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Social Sciences and Humanities

P-4 Law and Ethics Relating to Medical Profession

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Medical Law is a new and expanding field, which offers considerable scope for interdisciplinary study and collaboration. The responsibilities of those providing health care and the expectations of those receiving it are legally defined, and as a consequence the law is increasingly involved in dispute resolution. This challenging legal area draws on a wide range of existing legal subjects such as tort law, criminal law, family law and contract law. There is an increased interest among those involved in the medical field to know about the legal principles applicable to medical issues as there is now a developing pattern of judicial and legislative control over medical practice.

Law and Ethics relating to the Medical Profession, authored by Dr Puteri Nemie Jahn Kassim, provides the principles of law and ethics governing medical issues such as consent to medical treatment, confidentiality, medical negligence, euthanasia, assisted reproduction, abortion, sterilisation and mental health. The book is designed not only to provide readers with thorough knowledge of the substantive medical law but also to enable readers to apply legal and ethical concepts to specific situations that relate to medical practice.

**P-6 Essentials of Musharakah And Mudarabah: Islamic Texts
on Theory of Partnership**

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This research, now published in book form, is a fresh attempt at analyzing the basic theoretical aspects of joint ventures in Shari'ah. The first part of the work explores the rules of partnership and joint ventures as presented in the major texts of Islamic law, giving full references. It examines the essential nature of shirkah (musharakah) and mudarabah, their varieties, conditions necessary for their validity, and fundamental rulings pertaining to their operation and termination. The second part is a study of the Shari'ah theory on partnership and capital. It analyzes the basic theories pertaining to the essence of commercial partnership as postulated in different schools, and how the principal theory is intrinsically related to the rulings of each school on issues such as the nature of partnership capital. The discussion is expected to draw academic interest in studying the fundamental perceptions of schools of Islamic law regarding the core essence of various subjects, and how these are inextricably related to, and provide a foundation for, entire bodies of rulings. The work is a prelude to a detailed analysis of equity financing as practiced by modern Islamic banks that is forthcoming in print.

**P-7 The Legal and Ethical Position of Research on Human
Embryos in Malaysia**

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The study looks into the legal and ethical issues that arise from the use of extra embryos as a result of assisted reproductive technologies. The study also highlights the ethical and legal issues raised in cases where human embryos are created by way of somatic cell nuclear transfer technology for research purposes. From here, the study continues to examine the justifications for human embryo research and the benefits that such researches seek to achieve. Basically, the furor in doing research on human embryos is to enable scientists to find solutions for incurable diseases such as juvenile diabetes, Parkinson's Disease and many other genetically related diseases. Nevertheless, despite these noble aims there is the basic issue of whether human embryos should be subjected to research? Are they not the precursors of

human life? Research on these embryos would mean they will ultimately be destroyed, would this be similar to the destruction of human life? But are embryos actually humans or are they just a clump of cells that have not yet developed into a child and have no potential to be born as they are in vitro and not in utero? These are difficult questions raised by the study. Although the study does not claim to have the answers to all these pertinent issues, it provides a comprehensive analysis of the legal positions in countries that have legislated research on human embryos. Aside from that ethical positions are also discussed and special highlight is made on its position under the Shari'ah.

P-8 Identifying, Ranking and Assessing the Critical Success Factors of the Nine Challenges of Malaysian Vision 2020

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By the year 2020, Malaysia aspires to become a fully developed nation. This lofty vision, known as Vision 2020, was unveiled by the former Prime Minister of Malaysia Tun Dr. Mahathir bin Mohamad in 1991. At the present time, it is generally felt that the nation has achieved about 50 to 60 per cent of the objectives of Vision 2020. "Many more things need to be done by many more people". What need to be done and in what areas? This is the question we asked to 759 people living in Malaysia (Malaysians as well as Internationals) in a nationwide survey. As expected, the respondents articulated a wide variety of issues pertaining to education, economy, technology, quality of life, law and order, R&D, etc. Upon compilation of all the articulated issues, we developed an affinity diagram. The Analytic Hierarchy Process (AHP) has been applied in each component of the affinity diagram. This exercise identifies the main issues for implementation. Further, in order to realize this vision, Malaysia also needs to address nine strategic challenges: (1) Establishing a united Malaysian nation, (2) Creating a psychologically liberated, secure, and developed Malaysian society, (3) Developing a mature democratic society, (4) Forming a community that has high morale, ethics, and religious strength, (5) Establishing a mature, liberal and tolerant society, (6) Establishing a scientific and progressive society, (7) Establishing a fully caring society, (8) Ensuring an economically just society, and (9) Establishing a prosperous society. The present research has identified and ranked the critical success factors of these nine challenges by applying the AHP. A number of 'front-line' critical success factors are discussed at length. The impact of respondents' demography on the outcomes are also discussed. The findings are expected to provide valuable guidelines to the Malaysian government in course of developing effective action plans to achieve Vision 2020.

P-9 Determinants of Economic Performance of Micro-Credit Clients and Prospects for Islamic Microfinance in Malaysia

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This study is divided into two parts. The first part of the study utilizes econometric models to assess the economic performance of clients participating in the microcredit program of Amanah Ikhtiar Malaysia (AIM). Several proxies are used for the economic performance variable (dependent variable), including level of earnings/income, ratio of spending to income and value of assets. The regressors (independent variables) used are education level, age, amount of loan, source of income and ownership of assets. The second part of this study concentrates on analyzing the prospects of introducing Islamic microfinance products to be used in microfinance activities in Malaysia. In the first part of the study, we find that the economic performance of AIM participants is significantly determined by the amount of money borrowed from AIM. Other factors found to influence the respondents' economic performance are education level, age, gender, assets owned before joining AIM and area of residence. Because level of education is found to contribute significantly to the economic performance of AIM participants, it is suggested that AIM work to educate its borrowers, and more specifically, to provide business training. In the second part of

the study, the results show that there is a great demand for Islamic microfinance products in Malaysia. The findings of the study could serve as general guidelines for microfinance institutions in designing Islamic microfinance products for either Muslims or non-Muslim micro-entrepreneurs.

P-24 Expenditure and investment Patterns of Malaysians

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The objective of the study is (i) to examine the spending and consumption patterns of Malaysians; (ii) to investigate the types of investment made by individuals; (iii) to understand how individuals manage their expenses, and their behavior with respect to savings and risk as well as their shopping habits; and (iv) to analyze factors that give impact to individuals' expenditure and investment decisions.

A survey was conducted at randomly selected companies and organizations in five states – Kedah, Selangor, Johor, Kelantan and Sarawak, and in Kuala Lumpur, and 2653 usable questionnaires were obtained. The analysis employs *t*- and *F*-tests, correlation analysis, ordinary least squares and logistic regressions. The results show that the largest proportions of spending were on food, house and transportation while significantly lower amounts were spent on newspapers, magazines and books.

It is also found that more than half of the respondents made joint decisions with their spouse regarding both everyday and large household expenditures, and that majority of them kept track of their expenses. In addition, a slightly disproportionate higher number of Malays, and a disproportionate lower number of Chinese and Indians lived beyond their means.

With respect to financial matters, many respondents preferred to keep their money in liquid assets which have the lowest level of risk compared to other financial assets. The selection of conventional-based financial assets was more widely-accepted than Islamic-based assets. Concerning investment, expecting a high yield was the most important reason for majority of the respondents when investing their money in a financial product. Notably, it is found that individuals, in general, were risk averse, and the main references for financial decisions were firstly, financial newspapers or magazines, and secondly, government publications.

The research provides some policy recommendations related to investment and spending patterns of Malaysians and suggestions to investment-related institutions to tailor their marketing efforts to meet the specific needs of the various communities in Malaysia.

P-38 Inculcating Self Correction in Writing through Peer e-Editing

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Peer editing enables students to collaborate and edit each other's writing. In an L2 classroom, the exercise does not only offer distinct advantages to language learning but also encourages students to be more responsible for their own writing. A number of studies have been conducted on the advantages, effectiveness and importance of peer editing in the L2 classroom. However, little attention has been given to the hidden values of the exercise. This study reports the positive impact of e-editing on students of Arabic L2 class as far as grammar is concerned. Both quantitative and qualitative data were obtained and triangulated. The findings showed that the students were more responsible with their own writing and the quality of their work was improved over the course of one semester.

**P-40 Protection and Adoption of Abandoned Children In Malaysia: A
Comparative Overview with Islamic Law**

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Abandoned Child or the foundling in general refers to a child who is abandoned by his parents or guardian and his status is unknown. Issue on abandoned children (foundlings) is not new in Malaysia. It has come to attention and discussion since 1980. Despite enactment and amendment of law on child protection, statistics have shown the increased number of abandoned babies. Research has also been done to identify causes and reasons of abandonment which include adultery and illegitimacy. Islamic law among others has imposed a stern punishment on adultery with the purpose of deterring people from committing the offence. Nevertheless, problems on child abandonment seem hard to be solved. This research examines several means to protect these vulnerable children. One of those means is by taking them up upon finding and continuing serving them through providing care and maintenance. The research also examines on means of protecting the abandoned children through adoption and fostering based on the law in Malaysia and legal principles governing foundling (*laqit*) in Islamic law (*the Shari'ah*). Examination extends to the rules and practices of adoption and fostering in Australia whenever appropriate to serve as a comparison to certain differences between Australian law and Malaysian law on adoption and foster care. Reference is also made to the child law of Egypt to provide a sample of the application of the child law under the *Shari'ah* particularly in the protection of abandoned children. The research will serve as an authority for all academicians, legal practitioners, governmental and non-governmental organizations, students, social workers and officers and public as a whole.

**P-47 Causal links in QOL sub-domains accentuate greater support for
physical and emotional well-being of breast cancer survivors**

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Group psychotherapy or support group (SG) interventions have been reported to improve the quality of life (QOL) of cancer patients. For an improved life of Malaysian breast cancer survivors, facilities for SG interventions have been set up both in the urban and rural areas of the country. However, the impact of support group participation on QOL of these patients, and factors that may influence it have remained elusive. This study, examines the impact of SG participation on the QOL of Malaysian breast cancer survivors using the Functional Assessment of Chronic Illness Therapy (FACIT) questionnaire. Multiple comparisons using the Tukey HSD show that the QOL measure for rural SG participants are significantly lower ($F_{(2,55)} = 14.570$; $p < 0.01$) than for urban SG participants. Analysis of the interrelationships between the QOL sub-domains indicated that functional wellbeing (FWB) fully mediates the effects of physical wellbeing (PWB) and emotional wellbeing (EWB) on social wellbeing (SWB). In addition, PWB was relatively more influential than EWB in determining patients' FWB and SWB while PWB, EWB and FWB collectively explained about 25% of the variability in SWB. Findings of this study thus indicate that measurement of QOL is relative to patients' location i.e., urban or rural, which in turn reflects the patients' education and financial background. The findings also indicate a causal relationship among the QOL sub-domains which accentuate the contribution of SG interventions in improving the QOL of breast cancer patients. Accordingly, it is important that support group interventions should focus on how breast

cancer survivors can improve their physical wellbeing and emotional wellbeing which will lead to, if not for an extended survival, at least for a better functional wellbeing and eventually social wellbeing.

P-80 Where Modern Science and Civilization meet Islamic Values and Epistemology: Creative Encounters

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Modern science and civilization develop many things for human use and raise many critical questions which touch the core Islamic ethical and aesthetical values and its epistemology, leaving us with more doubts than ever before. Islam advanced a positive attitude towards science and civilization through its well established epistemology and value-based mechanism rooted in the Maqasid al-Shari'ah (objectives of Islamic law). Based on this mechanism Islam creatively endorses whatever meets its standard and rejects whatever violates it. This creative encounter between Islam and modern Science and Civilization is explored in five broad integrated fronts: ethical, aesthetical, epistemological, eschatological and linguistic fronts. The findings are published in four local and international refereed journals and in a book chapter.

P-83 Modeling E-Government Adoption : Trust, Perceived Risk and Political Efficacy

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The rapid development of ICT and Internet Technology has encouraged governments to take part in the virtual world through the development and deployment of electronic government or e-government in order to better serve the citizens. As one of the MSC Malaysia Flagship Applications, e-government initiative has been introduced since ten years ago aiming at building a more effective and efficient way to communicate and transact with the citizens and industries. One of the projects is Online Tax System or e-Filing that has gained its popularity since it was launched in 2006. But the obstacles remain concern taxpayers who are really anxious about the technology, lacking of technical skills, or do not trust of any online transaction. This has led the researchers to investigate the factors that might contribute to taxpayer's intention to use e-Filing system. Against this backdrop, this research intends to study about Government to Citizens (G2C) adoption in Malaysia by integrating the Technology Acceptance Model (TAM) theory, Diffusion and Innovation (DOI) theory and Perceived Characteristics of Innovating (PCI) as a research framework. Other factors that are believed in influencing citizens' intention to use G2C system are also examined in the study they are social influence, web-based service quality, trust of the internet, trust of the government, and perceived risk. The results demonstrate that trust of the government and web-based service quality are found to be a significant factors influencing citizens' intention to use e-Filing. Key implications for theory and practice are also discussed.

P-119 Cointegration and Causality between non-bank financial intermediaries and economic growth in Malaysia

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The question whether financial development influences economic growth has been examined in a large number of studies over the past four decades. Theoretically, the positive effects of financial development on economic growth are credited primarily to the functions it plays in the mobilization and allocation of resources needed to undertake productive investment activities by various economic agents. Theoretical literature argued that the increased availability of financial instruments and institutions greatly reduces transaction and information costs in economy which in turn influences savings rate, investment decisions, undertaking of technological innovations and hence the economic growth. A great deal of empirical works has also tested the finance-growth hypothesis in a various settings using different indicators of financial development in cross-country or time series studies. The tests found mixed results. They are; no causal relationship, growth causes financial development, financial development causes growth, and bidirectional relationship. However majority of the findings support that financial development plays the leading role in influencing economic growth. Surprisingly; most of the existing finance-growth literature uses either bank development or stock market development as proxy for financial development ignoring the development of non-bank financial intermediaries (NBFIs) as one of the significant components of the financial system development and its relationship with economic growth. In this paper we made an attempt to fill in the gap by investigating the causal relationship between NBFIs and economic growth in Malaysia for the period 1974-2004. By employing ARDL bounds testing approach to cointegration and the Granger non causality test in a multivariate vector error correction mechanism (VECM), we found that nonbank financial intermediaries and economic growth are cointegrated when economic growth is treated as the dependent variable. The finding shows evidence of a long-run causality running from nonbank financial intermediaries to economic growth, but not the vice versa..

P-138 Factorial Validity And Invariance of the Muet Writing Rating Scale: Empirical and Theoretical Correspondence

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The validity of performance assessment depends to a large extent on the rating scale that is used in the assessment procedure. It delineates the theoretical construct being measured and yield considerable influence on how performances are judged and interpreted. Implications of the use of rating scales are therefore far too important to be taken lightly, particularly in high-stakes standardized tests. This study investigates the factorial validity and invariance of a writing rating scale used in such a test – the Malaysian University English Test – in terms of its correspondence to empirical data and the theoretical construct of ESL writing through the use of confirmatory factor analysis (CFA). To test for factorial validity, a measurement model was developed based on the construct definition of the MUET rating scale and tested using AMOS, a data-fitting programme. CFA results of the 2-factor structure model underlying the MUET scale showed poor model-data fit. The measurement model was re-specified and re-tested iteratively. A 3-factor model, which is more consistent with the theoretical construct of ESL writing, was found to produce the best fit to the data. Factorial invariance of the 3-factor structure was then tested by examining the comparability of the structure and values of parameters within the measurement model across two samples which had been randomly drawn from the same population. Configural invariance of the 3-factor model was established. Metric invariance, however, could only be partially maintained. As the metric model produced better fitting fit indices compared to the baseline model, a more restrictive model was tested, where variances and covariances of the latent constructs together with factor loadings were constrained to be equal for the two samples. The resultant goodness-of-fit indices showed an even better fit to the data, providing additional support for the factorial invariance of the 3-factor structure.

P-141 Empirical Understanding of and Perceived Ability in Statistical Concepts: A Rasch Measurement Approach

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This study investigates students' conceptual knowledge and understanding of basic statistical concepts and compares it against statistical competence, which is associated with discrete statistical knowledge and basic interpretive skills. It also examines the correspondence between students' perceived ability and their empirical understanding of the concepts. Two instruments were developed: a 20-item test to measure students' empirical understanding of the basic statistical concepts and a questionnaire with matching items to measure their perceived ability of these concepts. For a direct comparison of the two, students' responses to the test and questionnaire items were jointly analyzed using Rasch analysis. Results of the analyses conducted indicate that conceptual understanding of basic statistical concepts is more difficult to attain than statistical competence. The results also suggest that students more often than not overestimated their understanding of basic statistical concepts, particular those requiring conceptual understanding of the concepts.

P-190 “Internationalization” as a Resource of Human Capital Development: Preliminary Results of a Proposed Model

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Internationalization is a potential sustainable Muslim resource for human capital development. The word “internationalization” impresses everyone irrespective of one's personal or institution's efforts to align with the idealized internationalization or a few defined by referent organizations. The paper aims to (a) trace the origin of the word and concept of “internationalization” within available literature in English, (b) reconcile between the literature definitions with the usage of the word and concept among selected international organizations, especially Muslim-controlled and Islamic oriented tertiary institutions, and (c) suggest whether the hybrid concept of internationalization match strategically with the spirit of *Kalima Shahada*, the very foundation of Islamic belief, which embraces the entire mankind. The proposed study is believed to be significant because it attempts to ascertain the degree of consonance or otherwise that might exist between the two concepts – internationalization and the spirit of *Kalima Shahada*, and project a pattern of responses that might be expected from the Muslim organizations and nations towards the concept of “internationalization” in its various forms. The study used textual analysis to develop a model of internationalization which reflects the *kalima shahadah*. It then tested the proposed model with the independent raters (n=78). The authors consolidated the components in the literature and practice to propose five connections that reflect the status of being “international”. However, the results confirm only three out of five proposed connections. (222 words)

P-207 The Dynamics of Trade Variety and Economic Performance of ASEAN-5

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ASEAN-5 (Indonesia, Malaysia, Philippines, Singapore, and Thailand) exports have been growing rapidly over the last decades. However, the growth may negatively affect welfare if it is followed by deterioration in the terms of trade, as implied by the standard Armington trade model. But the expansion of the variety of products exported may thwart the adverse terms of trade effect. Another important characteristic of ASEAN-5 exports is the heavy reliance on imported intermediate components, and hence

P-216 An Introduction to the Theoretical Foundations of Islamic Transactions

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This book presents a study of the theoretical foundations for Islamic transactions. It provides the reader with a solid background which is essential for a comprehensive knowledge of Islamic transactions, banking and finance. The main discussions include the sources for Islamic commercial and financial laws, the objectives of Shari'ah with regard to commercial and financial transactions, property and its classifications and their implications for transactions, rights and financial rights, ownership and its types, the theory of contract, the pillars of contract, its classifications, and its options. The last chapter discusses factors that invalidate transactions such as usury/interest (riba), ambiguity (gharar), gambling (maysir), and the involvement of prohibited properties. The book is an important text not only for the students but also for all those who work in Islamic banks and financial institutions.

P-217 The Practices of Global and Traditional Management Characteristics among Senior Managers in Malaysian Cooperatives

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The practices of global and traditional management characteristics among senior managers in Malaysian cooperatives are important to ensure the survival and performance of Malaysian cooperatives. Senior management plays a very significant role to enhance the profitability of the co-operatives. Unlike traditional companies which are regulated by the Commission of Companies Malaysia, cooperatives are regulated by the Cooperative Commission of Malaysia. Despite operating under different legal framework, cooperative managers are adopting the characteristics of global managerial traits. This paper attempts to investigate the perceptions of cooperatives' senior management toward managerial roles and global skills, and aggregate the two sets of dimensions into broader categories.

P-220 Leadership and work motivation from the cross cultural perspective

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The purpose of this paper is to compare and contrast conventional management thought, its main features of leadership, and work motivation with those from an Islamic perspective. The paper fills in the literature gap that exists, despite the growing importance of a need for knowledge on management from an Islamic perspective. This paper is conceptual in nature. Therefore, the method adopted is descriptive and approached using revealed knowledge sources, as well as knowledge from conventional management literature from the cultural school of management thought. Leadership and motivational concepts in Islamic management are more comprehensive than the conventional theories. Islamic motivation frameworks also provide fundamentals for developing a strong Islamic leadership. Implications of these Islamic management concepts are not only confined to this materialistic world but also have connotation for subscribers of the belief of attaining eternal success in the hereafter. The paper gives a better understanding and guidelines for managers of multinational corporations, especially those working in Muslim countries, in order to achieve their corporate objectives successfully.

P-224 The Effects of Construction on Environmental Resources in Peninsular Malaysia: The Perspective of Land Use Planning

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Environment forms the basis upon which all human activities such as physical, social and economic take place. Malaysia is a nation that is blessed with the beauty of nature and at the same time advanced in terms of infrastructural development. Environmental resources are vital components of the environment that include land, vegetal resource, water bodies, atmosphere, flora and fauna. Nowadays, due to high rate of urbanization, rapid population and economic growth led to greater need of space for operation, which subsequently forced the construction industries to meet this demand. This gives rise to various forms of environmental degradations which lead to disruption of environmental equilibrium. The study assesses the effects of construction industries on the environment in the perspectives of land use planning. However, if proper measures are not taken, the consequences will never be of benefit to the country. Land use planning is an approach used to identify the relationship between construction activities and environmental resources. Generally, the study area covers Peninsula Malaysia because of the similarities of construction conditions and the environmental effects. The methodology employed in this study is based on the available data derived from the secondary sources of information. It also aims at suggesting ways of achieving sustainable construction activities so that our natural earth will not be harmed, destroyed or degraded.

P-225 Whether individual characteristics are related to organizational affiliation

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One's affiliation with formal and informal organizations tends to reflect dominant attributes or orientation of the organizations. One's fit with an organization will make him continue his membership; a mismatch will separate the two. Members of two different organizations might face difficulties in their interactions with members of other organizations, and consequently could not work on joint projects. It is therefore important that different organizations become aware of dominant attributes of members of their interacting organizations to facilitate their communication and work on joint projects. The objective of the study is to identify common traits that are shared by members of selected Islamic-related organizations. The study used an open-ended instrument to solicit the opinions on positive and negative attributes perceived by a friend of one who is affiliated with an Islamic organization. The instrument was administered on a group of eighty (n=80) students who studied *Business Ethics* in a public university in Malaysia. The study content analyzed the attributes, and collapsed them into common categories. The authors believe that the current preliminary study is important in harmonizing the relations between various Islamic organizations.

P-227 Employers' Perception And Expectation Of The Graduates Competency

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This research discusses the employers' perception and expectation of the undergraduate competency and personality. Research methodology is based on questionnaires survey and in depth interview on 100 employers. It focuses on employers that consist private and public sectors. The main findings show that factors such as mediocre or low academic achievement, low English language proficiency, inconsistency

in competency and personality characteristics those observed on unemployed graduates and those aspired by employers are the causes of the unemployment among graduates.

P-229 A Critical Examination of the Definition and Implementation of Riqab (Slavery) by a Selected Bait al-Mal in Malaysia

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Riqab (slavery) is one of the standard categories of *Zakat* expenditure sanctioned by Islam. Unlike in the old days where the incidence of slavery was common, modern life might find cases of slavery alien, almost non-existent. This study attempts to revisit the particular category as being managed by one of the *Bait al-Mal*'s in Malaysia. **Objective:** The study attempts to propose the core concept of *riqab* in the Islamic literature, and verify it with the definition adopted by and actual distribution practiced by the *Mal*. **Issues:** There are two main issues that challenge intellectuals and average people in this study: (1) Whether the definition of *riqab* adopted by the *Mal* is well supported by the literature; (2) Whether the *Mal*'s recipients under *riqab* category are consistent with the definition. **Methodology:** The study will present analysis of the actual data available with the *Mal*. In addition, it will obtain experts' views on the same issues. To further evaluate on whether ordinary Muslims perceive acceptability or otherwise of the examples of *riqab* recipients adopted by the *Mal*, the study proposes to administer a short questionnaire on Muslim students of a public university. **Significance:** The study is unique both in terms of novelty of the topic and attempts by the *Mal* to apply the concept in an apparently non-*riqabic* contemporary environment.

P-233 The Concept of Wasatiyyah and the Challenge of Islam Liberal in Indonesia

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My research shows that the justly balanced worldview of Islam has wide implications for contemporary Muslim society encompassing the Muslims' religiosity, spirituality, intellectuality, outlook, attitudes, behaviour, relationships and activism. Each one of the twenty positions spelled out by al-Qaradhawi also serves as general principles and guidelines towards achieving the goals of Islamic moderation, and avoid the tendency of Muslim societies to be caught between the two poles of immoderation (*ifreet*) and negligence (*tafreet*). In addition to the above twenty "middle path" positions that Muslims have to adopt, al-Qaradhawi mentions eight basic religious implications which Muslims need to take note of in pursuing the path of *al-Wasatiyyah*.

The rise of "Islam Liberal" movement in Indonesia is a serious internal challenge to the true meaning of *Wasatiyyah*. A comparison with a Singaporean Muslim stand will show the deviationist tendency of the "Islam Liberal Network".

P-234 Is Zakat Fund Collected Investible?

*Abdul Bari Awang, Suhaimi Mhd Sarif, Yusof Ismail
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Zakat being the fifth pillar of Islam tends to be discussed among the Muslims from the general collection and distribution aspects. The collection and disbursement functions of *zakat* appear to be straight forward cases. As with any funds, the *zakat* fund will naturally accumulate as a result of payments from eligible Muslims, and after disbursement, the fund should naturally decline. If the function of *zakat* is receipts and disbursements, then increases due to *hibah* from the financial institution with which the fund is maintained will only be incidental, and perhaps, unavoidable. There is one immediate and

access audit done in Kota Kinabalu concluded that the water front area was designed without consideration of Universal Design, and renovation of the built environment is urgently needed to comply with the Malaysian standard requirements.

**P-239 A Comparative Study of Horizontal and Vertical Architectural
Design Studio Management in IIUM**

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The Department of Architecture, Kulliyah of Architecture and Environmental Design (KAED), International Islamic University Malaysia (IIUM), had had conducted a horizontal studio management system for the last 11 years of its operation. The same system has also been used by most of the schools of architecture through out the globe. However, due to the increasing numbers of students, and shortage of lecturers, the department had some difficulties in managing the smooth running of architectural design studio teaching. Therefore, the department resolves such problems by introducing a new vertical studio management system, which commenced in December 2008. The implementation of vertical studio system is for the purpose of improving both lecturers-students interaction, and students' learning capabilities. This research aims to compare the strengths, weaknesses, and effectiveness of two (2) systems of studio management: Horizontal and Vertical Studio Management. With support of survey and interview, this research mainly utilizes action research, in which personal experience of academic staff and students in dealing with both horizontal and vertical studio management systems is documented. It is expected that the new vertical system would have some disadvantages as its introduction has not been properly tested and securitised prior to its implementation.

P-243 Work and Family Life Balance: An Islamic Response

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The increasing need to finance the modern life has called women to participate in the workforce. The issue of work and family balance arise when married women or traditional mothers also joined the workforce. When working mothers joined the workforce, there is dilemma to create a balance between family obligations and organizational commitments. The work-family balance includes time balance (equal time devoted to work and family), involvement balance (equal involvement in work and family), and satisfaction balance (equal satisfaction with work and family). The study evaluates the concept of work and family life balance from an Islamic perspective. Both working and family life are integral in human's principal duty, which is to worship Allah (by executing the tasks as servant and vicegerent of Allah on this worldly life). The ultimate aim of life is to gain true happiness (victory/ al falah) in the Hereafter. The study suggests that both institutions (work and family) if submit to the teaching of Islam, can ultimately accomplish the well being of people and society and the pleasure of Allah.

**P-244 Mediation in Marital Discord in Islamic Law: Legislative
Foundation and Contemporary Application**

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Mediation as a method of marriage conflict resolution has recently emerged as one of the most workable institutionalized techniques in Western jurisdictions. In Islamic law, although ipso facto, it was given legislative recognition centuries ago under the principle of *taḥkim*; its potential as a viable reconciliation technique was somewhat obscured by juridical technicalities. Indisputably, mediation was the underlying *ratio legis* for the institution of *ḥakam* (arbitration). In practice, however, mediation was not the sole

prerogative of the arbitration. It was instituted and carried out through numerous culturally specific methods, both formal and informal. In the Malaysian scene, mediation in family dispute is part of the ongoing daily job of Shari'ah lawyers, judges and officers in religious departments. However, critiques believe that neither the agents under traditional hakam nor Shari'ah practitioners of Shari'ah bodies have the necessary training and soft skills to act as effective go-betweens in resolving marital conflicts in the contemporary setting. The alternative, therefore, is to create a body such as a "Conciliatory Committee" using the pattern for a Western mediation model. Thus this paper, while agreeing with this idea, proposes an integrated method of doing this within the hybrid framework of both arbitration and modern mediation techniques consistent with Islamic legal methodology.

P-245 Forensic Evidence: A rethinking about its use and evidential weight in Islamic Jurisprudence

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Forensic evidence has emerged as one of the important tools to connect an accused to the crime for which he is charged and to identify him in case he is of mysterious identity. Its role is also crucial in affirming material facts relevant to issues contested before a court in civil suit. It has become indispensable in the process of implementing justice in the Western legal systems. In the Islamic jurisdictions, on the other hand, although its use and admissibility has been attempted – its evidential weight continues to invoke juristic discourses and legal theorization. It is often classified as a kind of qarinah whose admissibility as a mode of proof has invoked the same polemics that surrounds qarinah itself. This essay, however, argues: first, forensic evidence ipso facto represents an expert opinion from forensic scientists. It is as such derives its legitimacy from the Islamic sources as a separate method of proof. Second, it as a means of proof is another sure way of establishing the truth (al-bayyinah) – distinct from qarinah. It, in terms of standard and evidential weight, amounts to oral testimony perceived and revealed through scientific eyes as it unlike qarinah not only gives rise to suspicion and conjecture but affirmatively proves and disproves facts and relevant facts. Lastly, in terms of function it not only tracks and traces the physical evidence against the accused in a criminal trial, it also discloses other issues of psycho anthropological relevance to all types of cases. Accordingly, a thoughtful reflection about the reality of forensic evidence, as argued above would broaden our horizon of thinking about the ways that legal justice could obtain today.

P-249 The Effectiveness of Key word Method in Acquisition of Arabic Vocabulary: An Experimental Study of Teaching Arabic as a Second Language in Malaysia

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The success of a second language teaching and learning is one of the central topics in cognitive science. Theories of cognition had tried to explain it; probably no other topic has aroused such controversy. Generally, commentators have focused on the technical difficulties of working with a second language such as grammatical rules and pronunciation. However, the technical aspects of a language are just a matter of absorbing a natural phenomenon. The real problem here came from the stereotypes of dealing methodologies and it should be evaluated before a comparison can be made. This step is a principal responsibility of every teacher who strives to use their observations and evaluations to improve their teaching effectiveness and always look forward to learn, develop or apply new research-based teaching practices within their teaching methods. In the case of learning Arabic, memorization can be assumed to be a difficult task to Malay learners. For this reason, this study was tried to evaluate the effectiveness and practicalities of the "Key-word method" in improving the betterment of both teachers and learners performance and the ability enhancement in overcoming the challenges, so that they become

– the Qur'an and *Sunnah* - Islamic *Fiqh* and jurisprudence, relevant websites, recent journals, magazines and newspapers etc.. It analyzes the stance of different jurists from traditional and modern perspectives and gets the latest available data through different journals and newspapers. The research reached conclusions that Islamic criminal punishment is a just, fair and balanced one, which is still suitable to be implemented throughout the globe provided that the states follow Islamic rules in overall policy of governance. Islamic *Hudud* alone cannot be established in isolation from other religious rulings and *adaab* (manners). Islam does not discriminate man and woman in carrying out its legal punishments. Societies can subsequently prosper once it implements Islamic teachings in all aspects of life, and then the issue of committing even minor crimes, let alone the major ones, will rarely emerge.

P-257 The Challenge of Managing Knowledge Transfer Among Technology Firms in Malaysian Technology Parks

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The study examines the management of knowledge transfer among technology firms in Malaysian technology parks by using the concept of “macro stickiness.” The concept uses literature in the field of innovation studies, in which governments have been identified as major contributors. The study examines the perceptions of a variety of informants of stickiness in knowledge transfer among technology firms in Malaysian technology parks. The study interviewed fifty (50) informants, who included policy makers, government officers, and senior executives of technology firms in Malaysian technology parks. The preliminary findings indicated that policy makers and government confirmed that they cannot go away from previous policy documents when formulated policies for technology incubation that based on three major elements: enhancement of national unity, intensification of foreign direct investment and expectation of sound economic growth. Such actions do not sufficiently promote knowledge transfer among technology firms in the incubation facilities because technology firms are motivated to gain short term profits instead of developing indigenous technology.

P-258 Challenges And Prospects in Group-Based Assignments At Higher Learning Institutions in Malaysia

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The pros and cons of group-based assignments received well attention by education and training researchers. The study obtained the opinions of Business Administration students about the problems that they possibly identified in group-based assignments and to propose solutions on how to improve group-based assignments through an instrument (questionnaire). The instrument is designed to be one sheet of A4 so that it appears to be convenient and will not consume much of the respondents' time. It was distributed to students during class time and collected after 30 minutes. The total number of student respondents who participated in this study is 150, which comprised 40 (36%) male and 110 (64%) female. Respondents identified very serious problem related to group-based assignment which is free riding, which means some members of the group do not share fair share of work in completing the group-based assignments. Thus, the majority of respondents is not in favor of group-based assignments due to this serious problem and suggested the lecturers to discontinue using group-based assignments. However, some of the respondents insisted that group-based assignments can be implemented provided that the instructors use multiple evaluation methods so that the problems can be addressed. The immediate implication for the practice is that university instructors need to review its group-based assignments to reduce the “free-riding” problems. The study would like to propose the use of multiple evaluation methods on group-based assignments to reduce the free riding problem if university instructors insist to apply group-based assignments. The future research for this study should extend the questionnaire to Business Administration students from other universities to ensure the robustness of the results.

P-260 Teaching-Learning Religions after 9/11: A Preliminary Assessment of Islamic Cases

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Tragedy of 9/11 has far-reaching effect. It has changed systematically all aspects of the modern world history, especially the aspects pertaining to religions. Islam, in particular, has been the most badly affected and maligned among these religions as being projected widely the main agent behind the tragedy. Then, all negative attributes and stigmas, such as violence, terrorism, hatred, intolerance, etc., are labeled loosely and massively against Islam. Hence, the demand for reforming and restructuring the Islamic educational curricular at all levels, as well as for scrutinizing the reading materials or books required for the process of teaching-learning Islam, especially in madrasahs (traditional Islamic schools) in the Muslim countries. Therefore, this paper is an academic attempt to assess the extent to which the tragedy has affected the process of teaching-learning Islam, and to evaluate this impact in the context of both philosophy of education, human rights, civil society and globalization.

P-265 An Analysis of Academic Staff Service Scheme of Selected Private Universities in Malaysia

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This study has analyzed overall, qualitative characteristics of service scheme of selected private universities in Malaysia. Awareness of service scheme of players in the same industry could help a private university position itself from staff recruitment and retention perspectives. With such knowledge, private universities could develop strategies to attract resourceful academic and administrative staff. The study emphasizes findings from survey questionnaire and personal interviews. It de-emphasizes literature review. The most predominant method employed in this study was personal interview. Data gathering proved extremely difficult due to rigidity and confidentiality of informational disclosure. Conclusion, limitation of the study, managerial implications, and future research directions are highlighted.

P-266 Knowledge Transfer Capability among ICT Firms in Malaysia

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This paper presents the views of managers and knowledge workers of information and communication technology (ICT) firms in Malaysia pertaining to the roles of knowledge stocks, social network, and firm's environment in creating knowledge transfer capability. Knowledge is important because it enables a firm to be innovative in terms of producing new products and services to the market. Usually innovative firms create knowledge continuously because of the short product/service life cycle. Strategic management and knowledge management literatures suggest a firm with knowledge transfer capability is more innovative. However, based on personal interviews with 12 informants, the study observed that Malaysia's ICT firms were well equipped with knowledge transfer capability due to over emphasized on profit making over knowledge creation. These firms need to change from where they are now to more knowledge oriented approach if they want to sustain in the ICT industry.

P-270 The Role of Religion in Shaping Contemporary Man's Everyday Moral Character: An Islamic-Catholic Perspective

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The greatest problem that has confronted man since the beginning of his existence is the moral problem. Other problems (i.e., social, economic, political, religious, etc.) are only aspects of this master-problem. Man as a sound, rational and moral being, is always faced with the question: What are good and evil, right and wrong, moral and immoral acts? Therefore, this paper attempts to study the significant role of religion and its moral values in shaping man's everyday aspect of character by promoting high moral principles to enable him to eliminate contemporary social ills. The shaping of man's character is seen as an important issue by both religious groups of Islam and Catholicism. The Islamic-Catholic dictum - the promotion of good moral values and the abstention from evil values, will serve as a cornerstone for building the modern person's everyday ethical aspect of character. A comparison between religious and irreligious moralities, the influence of Islamic-Catholic ethics towards secular thinking and the application of everyday ethics will be presented in the text of this paper, too. This paper reaches the following conclusions: (1) Religion plays a significant role in shaping contemporary people's day-to-day intra-personal and inter-personal moral aspects of character and this will be actualized only when the process of 'religionization' of people's everyday ethics will be taken seriously by people of sound reason; (2) Only religious or religionized ethics will enable humanity at large to solve contemporary problems.

P-271 Muslim Women and Religious Authorities in the Mass Media in Malaysia

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The issues of participation and contribution of Muslim women in public spheres have been widely discussed in the academic circles. Up to the present day, many Muslim women in patriarchal Islamic societies are still struggling to have a role in public life. On the other hand, in some parts of the Muslim world women enjoy a much better status. They are welcome to contribute to and actively engage in their communities. This study will focus on Muslim women-preachers in contemporary Malaysia. The emphasis is on their ideas and preaching as expressed in the mass media outlets. The three preachers chosen for this study are: Dr. Sharifah Hayati Syed Ismail, a professor of Islamic studies at the National University of Malaysia, Siti Nor Bahyah Mahamood, a preacher and a motivator who owns a motivational company, and Dr. Fatma al-Zahra, an Egyptian medical doctor who migrated to Malaysia. These preachers have expressed religious responses and opinions to the masses through different media channels such as the national television, printed newspapers, as well as magazines. Oftentimes, they are also invited to give occasional lectures at the local and international mosques. The paper seeks to answer the following questions: What are the issues that feature prominently in the lectures delivered by Muslim women preachers?; Are their works and the issues they talk about only limited to the 'women' issues?; What are the challenges that these female preachers face in doing their job?; Do they feel being discriminated against?; What motivates them to engage in such work?; Are their views and opinions accepted and valued by the general public?; Are their views accepted because of their religious education?; Are their targeted groups mostly women? This study will analyze their works as expressed in the television programs, newspaper columns and magazines, and lectures at the mosques. The researcher will also conduct personal interviews with the female preachers.

P-275 Development of Reading Skills: Adopting Mobile Technology to Support Learning

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Reading is one of the important academic skills and is often associated with students' academic performance and achievement (Brown, 2007; Bishop, 2003; Krashen, 1995). This suggests that students' ability to perform successfully in the content area is correlated with their ability to read and comprehend texts. However, the time spent for reading is often limited to a dedicated learning environment and formal curriculum. To ensure that reading can be done regardless of where students are, mobile learning or MLearning through its mobile technologies such as mobile phones may offer another alternative to reading. As many students studying in a university own a mobile phone it can be used for teaching purposes. This research is on the use of mobile learning (MLearning) particularly short message service (SMS) facility in developing second-language students' reading skill. It aims to see whether mobile learning can complement traditional reading lesson. The study was conducted on language learners following proficiency courses at CELPAD. SMSes were sent everyday within one semester to the selected students. The study shows that students found the approach interesting and helpful. Some mentioned that receiving the SMS daily has encouraged them to use English or read English materials more often. Others claimed that the activity has enabled them to get access to English wherever they were. They liked receiving extra exposure to English through SMS in addition to classroom learning. Most of them appreciated the fact that they were chosen for the study and expressed hope that this approach will be adopted by the centre. The study also highlighted possible problems when using this technology. Among them are telecommunication networks incompatibility and limitation on the number of characters per message.

P-277 Nazm Al-Qur'an: A Viable Tafsir Methodology

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Hundreds of *tafsîr* works have been produced by Muslim scholars with a view to making the message of the *Qur'ân* accessible to the mankind. These works represent various trends, different approaches, diverse methodologies, multifarious objectives, and numerous schools of thought. Consequently, different and, at times, mutually conflicting interpretations of the words of Allah has caused Muslims to feel confused and dejected. Interestingly, scholars who have applied one and the same methodology to unfold the truth of the divine speech have also miserably failed to maintain the unity of the message of the *Qur'ân*, and come up with uncompromisingly contradictory interpretations. This situation serves as an obvious indicator that there is something wrong in the methodology of interpretation of the *Qur'ân*. In the twentieth century some Muslim scholars such as al-Farâhî and Îlîîî proposed and also practically demonstrated a new methodology of *tafsîr* known as *Nazm al-Qur'ân*. To them, it is not merely an excellent miraculous feature of the *Qur'ân* but also a methodology. Application of this methodology in the *Qur'anic tafsîr* leads to the unity of message in the *Qur'ân*. This methodology may enable the commentators of the *Qur'ân* to develop various meanings of verses but there is no possibility of conflict among scholars while interpreting the *Qur'ân* in terms of ideas. This paper introduces *Nazm al-Qur'ân* as a methodology of *tafsîr* and apply it to *sûrah al-Jumu'ah* for practical purpose.

P-278 Sayyid Abul Añl Mawdd's Views on Ijtihd and Their Relevance to the Contemporary Muslim Society

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The purpose of this article is to explore the views of Sayyid Abul Añl Mawdd on *ijtihd*. It intends to trace the origins of Mawdd's ideas within the social, cultural and political context of his time, especially the increasing influence of modernity in the Muslim world. The study shows that Mawdd's understanding of *ijtihd* and its scope demonstrates originality. For Mawdd, *ijtihd* is the concept, the process, as well as the mechanism by which the *SharÑah*, as elaborated in the Qurn and the *Sunnah* is to be interpreted, developed and kept alive in line with the intellectual, political, economic, legal, technological and moral development of society. The notion of *ijtihd* adopted by Mawdd transcends the confines of *Fiqh* (jurisprudence) and tends therefore to unleash the dormant faculties of the Muslim mind to excel in all segments of life.

P-279 Developing Young Learners' Writing Skills in Informal Situations Using ICT Facilities

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Palletier (2008) states that technology plays a big role in developing children's writing. She claims that the computer is one of the significant forms of technology because of its easy accessibility. Franco (2008) also stresses the importance of ICT in enhancing children's writing development. He examines the use of different teaching methods in order to help young students improve their writing skills. This paper explores children use of ICT devices outside the classroom. It discusses the ICT facilities used by young learners to develop their writing skills. Each has its strength in developing these skills. Power-point and word processors are the two obvious tools that can be explored for this purpose. Strong parental support and guidance can help very young learners to develop their writing skills using these devices. A longitudinal study (four years) on one nine year old child shows that power-point alone provided an interesting tool for the child to develop various aspects of writing. The bigger children preferred sites which are more interactive. It was, however, found that the social networking sites did not necessarily improve their writing skills. The real audience, however, made these sites a suitable medium for developing their communication skills. Those who were serious about developing their writing skills often went for other facilities. This included the use of blogs. Others utilised other means such as disguising themselves as the speakers of the target language. All these reflect the potential these facilities have in producing independent learners particularly in developing writing skills.

P-280 Language Teachers' Surfing Skills: Teachers' Knowledge of Metasearch Engines and Advanced Search Facilities

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The National Council for the Accreditation of Teachers (NCATE) (2008) recognises the relevance of incorporating the use of internet and world wide web in teacher training (ISTE, 2008). Brooks and Byles (2000) stress on productive strategies in Internet search. However, these are often overlooked although finding information on the Internet and how they work requires the right surfing skills. Added to that each search engine differs in its way of displaying information. A survey was conducted on all language teachers teaching at the Centre for Languages, IIUM to analyse teachers' knowledge of available search engines and their surfing skills. Questionnaire survey and interview methods were adopted in this study.

The study found that the majority of the teachers were not aware of the presence of search engines other than Yahoo, Google and MSN. Metasearch engines were rarely used. Many were also not aware of the advanced search facilities. They went for any domain and all formats when surfing without knowing that they could select for specific files and specific language when looking for materials. The research points to the need for teaching effective surfing skills in pre-service and in-service teacher training programmes.

P-281 Muslim Women in Contemporary Societies: Realities and Opportunities

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This book brings to focus, ideas articulated by some contemporary Muslim writers during a three-day conference organized by the International Institute for Muslim Unity (IIUM), on the politico-religious and socio-economic challenges of Muslim women in our time. Edited by Hassan Ahmed Ibrahim and Zaleha Kamaruddin, the book which features seventeen essays with an introductory note, addresses the challenges facing Muslim Women across diverse cultural and national backgrounds. With a gist that discrimination against women has no basis in Islam; the authors suggested what should be done in order to remedy the dominant misrepresentation in many Muslim countries where women are held inferior. The progress made by some Muslim countries where women enjoy political rights and are allowed participation in the public domain were highlighted while places and areas where much need to be done were also given due attention. By and large, the book opens a vista on how Muslim women can be empowered such that the *Ummah* can optimize their contributions to its civilizational development.

**P-283 Said Nursi's Theologico-Spiritual Framework in Risale-I Nur:
Revivalism of Islamic Worldview Through Contemporary Approach**

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It goes without saying that as a renowned religious figure of the twentieth century Bedi'uzzaman Sa'id Nursi has left a tremendous impact on different facets of Muslims' religious life, not only in Turkey but also in other parts of the Muslim world. The substantial reform on religious understanding that he brought to the Muslims particularly in Turkey through his powerful theological and spiritual framework could serve as a good method of da'wah in general and educational approach in particular to the Muslims of other countries. This paper examines briefly how this framework of Nursi's thought reflected in his masterpiece, Risale-i Nur could serve as a strong basis of a proper reconstruction of Islamic worldview through contemporary intellectual tool particularly the modern scientific knowledge.

**P-292 Understanding the Underlying Principles of Masjid Architecture
through Study of Built Form in Place, Time, People and
Culture in demystifying Islamic Architecture**

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Masjid or mosque has been typecast as a building typology to represent the presence of Muslim in all parts of the world heedlessly. While the generic symbolism of Masjid as icon to Muslim lies in the definitive domes, arches and minarets, the definitions and abstract implications of Masjid in the Quran and the traditions of the Prophet S.A.W., do not directly address the issue physically. While the Masjid signify Islamic architecture to the mass, i.e. Muslim and Non Muslim alike, the architecture fraternity, on the other hand, remain indignant to understand the underlying principles that makes a Masjid a Masjid. The study through primary and secondary data extract from literary and architectural research, interviews

of architects known for Masjid projects, as well as physical case studies in Malaysia and abroad, had significantly disclose the real Masjid as it should be known, to the additions and layers it has been camouflaged with while the history unfold. The study's objective is to demystify Islamic architecture at its very core-the Masjid. If the world, as the Quran quoted the Masjid, as every place on earth, then no matter whatever built form or architecture it assumes, if it is use as a Masjid, it is a Masjid in whatever name or form it portray. *Wallahualam*.

**P-294 Effective Labour Delivery Room Space Configuration
for Malaysian Hospitals**

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The planning and design of Labour Delivery Room (LDR) in the Malaysian hospitals ranged from simple utilitarian spaces of public hospitals to a 4-5 star spaces in private facilities. Although the area may differ from one design to another in conforming to certain acceptable standards or norms, the space configuration of these rooms remained an enigma to its effectiveness and the grid system chosen to fit in the repetitive module. The study is therefore conducted on selected hospitals with the LDR, and of various space configurations, so as to obtain the critical dimension required to perform safe normal delivery effectively. As a qualitative research, the data will be obtained through literature review, planned and unplanned observation, structured and random interview as well as re-measurement of the rooms/spaces as bases of measurement. The significance of the finding was to ascertain the critical dimension required to perform the main function of the space as labour and delivery area apart from other findings of importance for the well being of the users.

**P-295 Ahmad Surkitti (1876-1943): His Life, Thought and Islamic
Reform Indonesia**

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Shaykh Ahmad Muhammad al-Surkitti (1876-1943) was an important figure in the Islamic reform movement in early twentieth-century Indonesia. He was born in the Sudan in 1876, studied in Makkah and Madina for fourteen years (1897-1911), and established his career as a school teacher and a celebrated reformist leader in Indonesia (1911-1943). The purpose of this research project is to examine the early life and career of al-Surkitti in the Sudan and Saudi Arabia, and assess critically his contribution to the *islah* and *tajdid* movements in the Malay-Indonesia world. His intellectual and religio-political discord and conflict with the Alawi traditionalists will be investigated in the context of Hahdarmi identity and discourse between 'orthodox Islam' propagated by Surkitti and his followers and 'popular Islam' that gave the Alawi sayyids special recognition in their home society in Hadramaut and Diaspora in Indonesia.

P-308 Peaceful Co-Existence Among Adherents of Abrahamic Faith

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The research explores the divine principles to maintain peace and harmonious lives across races and religious boundaries in community. It deals in the first part on the concept and purpose of dialogue and practical example during the live time of the Prophet Muhammad (pbuh) and later generations how they demonstrated peaceful co-existence with the non-Muslims. The presence of other religious followers in Arabia and its surrounding areas is also dealt. It studies the concept of pluralism and the wisdom behind existence of diversity of religious adherents in the community. Then, it will analyze the views and commentary of Muslim exegetes and how they deal with religious text. This is mainly related with

methodological approach which they develop in giving the commentary. Moreover, it analyzes the current trend of making religious equality, perception of pluralism in the hands Western scholars, the purpose and practice of interfaith dialogue and its implication which is mainly aimed at reducing religious fervor among Muslims.

P-310 Creation of an Islamic State between Ambition and Ignorance

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It deals with the study on the Muslim hardliners on the concept of jihad as mentioned in Muslim religious text especially the Qur'an and the *Sunnah*. It studies their vision with regard to the concept of jihad in which, in reality, does not necessarily gives the meaning as the struggle in the battle field. It also critically discusses their vision on underlining concept from etymological aspect as well terminological concept and their main differences with the views of prominent Muslim scholars. Moreover, it also examines the emergence of the jihad movement which is inseparably related with older generation which emerged in the eve of independence. The way how they train new members among the youths, recruitment system, and their loyalty toward the central leadership is also highlighted. In addition, it also discusses the creation of educational and training center of *al-zaytun* which they regard it as the home of believers which is equal with the Madinan state established during the life of the Prophet Muhammad (pbuh). Another important aspect, it also highlights on the obligatory *infaq* taken from its members to be collected from any source regardless of lawfulness and unlawfulness simply for the sake of establishing an ideal Islamic government.

P-311 Approach of Liberal Muslims toward Religious Text

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Medical Law is a new and expanding field, which offers considerable scope for interdisciplinary study and collaboration. The responsibilities of those providing health care and the expectations of those receiving it are legally defined, and as a consequence the law is increasingly involved in dispute resolution. This challenging legal area draws on a wide range of existing legal subjects such as tort law, criminal law, family law and contract law. There is an increased interest among those involved in the medical field to know about the legal principles applicable to medical issues as there is now a developing pattern of judicial and legislative control over medical practice.

Law and Ethics relating to the Medical Profession, authored by Dr Puteri Nemie Jahn Kassim, provides the principles of law and ethics governing medical issues such as consent to medical treatment, confidentiality, medical negligence, euthanasia, assisted reproduction, abortion, sterilisation and mental health. The book is designed not only to provide readers with thorough knowledge of the substantive medical law but also to enable readers to apply legal and ethical concepts to specific situations that relate to medical practice.

P-312 Emergence and Development of Muslim Liberal in Indonesia

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The book reveals the emergence of liberal Islam in Indonesia by tracing the root of historical perspective. It emerged long before independence where secular Muslims made their efforts to expose their religious understanding in the community. It came out in the first part from secular group who tried to portray the religion from the use of Western angles. Liberal thought which was propagated by Muslim scholars who, to a large extent, have sufficient understanding toward the teaching of Islam but simply look at using the rational approach. They also tended to interpret certain religious text it using their own

judgment, ignoring the rules and principles laid down by the authority of Muslim scholars.

It also deals with liberalism which is closely related to the debate among the founding members of the nation between nationalist and Muslim leaders. It also emphasizes the liberal thought of Sukarno who can be considered as the main figure who propagated the liberal interpretation on the religious text before independence. It also highlights liberal thought during the era of Suharto. His policy to disintegrate Islam from the political scene and the prohibition of the revival of Muslim parties under the leadership of committed Muslim leaders is also discussed.

Moreover, it is devoted to discuss the role of Nurcholis Madjid in promoting secularism and liberal thought in the country. In other part, it focuses on the new policies of education to comply with the political system developed in the realm of the so-called new order government under Suharto. The role of Western university graduates and their interpretation of religious text as well as their thought in Islamic studies becomes the main topic of discussion.

Moreover, the liberal thought of young generation which emerged since 1990s is also discussed. The approach toward the religious text, the issue of equality among all religions, the permissibility of marriage across religious boundaries, criticisms toward certain dictum of religious text as well as the demands of revising certain aspects of Islamic law are discussed extensively.

P-318 Mohammad Natsir's Socio-Religious and Political Thought

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The book discusses the role of Mohammad Natsir, ex Prime Minister of Indonesia in developing the country through socio-religious and political thought. It deals with the comparative study between Western democracy and theistic democracy. In addition, his views on nationalism from the Islamic perspective are also highlighted. Moreover, Natsir also encouraged the peaceful co-existence among religious adherents in Indonesia and gave strong warning the Christianity should respect the concept of freedom of belief correctly. The concept of knowledge and the importance of promoting Arabic among Muslim youths and integration between Western and Eastern knowledge become the focus of in this book.

P-323 A Review of Islamic Credit Card Models in Malaysia

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Islamic credit card or better known as Credit Card-i is one of the alternative banking products introduced by Islamic financial institutions in Malaysia to substitute the conventional credit card. This paper aims at reviewing the structures and instruments applied by Islamic Financial Institutions in Malaysia from Shariah Compliance perspectives. The instruments include tawarruk, inah, and ujah. The method used is descriptive and positive analytical criticism which aims at improving the existing structure.

P-325 The Taj: an Architectural Marvel of an Epitome of Love?

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On Saturday 7 July 2007, the New Seven Wonders Foundation, Switzerland, in its new ranking again declared the Taj Mahal as one of the Seven Wonders of the World. Taj Mahal of India is not just an architectural feat and an icon of luminous splendor but an epitome of enormous love as well. The Mughal Emperor Shahjahan (1592-1666) got built the Taj Mahal, the fabulous mausoleum (*rauza*) in the memory of his beloved queen Mumtaz Mahal (1593-1631). Perhaps, there is no better and grander monument built in the history of human civilization dedicated to love. The contemporary Mughal sources refer to this

marvel as *rauza-i-munavvara* (The illuminated Tomb). Taj Mahal of Agra, originally called *Taj Bibi-ka-Rauza*. It is believed that the name "Taj Mahal" was derived from the name of Mumtaz Mahal, which means the "Crown Palace". The pristine purity of the white marble, the exquisite ornamentation, precious gemstones used and its picturesque location, all make Taj Mahal a marvel of art. Standing majestically at the southern bank on the River Yamuna, it is synonymous with love and beauty. This paper highlights the architectural design and beauty of the Taj, and Shahjahan's dedicated love for his beloved wife that led to its construction.

P-326 Between the Purposefulness of the Shari'ah and Normativity of Human

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The present study is an attempt at reconstructing the views of Abu Ishaq al-Shatibi and Ibn Khaldun into one coherent theoretical framework for the understanding of human socio-historical existence. Being contemporaries who lived in the eighth/fourteenth cen-tury under almost similar socio-political and cultural conditions that prevailed in North Africa and Andalus, both scholars embarked on an ambitious project of radical reform. A jurist by training and profession who was dissatisfied with the legal hermeneutic methodology of Muslim jurists, al-Shatibi was concerned about developing a holistic approach to the study and interpretation of Islam's textual sources (the Qur'an and the Prophet's Sunnah) with a view to discovering the fundamental values and universal principles underlying the Shari'ah ethico-legal system governing human socio-historical existence as a multifaceted and dynamic reality. His effort culminated in his widely acclaimed theory of the Shari'ah objectives (*maqasid al-Shari'ah*) that consisted in developing a new and comprehensive legal hermeneutics whereby Islamic spiritual, moral and legal teachings are seen to revolve around realizing and promoting five necessary universal objectives. Complemented and consolidated by a gamut of secondary (*hajiy-yat*) and tertiary (*tahsiniyyat*) covering all aspects of human individual and collective life, these universal necessary objectives constitute the indispensable core (*daruriyyat*) of human good and wellbeing and the foundation of human socio-historical existence. Hence, the theory of *maqasid al-Shari'ah* as formulated by al-Shatibi in his well-known book *al-Muwafaqat* provided a systematic exposition of Islam's all-inclusive system of values and principles governing human life. On the other hand, Ibn Khaldun started his reform project from a fundamental critique of the way the study of history and transmission of historical information had been practised by Muslim historians. This led him to profound reflection on, and systematic inquiry into, the birth, rise, development and decline of human society and civilization from the perspective of the philosophy of history. His aim was to unveil the laws governing human socio-historical existence and identifying the factors responsible for the rise and fall of civilization. Hence, he bequeathed to us his famous book *al-Muqaddimah* in which he formulated his innovative 'ilm al-'umran al-bashari (science of human association and civilization), revolving around the preservation and promotion of the five necessary universal objectives mentioned above. The aim of the present study is to look into the possibilities of synthesizing al-Shatibi's legal hermeneutics and Ibn Khaldun's historical and sociological method into an integrated methodological and epistemological framework that can enable Muslim social scientists to overcome the inadequacies of the prevailing reductionist and positivist approaches to the study of human society and civilization. Meanwhile, the author takes stock of the wealth of insights and ideas developed after al-Shatibi's and Ibn Khaldun's time by a number of eminent Muslim scholars such as Shah Wali Allah, Muhammad al-Tahir Ibn Ashur, Malik Bennabi and Ali Shari'ati. The ultimate purpose is to resolve the dichotomous relationship in the social disciplines between the empirical and the normative.

P-333 Muslims' Attitude Towards Divorce :the problem of fiqhĒ postulates

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Divorce in its variant forms whether initiated by a husband or a wife ideally should be controlled within the minimum limit as anticipated by the socio-religious requirements of Islam .The reason being that the Prophet has vociferously condemned its wanton use by both women and men. Nevertheless, in our age marriage break- ups ending in divorces have become a worrying phenomenon the world over, including Malaysia. . To remedy the situation, legislative reforms of the Muslim laws have been a regular exercise. However, in our view, for such reforms to succeed ,we need to address the basic jurisprudential postulates that have shaped its laws and orientated public outlook/attitude towards practicing it. The bottom line, therefore is as to how Muslims perceive divorce and its procedures ,as formulated by the dominant schools of legal thought.The most widely held opinion among people is that they can practice divorce even if it contradicts the set procedures of the Qur'an .Simply because a certain school of legal thought validates it.This kind of naïve approach to Islamic law as articulated by many law books on divorce ,being a replica of the larger problem of taqlid, has seriously hampered the success of reform attempts in our time .Accordingly, in this paper , we try to take the readers ``back to basics`` with the prime aim of enlightening them about some pertinent jurisprudential postulates that surround the dissolution of marriage .To this end ,the paper covers a brief overview of divorce ,then it proceeds to address its jurisprudential postulates in terms of Shari`ah value and its procedure so as to identify the most Shari`ah consistent view from among the variety of juristic interpretation.

P-334 Gated Community, Theory and Implementation in Landscape and Housing Area of Malaysia

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The interpretation of gated community in Malaysia often been regarded as a residential community area equipped with human or electronic security surveillance. However, the true meaning is a community area enclosed by walls and fences, most of the time having controlled over the entrances especially for automobiles and pedestrians. It is an issue where the concept was only used for profit gaining and not looking at the holistic approach towards overall community planning and the landscape environment. This research will review the current practice of community planning in Malaysia and seek to establish any significant developments pertaining to planning implication and community landscape in the approaches used. The paper will appraise international and local case studies to compare the true meaning, theory and implementation of the term gated community. This research aims to contribute to emerging guidelines for gated community development in Malaysian.

P-340 A Contextual Approach on The Views of Muslim Feminist Interpreters of The Qur'ón Regarding Women and their Rights in the Society

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The interpretation of the texts of the Qur'Ēn regarding the rights, role, and status of women is a challenge and much debatable subject. The Qur'Ēn is seen by almost all Muslims as the literal words of Allah (swt). The majority Muslim exegetes interpreted the verses of the Qur'Ēn by applying a method of literal reading. In modern context, regarding women's rights, Muslim feminist interpreters of the Qur'Ēn have applied a contextual approach with regard to the historical, social, and political context in which the verses were revealed in order to disclose an underlying liberal intent, which may liberate Muslims from a

literal reading of the Qur'Ēn. However, feminists face a particular challenge and accusation from traditional Muslim exegetes. The accusation is that feminist scholarship is not loyal to the teachings of Islam and its heritage, but produces liberal Islam and liberal Shar'Ēnah, influenced by the Western values and imposed upon Islam.

The article focuses on how the method of contextualization is applied to some contentious verses in the Qur'Ēn, which are related to the rights, role and status of women in Islam. These verses represent the arguments at which feminists face a great challenge. Two questions on the basis of those verses will be examined; one is the question of men's authority over women and the other is woman's leadership in modern context. For instances, the contentious verse 4:34 recognizes man's authority and superiority over woman for certain tasks and the verse 9:71 also recognizes the sovereign power of women '*al-WilĒyah al-Mutlaqah*' equally in participating nation-building. We examine how two contemporary feminists Muslim thinkers; Fatima Mernissi, a Moroccan sociologist and Aminah Wadud Muhsin, an African-American professor of Islamic Studies use the hermeneutical method of contextual reading to interpret the texts of the Qur'Ēn. The article evaluates the theoretical and practical challenges faced by them from traditional exegetes and argues that whether such a methodology strengthens their arguments and a fuller discussion of the issues that it raises regarding woman's rights? It is also argued that through the interpretation of the contextualization one may find difference with the previous interpretation of the Qur'Ēn, which is central to feminists exegesis.

**P-345 Accommodating Religion into Culture and vice versa:
The Case of Adat Perpatih**

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Certain circles in the Islamic community consider a culture which does not follow the exact dictates of the Qur'an as unIslamic and must not be followed. This is the case with Adat Perpatih, the origin of which was said to be ancient Hindu-Buddhist culture of the the place presently known as Minangkabau area, West Sumatra, Indonesia. This culture is based on a matrilineal system, where the lineage of a person is traced to the tribe of his/her mother. There are a few examples which seem to cause men hardship especially when this custom is abused. One example is the law of inheritance which designates immovable property to women. Scholars have argued that this is a violation against a specific injunction within the orthodox Islamic tradition which is patriarchal. In contrast to this popular misconception, we find that the people of Adat Perpatih are among the staunchest of Muslims. The Islamic scholars of Adat Perpatih have justifications of the "Islamicity" of their culture based on Islamic sources and how this opinion becomes acceptable. The result is an Islamization of a culture and a compromise between culture and religion which benefit the people. Thus we see a development of the culture which is influenced by Islam and Islam which accommodates a culture. This indicates the flexibility, accommodative nature and dynamism of Islam as a religion as well as to the ingenuity of a people who are considered staunch Muslims yet able to find peaceful balance within religion and culture.

P-347 Legal and Ethical Duties of Corporate Managers

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The Companies Act 1965 (Malaysia) provides certain duties to corporate managers which must be followed and complied with. These duties are imposed by law to ensure excellent performance and high productivity in the corporation. These duties also can ensure outstanding project management in the corporation. Those duties are: i) To be honest and speak the truth about the quality of products, ability to perform work etc. at all times; ii) To use reasonable diligence, skill and care; iii) Not to misuse inside information of the corporation; iv) Acting bona fide in the interest of the company; v) Disclosing personal interest in any transaction with the company; vi) Not to make secret profit by using manager position; vii) Avoiding conflict of interest with the company and so on. It is not the only duty of corporate managers to

P-351 Making Ethics Matter to Developing World Business: Understanding Differing Perspectives and How to Change Attitudes in Malaysian Context

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Making Ethics Matter to Developing World Business: Understanding Differing Perspectives and How to Change Attitudes in Malaysian Context In teaching business ethics in a developing country, I was confronted with a strong negative perception of the subject especially among working business students. “ If I practice what you preach in business ethics, one student proclaims, then my business will go bankrupt”. The question is why do they have such a negative attitude and how can we change this perception? Many see business ethical standards as another foreign imposition on them by the West maybe to further negate their already difficult ability to compete in this global market. Many see it a luxury of conscience that they can afford. We need to survive for today and we will deal with tomorrow when tomorrow comes, overwhelmed with myopic short-sightedness. Approaches on how to resolve the developing countries negative perception towards business ethics must take into account these attitudes and must come up with creative and new ways to address these questions. The standard business ethics textbook approach is inadequate in addressing these issues. We must take into account small businesses and how they must grapple with these questions. We must draw lessons and strength from their own culture and in most cases their culture has a very positive attitude towards nature. This paper is base on a write up of an assignment I had given to MBA students from various industries in Malaysia to explain why they think there is such negative perception towards Business Ethics and how to overcome it.

P-352 Towards an Islamic Common Market:Are OIC Countries Heading the Right Direction?

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Economic cooperation through trade has been one of the important agendas of the Organization of Islamic Conferences (OIC) since its establishment in September 1969. In the late 1990s, the OIC has made a significant move in declaring the target date for the establishment of the Trade Preferential System among the OIC countries (TPS-OIC) to be January 1st, 2009. In October 2003, during the 10th Islamic Summit Conference, the OIC took a step further in adopting a resolution on the establishment of an Islamic Common Market. This resolution reaffirms the desire of the OIC to intensify trade and economic cooperation. The Protocol on the Preferential Tariff Scheme for TPS-OIC (PRETAS) outlines the mechanism in which tariff reductions would take place among participating states. Seventeen countries have, since, agreed to participate. In the light of this development, it is therefore, necessary to investigate the existing trade potentials among member countries and the specific sectors in which tariff reductions can be undertaken under the TPS-OIC. This study analyzes intra-trade potentials by using the Revealed Comparative Advantage (RCA) Indices on five countries that are signatories to the Framework Agreement on Trade Preferential System Among the Member States of the OIC. These countries are Jordan, Malaysia, Pakistan, Turkey and the United Arab Emirates (UAE). Sectors that show potential for intra-trade among OIC countries are identified based on the RCA indices. The corresponding MFN weighted average applied rates are also examined to determine the specific sectors that would benefit from tariff reductions under the PRETAS. The findings of the analysis serve to provide an indication as to whether the implementation of the TPS-OIC is strategically headed towards the right direction. Such information will be useful for member countries to formulate strategies that would foster closer trade relations among themselves in their effort towards establishing an Islamic Common Market

P-353 Formulating an Islamic Model of Science and Bioethics

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The project investigates the Islam-and-science paradigm considering the Islamic categorization of the sciences. It provides a working definition of Islamic science including medicine and bioethics, and underlines the importance of Muslim legal rulings on these models. This project concludes that a universal form of science exists, and that it may be absorbed by different systems based on specific world views. It is essential to be aware of the different models and separate universal knowledge from value-orientated interpretation and usage. Ideologically generated knowledge produced within a non-Islamic framework needs to be thoroughly scrutinized for conformity to Islamic concepts. It is rather the presence or absence of an enacted Islamic reference framework that contextualizes life sciences as being Islamic. Bioethics, however, are initially bound by the Islamic value system as enacted by the Islamic legal ruling.

**P-354 Economic Integration Among Asean Countries:
Evidence from Gravity Model**

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This study aims at investigating whether intra-ASEAN trade is trade creating (higher trade with efficient members) or trade diverting (higher trade with inefficient members) for both inter-industry and intra-industry trade. Since integration efforts within ASEAN had to be geared toward “open regionalism”, factors that affect trade, both inter-industry as well as intra-industry trade at the sectoral level are also identified. The study adopts the extended gravity model at the total as well as the disaggregated level using the one-digit Standard International Trade Classification (SITC) Revision 2. Trade creation is found to be present for total exports, for beverages & tobacco (SITC 1), chemicals & materials (SITC 5), machinery & transport equipment (SITC 7), and miscellaneous manufactures (SITC 8). Income levels, transportation costs as well as level of development have significant effects on total trade as well as most sectors. Relative development affects only food & live animals (SITC 0), crude materials (SITC 2), chemicals & materials (SITC 5), and manufactured goods (SITC 6). Factor endowments are important determinants of total trade as well as trade in animal & vegetable fat (SITC 4), chemicals & materials (SITC 5), machinery & transport equipment (SITC 7), and miscellaneous manufactures (SITC 8). Tariffs do not seem to have any effect on trade except for the animal & vegetable fat sector (SITC 4), while exchange rate risk affects only beverages & tobacco (SITC 1), minerals & fuels (SITC 3), machinery & transport equipment (SITC 7), and miscellaneous manufactures (SITC 8). Based on the findings, in general, policies that promote growth and development in the region should be maintained. In addition, measures need to be undertaken to ensure low transportation costs that include improving both the physical infrastructure and the efficiency of transportation systems. Since tariffs are no longer much of an issue to promote trade, emphasis should be placed on other factors that may affect export demand such as product development to improve the quality of exports and to meet the preferences of importing countries.

P-358

**Gender Ratio in Undergraduate Medical Program,
Kulliyah of Medicine, IIUM**

Yi Yi Myint

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Purpose: Historically, more men enrolled in medical schools than women. However, during the last few decades, there has been an increase in the number of women attending medical schools worldwide. In this present study, we investigated if such gender enrolment differences occurred at our medical school.

Methods: Information was obtained from Kulliyah of Medicine student statistic for 2009/2010 section and graduates from 2001/2002 (1st batch) to 2008/2009.

Results: Our study showed that more than half (61.9%) of our graduated students from 2002-2009 and (56.55%) of overall students in IIUM (2009/10) sections are female (Table 1-2, Figure 1-4). This study also shows that all students who received distinction in final year exam from 2002 till now are females although the number of males who needed to sit the supplementary examination outnumbered the females during that period.

Conclusion : Our study indicates that feminization of medicine is a global phenomenon . A drastic shift in this ratio is now a concern in the context of workforce planning and medical school deans, chancellors, university administrators and politicians need to pay more attention to issues confronting women in leadership positions.

P-359

**Cross-Cultural Adaptation and Validation of Bahasa Malaysia
Version of the Eating Disorder Examination Questionnaire (EDE-Q)**

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Introduction: As eating disorders such as anorexia nervosa and others are generally becoming more prevalent, it is essential to have a culturally accepted and locally validated questionnaire that is able to detect abnormal eating habits.

Objective: To translate the Eating Disorders Examination Questionnaire (EDE-Q) into Bahasa Malaysia (BM) and to determine the construct validity, reliability and other psychometric properties of the BM version.

Method: Two parallel forward and backward translations were done in BM in accordance to guideline. Its validation was determined by using confirmatory factor analysis among 298 secondary school children.

Results: The BM EDE-Q had very good internal consistency with global Cronbach's alpha value of 0.879. For construct validity, majority of the items managed to produce values of more than 0.4 for confirmatory factor analysis with four unforced distinct factors detected.

Conclusions: Analyses of reliability and validity of this BM version of EDE-Q yielded satisfactory results. The BM version produced in this study had good psychometric properties and it is applicable to the Malaysian population. Findings indicated that cultural factors in eating habits certainly influences the effort to adapt the questionnaire within a Malaysian setting.

P-367 The Supply-Side IT Outsourcing: The Malaysian Window

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IT Outsourcing has been around in Malaysia since 1990s after the famous Kodak Effect was much hyped in the US media in 1989. Among the early adopters of ITO in Malaysia include The Prime Minister's Office, Malaysia Postal Office, Amanah Saham Nasional, Smart Schools project and financial institutions. Computerisation of public services and Bank Negara Malaysia directives for financial institutions sped ITO growth in Malaysia. Firstly, the study found that ITO models or arrangements are much similar to other developed countries practices as found by Currie (2000) such as: (1)Consultancies/service providers, (2)Hardware vendors, (3)Systems houses, (4)Generic outsourcers, (5)Niche player consultancies and (6)Niche player IT suppliers. Based on the findings, IT outsourcing challenges to Malaysian companies include: i.Competition with India and China? a) Cost and population vs. value propositions, b) Competences and capabilities and c) Multi-languages, political and economic stability. These challenges must be considered by relevant parties in Malaysia outsourcing industry. Secondly, skill-sets of IT graduates are very important to support the industry. The findings show that besides technical skills, non-technical skills are growing in importance and often become a second prerequisite to employability requirement. These include ethics, attitudes, communication skills, confidence, multilingual especially good English language as well as good values. In our cross-IHLs comparison analysis, for example, IIUM and MMU, as part of national MQA requirements, require students to complete general studies, language courses and co-curricular activities besides the technical skills taught by respective faculties or departments. This aims to balance the strengths of graduates in moral/ethics, social responsibilities and specific relevant job skills. Hence, depending much on the graduates and also preferences of potential employers, our analysis suggests that the curriculum in Malaysia is equivalent/similar with International curriculum such as ACM, AICTE, North American and European universities curriculum. Finally, the critical success factors are mainly divided into internal and external factors. The internal factors are generic and depend on the vendors' organizations and its staff capabilities, reputation, past records, size, presence and certification among others. The external factors include the environment surrounding it such as clients organizations and staff, government, competitors, regulations, industry and other stakeholders for example.

PP-5 Medical Negligence In Malaysia : Cases and Commentary

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As the frontiers of medical knowledge and technology are continually challenged, the performance of medical professionals and providers of medical care is increasingly put under scrutiny. Higher expectations are placed on the standard of treatment, skill and care provided by medical professionals. This has led to increasingly more claims. This is the first book to be written on medical negligence case law in Malaysia, comprising cases from 1950's to present. It provides a useful compilation of local medical negligence decisions. The facts and brief holdings are presented clearly, followed by relevant excerpts of the courts' decisions. Key subject terms which precede each case provide a quick guide to its scope and content.

PP-29 SOLAT: A Teaching Aid for KAFA

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The product is a courseware to be used by students of Standard 1, 2 and 3 for the Kuliah Agama Fardhu Ain (KAFA). It teaches students about solat. The courseware was developed using Adobe Photoshop, Adobe Illustrator and Macromedia Flash. It is in the form of a multimedia of multimedia presentation which consist of six (6) modules. The modules are Instruction, Defination, Solat, Congregational Solat, Recitation and Quiz. Most of the modules are interactive and the presentation is quite appealing for the targeted user, i.e. children. The courseware shows that religious can be delivered in a very interesting and enjoyable way. This will make the early learners enjoy the learning activity, because they can view it as a play activity too.

PP-30 A Web Based Survey Using Fuzzy Set Model

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Turksen and Wilson (1995) have laid a theoretical ground for the works using a fuzzy set model for preference prediction. A fuzzy set conjoint model has been developed by incorporating fuzzy measurement of evaluations into the vector preference model. Mohtar et. al (2008) have done a study that used a fuzzy set preference model which represent linguistic variables, which usually used in survey research, to estimate overall preferences of costumer satisfaction on services provided by a shopping mall. This study by Mohtar et. al (2008) showed that the model has worked well and produced good results. Thus, we can use this fuzzy model to analyse survey data, instead of using statistical methods.

Our proposed study aims to develop a web-based software system that will be able to process and analyse survey data using the fuzzy set model mentioned above. We expect that from this study, a software prototype of the systems and a conference paper will be produced. The system prototype should provide functions of processing and analysing the survey data inputted and then producing summary results of the analysis. This software will be very beneficial for researchers who do survey research in doing the analysis using the fuzzy set model, especially if the amount of data is quite large. This web-based survey will definitely save time in analyzing the data. Furthermore, since it is a web based system, there is no spatial boundary of respondents that can be reached by the survey created in the system.

PP-34 Stop Motion animation: Anti-Kidnapping awareness campaign

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A creative campaign to increase parents' awareness on preventing their children from getting kidnapped can be 'conveyed' in an 'entertaining' way using multimedia technique. The product presented here is using a stop-motion animation. It provides a short story about a little girl who was kidnapped whilst she was left alone (unattended) for a short time by her parents in a restaurant. The story is presented in a form of stop-motion animation which adopted the clay animation technique. It is informative, and the presentation can also be targeted to children to make them aware about the danger that they might face from being alone.

PP-183 Law of Confessions

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This book offers a comprehensive guidance on the law of evidence in Malaysia.

PP-209 The Hikmah Pedagogy of Philosophical Inquiry for Thinking and Communication Skills

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Thinking has been commanded by Allah as evident in the Qur'an and also from the tradition of the Prophet. The Malaysian Integrated Curriculum for Secondary School (KBSM) emphasizes creative and critical thinking skills (KBKK) and Teacher Education Programmes even offered courses for pre- and in-service teachers. However, we lack a programme that is appropriate for Muslim youth. This was the impetus for the researcher's interest in this field and this research is an effort to contribute to the development of Muslim youth from within their Islamic tradition.

There are many thinking programmes already in existence. However, this research project is based on the notion of philosophy for rational thinking. Lipman's Philosophy for Children Programme was used as a model. Using his framework, I have attempted to develop a philosophical inquiry programme for Muslim youth that incorporates common, central and contestable concepts in Muslim society and also Islamic ethical values, and thus the name HIKMAH. The objective of the programme is to make Muslim youth of various levels (primary, secondary and tertiary) become more critical, creative and ethical in their thoughts and also more articulate in their presentation of arguments. This programme also improves students' communicative and language skills. Two important elements that are essential for the success of the programme are the specialized instructional materials and specially trained teachers because of its unique methodology. In this regards, I have worked to produce the materials and have also tested them with the students. I have also trained teachers using modules that I have worked on. The teachers need to help students make sense of their world, and to open up new worlds of knowledge and experience.

The outcomes from this research project are teacher training modules, instructional materials – narratives and concept games, theses, papers, and a continuous Hikmah School Holiday Programme and partnership with schools.

PP-222

Peace in Islam: Concepts, Principles and Practices

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There is no doubt that the world today is concerned and confused which had barely acclaimed with joy because of the end of second world war, while the wars began on other fronts burning nations and countries. All the big powers are talking about peace and declare their desire in it. But they are racing in producing weapons of mass destruction and armament. The relations between Islamic countries and the west are very tense, particularly after the events of 11 September 2001. The Muslims are charged with accusations as terrorists who donâ€™t want peace, and corrupters who love violence and donâ€™t want security in the world. Indeed, Islam is a religion of peace because it came to circulate principles of right justice and peace in the world. It wasnâ€™t the principle of the greatest prophet â€œ peace be upon him â€œ war, aggression and hostility. This research aims to show that Islam is only peace with the individual conscience, family, community, the world and all humanity. Peace and Islam meet in the provision of security, peace of mind, tranquility, justice and harmony. Islam is the first legislation that made large significant progress towards the establishment of world peace and designed fuller guarantees for stability, which, if taken by all nations, they could relax and rest.

PP-246

**Sharing Borders: Studies in Contemporary
Singaporean-Malaysian Literature**

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This research examines writers of the Singaporean-Malaysian literary tradition in the English language from its inception to the present time. The focus is on the major writers of the tradition in all the genres, interrogating their principles themes – social, political, cultural, spiritual – as well as the various and/or shifting stylistic approaches they employ in their creative works. The objective is to trace the growth and achievements of this tradition, its significance to the nation-building enterprise in these two newly emergent countries, the way its shapes and moulds identity-formation within and outside the socio-cultural orbits of the two nations, as well as to investigate the challenges and prospects of this tradition in the post-modern, post-industrial era of transnationalism and globalisation.

PP-273

**Psychometric Properties of English and Malay Versions of
General Self-Efficacy Scale**

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In view of the substantial contribution of General self-efficacy (GSE) to organizational theory, research, and practice, this study compared the psychometric properties of English (Schwarzer & Jerusalem, 1995) and Malay versions of GSE Scale. The sample included 494 undergraduate students (82.0% females) of International Islamic University Malaysia. The English version of GSE scale was forward and back translated and then finalized by committee approach by postgraduate students taking Test Construction and Adaptation course with the principal author. The final Malay version was further checked by a lecturer of psychology having certificate in English to Malay translation. Item-item correlations for both English ($r = .24 - .61, p < .0001$) and Malay ($r = .31 - .52, p < .0001$) versions were statistically significant. Corrected item-total correlations were also statistically significant (English: $r = .45 - .64, p < .0001$; Malay: $r = .50 - .63, p < .0001$). Coefficient alpha for English and Malay versions

were .87 and .86 respectively. Both the versions appeared to be internally consistent and showed construct validity in terms of item-item and item-total correlations for Malaysian sample. The principal component analysis indicated that English and Malay versions of GSE scale are one-dimensional. This paper includes tentative percentile norms for the university students.

PP-282 Democracy, Democratization and Ideological Conflicts/Polarization in the Contemporary Muslim Societies

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Democratic peace theory assumes that Muslim societies would become better off if they democratize. The democratic experiences in Muslim societies such as Algeria (1991), Palestine (2006-2007), Iran (2009), Turkey, Egypt, etc. suggest that democratization of the Muslim societies has resulted in ideological polarization within Muslim societies and division of Muslims into supporters of secularism and proponents of political Islam. The Islamists-seculars relation radicalizes: (1) when the advocates of political Islam are prevented from participating in the political process and capturing power through democratic institutions and (2) when the advanced Western democratic states cooperate with non-democratic secular elites of Muslim societies. The view that corruption, poverty, low literacy rate, tribalism, etc. may shed lights on possible reasons for failures of democracy in the Muslim world appears underestimating the reality. It does not explain the correlation between West's economic aids to and political cooperation with selected governments of the Muslim world. It also does not explain the relationship between state or military's intervention in, for instance, a relatively economically advanced Turkish society that enjoys high literacy rate. Academics have often neglected to investigate the relationship between philosophical dimension of democracy and philosophy of life prevalent in the Muslim world. Institutional and philosophical approaches to democracy and democratization are inseparable. It appears that democratization of Muslim societies in the image of Western liberal democracy is difficult. Yet, the institutional approach to democracy provides a common ground for cooperation between Islam and the West. The destabilizing role of democracy can be moderated if the debate between the Islamists, the seculars and the West focuses on issues that are human properties irrespective of religion, ethnicity or language.

PP-360

Smart Kit for Operator's Performance

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The worker performance associated with cognitive ability to handle stress, emotional instability and fatigue in the work place. This research has come up with state of the art kit to assist operator to improve cognitive and emotional performance. The kit consists of biofeedback protocol, biofeedback device, training module for improving and sustaining operator's optimal physiological functions.

The system is useful to boost operator's ability to handle their performance blocks by promoting homeostasis and autonomic nervous system. As a result, operators will gain an enhanced health, emotional well-being, and work performance. By using the kit, the operators can enhance cognitive and emotional performance and lead them to improve productivity.

Science, Engineering and Technology

P-1 Tuning Fork Type Ultra Wide Band (UWB) Antenna

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In this work a tuning fork type structure of Ultra Wideband (UWB) antenna is proposed. The antenna offers excellent performance for UWB system, ranging from 3.7 GHz to 13.8 GHz. The antenna exhibits a 10 dB return loss bandwidth over the entire frequency band. The rectangular patch antenna is designed on FR4 substrate and fed with 50 ohms microstrip line by optimizing the width of partial ground, the width and position of the feedline to operate in UWB. The rectangular patch is then modified to tuning fork structure by maintaining UWB frequency range.

P-12 Watermarking Technique Based on ISB (Intermediate Significant Bit)

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Digital watermarking is a special case of the general information hiding problem. It inserts a perceptually transparent pattern called watermark in an image called host or cover using an embedding algorithm. The purpose of the watermark is to supply the ownership of the image or copyright protection information. The energy of the embedded data should be low enough when projected onto the human perception domain but it should be strong enough for robust machine detection. Least Significant Bit (LSB) technique is the earliest developed technique in watermarking and it is also the most simple, direct and common technique. It essentially involves embedding the watermark by replacing the least significant bit of the image data with a bit of the watermark data. The disadvantage of LSB is that it is not robust against attacks. The aim of this study is to develop a robust watermarking model using spatial domain technique and at the same time maintaining important watermarking requirements of picture quality. The new model has been developed based on intermediate significant bit (ISB) aim to replace the watermarked image pixels by new pixels that can protect the watermark data against attacks and at the same time keeping the new pixels very close to the original pixels in order to protect the quality of watermarked image. The technique is based on testing the value of the watermark pixel according to the range of each bit-plane. The main contribution of this research is replacing the classic least significant bits (LSB) technique by a new technique called intermediate significant bits ISB, which improves the robustness and maintains the quality of watermarked images.

P-13 An Eco-Plastic Made of PLA-Kenaf Fibre Biocomposite for Cleaner Environment

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Every year more than 100,000,000 polyethylene terephthalate (PET) bottles are used in Malaysia, Singapore and Brunei. Out of this gigantic figure, 85,000,000 PET bottles end up as garbage and caused the landfills to be filled by the PET bottle toxic wastes that leach into the soil. This may pollute and endangers our environment specifically our drinking water.

This project focuses on the potential of kenaf fibre (KF) as a reinforcing material for poly(lactic acid) (PLA) biopolymer. PLA is a food grade plastic and kenaf fibre is a kind of natural fibre widely available in Malaysia. The fabrication of kenaf bast fibre reinforced poly(lactic acid) biocomposite is expected to be applied as food and beverages containers with the properties that are comparable to man-made based composite. The kenaf fibre content in the PLA was 5%, 10%, 15% and 20% by weight. PLA-KF biocomposite was extruded using Haake twin screw extruder then injection molded for further mechanical characterisation. The kenaf-fibre aspect ratio is 34. Single fibre tests shown that tensile strength and tensile modulus for KF are 119.6 MPa and 6206.1 MPa, respectively. Processing parameters have been

determined by using 10 wt% KF at temperature of 180°C and screw rotation of 150 rpm. The theoretical tensile strength and tensile modulus was also predicted by using parallel rule of mixture and the value then compared with the value obtained via experimental.

P-17 Lattice models with interactions on Caylay tree

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We consider an Ising competitive model defined over a triangular Husimi tree where loops, responsible for an explicit frustration, are even allowed. We first analyze the phase diagram of the model with fixed couplings in which a “gas of noninteracting dimmers (or spin liquid) — ferro or antiferromagnetic ordered state” zero temperature transition is recognized in the frustrated regions. Then we introduce the disorder for studying the spin glass version of the model: the triangular $\pm J$ model. We find out that, for any finite value of the averaged couplings, the model exhibits always a finite temperature phase transition even in the frustrated regions, where the transition turns out to be a glassy transition. On the other hand, In this investigation we studied one-dimensional countable state p-adic Potts model. We prove the existence of generalized p-adic Gibbs measures for the given model. It is also shown that under the condition there may occur a phase transition.

P-20 Socially Interactive Humanoid Head

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Due to rapid development of technology, robots are entering and influencing the human life into its social paradigm breaking out from its confinement within industrial applications. As a consequence, research on social robotics is on surge globally. Social robotics is a specific field of robotics where robots engage in interaction and communication with humans in ways determined by social and cultural norms of human society.

When humans interact with each other under collaborative conditions, the social regulation of behavior helps interactions go smoothly. Much of this social protocol relies on recognizing what task other people are attempting to perform and performing own part of the protocol in turn. One of the interesting and challenging fields is to put social robots at one end of this interaction. In this type of interactions, robots get engaged in interaction with humans evoking and exchanging emotional expressions. The crucial part is to understand, perceive and respond appropriately in the context of the environment they are operating.

To demonstrate the concept, a humanoid head is developed that can interact with humans exchanging emotional expression using the facial features just like the humans do. The problem of interacting with humans exchanging emotional expression is particularly challenging since it impossible to completely model the emotional states expressed by the human and they way they should be responded to. The task becomes more complex as different person express different degrees of expression in different emotional states and expects different response in reply. Planning actions for this type of interaction involves high level of uncertainty that must be taken care of.

The primary goal of this research is to produce a practically useful computational model of this interplay for the purpose of controlling an agent in socially situated tasks. More generally, this work suggests a novel approach to modeling and planning for a particular kind of multi-agent system: one in which self-interested agents pursue their own goals in a shared environment while following some set of guidelines for behavior. In most cooperative and many adversarial domains, the goals of the other agents are known.

P-22 Computer generated degenerative brain (DBrain) solution for people with memory loss and related impairments

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People with dementia brain (DBrain) have acquired global impairments of the intellect, memory and personality. In Malaysia alone there are estimated 100,000 sufferers of dementia. Presently about 26.6 million people worldwide have dementia related diseases. By 2020, this is expected to rise to 34 million and 104 million by 2050.. The development of computer generated DBrain solution of pseudo-codes with expressions of natural gene sequences aims to explore other dementia-related novel genes and overcome the ethical and data protection issues. The invention is the computer creation of artificial gene or pseudo-gene codes through a completed fundamental research funded by MOHE under FRGS 2007-2008. The invention is based on the phenomenon of recursive inter-molecular energy jumps between nucleotides. The molecular -mechanism approach attempts to represent the process of brain receptor proteins inhibiting neural transmission which may unravel decades of brain degeneration puzzles. The idea is to discover the novel receptor genes in the brain mitochondria that are responsible for modulating the inhibiting functions of a class of receptor proteins. Groups of the computer generated pseudo-gene sequences are found to have high fitness ratios of the natural gene motifs of animal and a human GABAR dementia related gene sequence. Patent for DBrain solution was filed in July 2009. The invention is being pre-commercialized by a local Industrial partner, Niche Frontiere a manufacturer of service robots through a MOSTI funded collaborative technofund project for the period 2009-2011. In this project more pseudo-gene sequences with high fitness ratios of natural DNA motifs will be generated by high speed computing grid of MIMOS-UTP and used by Niche-Frontiere's diagnostic, therapeutic and treatment multi-agents for dementia people at the clinical and firm levels. Through this collaborative pre-commercialization project, the pseudo-gene sequences are also used by laboratories in USM and UTM to discover novel herbal drugs and inhibitor receptor proteins as on-line databases for the service robots.

P-25 Lightweight TDMA Protocol for Wireless Vehicular Communications

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Wireless vehicular communications (WVC) has been identified as a key technology for intelligent transportation systems (ITS) for a few years ago. IEEE 802.11p (WAVE: wireless access in vehicular environments) is the proposed standard for physical and MAC layer of WVC devices. The standard is extended from 802.11 protocols. The main objectives of the standard are to change the frame format and increase delay spread tolerance introduced by vehicle mobility, in which the channel bandwidth is scaled from 20 MHz in 802.11a to 10 MHz in 802.11p. However, to ensure interoperability between vehicles communicate in rapidly changing environment where a packet transmission should be completed in short time-frame is a problematic issue. This poster proposes WiFi-based TDMA technique with flexible time slots and guard bands to tackle this problem. The new TDMA sublayer is compatible with the 802.11p standard to ensure the feasibility of adoption by any vendor. The simulation results present the performance analysis and validate the efficiency of the proposed method.

P-26 Construction of Streptococcus pyogenes mutants by allele replacement mutagenesis

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S. pyogenes secrete a large array of molecules that might contribute to resistance against antimicrobial peptides (AMPs). Some of these are anchored in the cell-wall by enzymes called sortases and others are released from the cell after secretion. One of the released proteins that have previously been reported to inhibit bactericidal effect of the AMPs are streptococcal inhibitor of complement (SIC). SIC has been recognised as a substantial virulence factor in the M1 GAS strain API1, because Δsic mutant failed to colonise mouse throat (Lukomski et al., 2000). In fact, the colonisation of the SIC-negative strain was significantly impaired during the first four days of post-inoculation, showing that SIC is a crucial virulence factor during the early stages of infection by this strain (Lukomski et al., 2000). Hoe and colleagues then showed that GAS Δsic mutant was easily internalised and killed more effectively by human epithelial cells than the wild-type strain (Hoe et al., 2002). Previous studies used SIC-defective mutants which were constructed by insertion of transposon. The disadvantage of such mutagenesis is that the GAS mutants may have retained an intact copy of the *sic* gene, which could express some SIC protein. Therefore, the specific objective of the project was to construct a *sic* deletion mutant of GAS strain SF370 by allele-replacement mutagenesis. The constructed mutant would have a genetically clearly-defined deletion mutant, that completely removed *sic* gene from the *S. pyogenes* strain SF370 chromosome, without leaving any foreign sequences (such as an inserted plasmid) behind.

P-31 MEMS Energy Harvester and Condition Monitoring Sensor for Power Plants

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Energy harvesting devices which convert ambient energy to electrical energy has been a very practical source for renewable energy. The design and simulation of MEMS based piezoelectric cantilever beam for energy harvesting application is presented in this paper. The piezoelectric energy harvesting devices presented is able to harvest mechanical energy (vibration) to electrical energy. The main target is to develop of a prototype of piezoelectric micro generator system for condition monitoring sensor in power plant application. The design of the cantilever beam presented consists of a cantilever beam structure with the interdigitated electrodes on the zinc oxide piezoelectric layer with nickel proof mass at the end of the beam. Due to many sources in the ambient vibration are in lower frequency, the piezoelectric energy harvesting device presented will operate between 50 to 150 Hz to optimize the power output. The aim of this paper is to obtain the resonance frequency which gives the highest displacement.

P-32 Electrical Cell-substrate Impedance Sensing (ECIS) based Biosensor for detection of DF-1 Cells

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Cell-based sensing techniques and their novel applications are actively researched as a continuous and real-time measurement for bio-sensing. Unlike conventional biosensors that use attached affinity recognition molecules (e.g. antibodies), cell-based biosensors use living cells, which have a variety of native biomolecules on their surfaces. These sensors rely mainly on fluorescence and electronic detection for sensing various cellular events, while cell-electronic sensors are often based on impedance

(e-mail,news,micro-blog,etc)

P-37 Bioremediation of oil spills in soil

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Oil spillage can cause a critical environmental impact on soil. Thus, many technologies have been developed for treating land contaminated by petroleum products. In this project, crude oil contaminated soil will be treated by bioremediation using oil-utilizing bacterial consortium. The bacterial consortium will be isolated from the crude-oil contaminated soil samples, and the best hydrocarbons degrading organisms will be selected for developing the bioremediation process. Water sludge with known composition will be used as nutrient source for the degradation process. The highest growth and hydrocarbon-degradation rate bacteria with the optimum process parameters will be used for the design of the bioremediation process.

P-39 In-situ method to monitor surface reaction / oxidation at high temperature

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The formation of external Cr_2O_3 scale is important to obtain the oxidation resistance of Fe-Cr alloys at high temperatures. It is well known that the critical concentration of Cr to form protective external scale of Cr_2O_3 in humid condition is higher than that in dry condition, and the criterion of this concentration is expressed as Wagner's equation. To determine this concentration experimentally, a lot of mass gain data and metallographic surveys are required. An in-situ method of continuous monitoring of surface oxygen potential by oxygen concentration cell using stabilized zirconia has been developed and applied to the oxidation of Fe-Cr alloy in order to check the protectiveness of the scale. In our previous work, the oxygen chemical potential on growing oxide scales during high temperature oxidation of Fe, Ni, and Co were successfully measured. In this study, the surface oxygen potentials of Fe-0~17 wt% Cr alloys in Ar-21% O_2 gas as dry condition and Fe-10~22 wt% Cr alloys in Ar-20% O_2 -20% H_2O gas as humid condition were measured at 1073 K up to 20 ks.

In dry condition, the surface oxygen potentials of Fe with more than 10 wt% Cr alloys were close to the oxygen potential of atmosphere immediately after the heating period. It indicates that protective Cr_2O_3 scale formed on these alloys at early stage of oxidation. However, the surface oxygen potentials of these same composition alloys were lower in humid condition than that in dry. By this method, the protectiveness of scales formed on Fe-Cr alloys can be evaluated in-situ in a few hours.

P-42 Molecular Characterization of Malaysian Ginger (Zingiber officinale Rosc.)

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The genetic polymorphisms among *Zingiber officinale* Rosc. (= *halia*) from Bukit Tinggi (BT), Tanjung Sepat (TS and Sabah (SB) cultivars of were studied using a single microsatellite oligo-primers: (CATA)5, (GATA)5 and (GAC)6 as DNA molecular markers in the polymerase chain reaction (PCR). Seven polymorphic bands were obtained from the PCR products, with in average about 2.334 polymorphic bands per primer, leading to a polymorphic rate of 17.9 %. Jaccard's coefficient of similarity varied from 0.562 to 0.875, indicative of close genetic relatedness among the genotype studied. UPGMA clustering indicated that the BT ginger cv. more related genetically to the TS cv. compared to the SB ginger. A putative new gene was observed from the DNA sequencing of the polymorphic bands of TS

cultivar, with the upstream region of DNA sequence contained of a guanine-rich core sequence (GGGCGG); enhancer (CCAAT); promoters (TATA box) and starting site (ATG). Our results showed the presence of genetic diversity among three Malaysian ginger cultivars by using microsatellites DNA.

P-43 Synthesis and Structural Studies of 2-[3-(4-methoxybenzoyl) thioureido]phenyl propionic acid and 2-[3-(4-methoxybenzoyl) thioureido]-3-(1H-indole-3-yl) propionic acid

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Two 4-methoxybenzoylthiourea of propionic acid namely 2-[3-(4-methoxybenzoyl)thiourea of propionic acid namely 2-[3-(4-methoxybenzoyl)thiourea of propionic acid (I) and 2-[3-(4-methoxybenzoyl) thioureido]-3-(1H-indole-3-yl)propionic acid (II) have been successfully synthesized. The compounds were analyzed and characterized by elemental analysis, infrared spectroscopy and X-ray crystallography. Both compounds crystallized in orthorhombic crystal system with space group P_{212121} , $a = 5.0364(13) \text{ \AA}$, $b = 16.716(4) \text{ \AA}$, $c = 23.040(6) \text{ \AA}$ and $Z = 4$ and P_{bcn} , $a = 18.247(4) \text{ \AA}$, $b = 14.083(3) \text{ \AA}$, $c = 14.736(3) \text{ \AA}$ and $Z = 8$, respectively. As in most carbonylthiourea compounds, the molecules adopts *trans-cis* configuration with respect to the position of 4-methoxybenzoyl and the propionic acid moieties against the thiono S atom across their C-N bonds. Molecule (I) is associated with one methanol molecule as molecule of recrystallization.

P-44 Understanding Emotion: Cognitive Science Perspective

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Psychologist and neuroscientist have long tried to unlock the neural code of the human brain with intensive research carried out to model the brain for purpose of understanding human perception. The Electroencephalogram (EEG) signals can estimate the cortical activities using scalp potential measurements targeted at areas of interest and were used in this project to understand and analyze human perceptions rather than using expensive and bulky functional magnetic resonance imaging (fMRI) machine. These EEG signals were used to understand the location of brain activities for different affective states. In the project four basic emotions of happy, sad, fear and calm were detected and analyzed. Features were extracted based on the kernel density estimate (KDE) and Mel Frequency Cepstral Coefficient (MFCC). The Multi Layer Perceptron (MLP) is then used as classifiers to verify and identify the different emotions from the EEG signals both in Time and frequency domain. Experimental results show the potential of using these techniques to detect and analyze the four basic emotions from the EEG signals with reasonable accuracy. Many potential applications can be developed based on such novel technique in detecting and analyzing the emotion based on EEG signals.

P-45 Temperature Control Circuit for Surface Acoustic Wave (SAW) Resonators

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Surface Acoustic Wave (SAW) resonators are key components in oscillators, frequency synthesizers and transceivers. One of the drawbacks of SAW resonators are that its piezoelectric substrates are highly sensitive to ambient temperature, resulting in performance degradation. This work proposes a simple circuit design which stabilizes the temperature of the SAW resonator, making it independent of temperature change. The temperature control circuit consists of a comparator, temperature sensor and heater. Several different SAW resonators were tested using this circuit. Experimental results indicate that

the temperature coefficient of frequency (TCF) decreases from maximum of 130.44 /°C to minimum of -1.11/°C.

P-46 Causes, Trends and Implications of Motorization in Malaysia

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Motorization trend has been rising rapidly in many countries including Malaysia. But the level and trend of motorization in each country varies according to major factors such as population, size of the country, economic growth, income level, fuel cost, and public policy on vehicle ownership. The level of motorization has both positive and negative impacts. On the positive side, it provides mobility from a landuse to another landuse to meet various purposes besides increasing trade related to transportation. On the negative side, it increases pressure on the environment by increasing more pollutants into the atmosphere causing global warming, traffic congestion, accidents, and added pressure on the road and rail infrastructure in terms of capacity. Looking at the past trend of motorization, the future appears very bleak. This paper highlights trends and causes of motorization in the past, its likely impact on the environment and possible implications.

P-48 Design and Development of a New Shariah Compliant Dirham Based Islamic Market

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The return of Islamic currencies consisting of the Dinar and Dirham calls for the return of the Islamic Trade and market. The Islamic Trade represents a frame by which the Islamic currencies operate in accordance to Islamic shariah exemplify by the earlier Muslims. For trades to exist, Islamic markets have got to be established and the characteristics of an Islamic market includes (1) right of place in the market until the completion of transaction, (2) no private ownership of the market place (3) no rent or tax levied on the usage of the market place.

A new Islamic trading and market that complies with the aforementioned shariah is hereby proposed. The proposed system consists of integrating a platform of registered sellers to a marketplace in the form of a vending machine. The vending machine is made up of two different modules, namely the seller module and the buyer module. The login information provided for each registered seller is used to configure the unit selling price by the seller and this information is also used for online sales monitoring and alert.

The buyer module is made up of an automatic dirham coin sensing device and the product selection switch. Insertion of dirham coin triggered the sensing and detection unit for coin validation. On completion of validation process, the acknowledgement unit reads the status of the products selection switch to detect the selected product. The End point module comprising of the sms gateway, the return unit and the delivery unit handles the completion of the transaction activity.

This innovative shariah compliant Islamic market gives any registered user the ability to trade on any of the available e-market space in the vending machine until the transaction completes without being the owner of the machine.

P-49 Green Technology of Energy-Efficient Materials up to 70% for Plasma Display Panel

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A plasma display panel (PDP) is a type of flat panel display common to large TV displays (32" inches or larger). Many tiny cells between two panels of glass hold a mixture of noble gases. The gas in the cells is electrically turned into a plasma which then excites phosphors to emit light. One of major part in the plasma display panel is its protecting layer. MgO thin film has been widely used as a protective layer for dielectric materials. An addition material to MgO as base material is an alternative method for improving its property as protective layer. A study of reducing the surface discharge potential of single pure MgO protecting layer by the addition of ZrO₂ with several compositions is presented. The discharge properties approach taken is by utilizing the flashover treeing for material characterization, produced by a scanning electron microscope (SEM). From the experiment, ZrO₂ addition into high purity MgO has influenced the property of MgO. Since secondary electron emission coefficient contributes in increasing the electric field of the surface, it could be found that 5 wt% ZrO₂ added MgO has highest secondary electron emission coefficient because the charging and discharging process happened within a shorter time. Therefore comparing with pure MgO, this new material could increase the efficiency of the energy consumption of a plasma display up to 70%.

P-50 Novel Nuclear Technology for Controlled Production of n-type Semiconductor

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Use of semiconductors for power electronics requires unique material characteristics because of the high power levels flowing in the devices. In this research, NTD silicon was try to be developed by using Cf-252 isotopic neutron radioactive sourced (1.6 mCi) instead of using neutron source from nuclear reactor. It was found that concentration of P between 0.5 and 14 wt% could be produced by irradiating silicon using netron between 1 and 5 days. It was proved that the irradiation time did not change the mechanical property of the material.

P-51 First Principles Study on Influence of Magnetic Materials on the Dissociative Adsorption of Oxygen

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Platinum-based transition metal alloys have shown to have greater activity than pure platinum for catalyzing oxygen reduction reaction. Hence, clarifying the magnetic effect in catalytic reaction becomes very crucial. In one of Kasai group's studies, using first principles calculations based on density functional theory (DFT), it is shown that in dehydrogenation of cyclohexane, catalytic reactivity of spin-polarized nickel is close to that of platinum. In one of their next studies using DFT based first principles calculations, they have shown that on the Mg-H dissociation of MgH₂, Sc and Ni have the highest catalytic activities among the 3d transition metals (Sc-Zn). In their another study, they have shown that Pt monolayer on Fe(001) surface (Pt/Fe(001)) can be magnetized resulting to a reduction of activation barrier in O₂ dissociative adsorption in half as compared to the case of bare platinum surface. So as a next step, it is of importance to study how another magnetic material Ni influences this reaction by the same calculation method mentioned above. We consider O₂ dissociative adsorption on Pt/Ni(110) which has been experimentally fabricated .

All calculations are based on spin polarized density functional theory using the code Vienna *ab initio* simulation package (VASP) employing generalized gradient approximation (GGA) for the exchange-correlation energy. We consider the model of a slab and an oxygen molecule. Details will be discussed at the meeting.

P-52 Novel AZO Thin Film for Display and Photovoltaic Application

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AZO is an ideal replacement transparent conducting oxide (TCO) for ITO to display and photovoltaic applications. The typical applications include: transparent electrodes for solar cells, flat panel displays, LCD electrodes, electro-magnetic compatibility (RF-EMI shielding) coatings, touch panel transparent contacts, static discharge dissipation. The production of useful and commercially attractive thin films using different deposition processes is very important parameter to investigate. A systematic study of the sputtering condition and their influenced on electrical and structural were studied. In this work, AZO films were deposited by RF magnetron sputtering at 200 Å°C. The result shows that the deposited time has influenced the characteristic of deposited AZO films. For a longer deposition time, thin film shows a uniform grain growth. The resistivity found minimum at the deposition time of 45 minutes. It can be considered that by reducing of the grain boundaries which enable the electron carries to conduct smoothly.

P-57 Fatty Acid, Mineral and Heavy Metal Contents of Different Malaysian Fish Species

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Fish are popularly recognized as an excellent source of lipids that are composed of a wide range of important fatty acids. Fish also contain good quality protein and are an adequate source of many vitamins (e.g. fat soluble A, D, E and the water soluble B-complex), in addition to important minerals such as calcium and phosphorous. We recently investigated the fatty acid (FA) profiles, mineral and heavy metal contents of 13 different species of commonly consumed, wild marine fin-fish found off Langkawi Island, a popular Malaysian tourist destination. The fish species were “jenahak” (*Lutjanus agentimaculatus*), “kebasi” (*Anadontostoma chacunda*), “duri” (*Arius cumatranus*), “tenggiri batang” (*Scomberomorus commersonii*), “kembong” (*Rastrelliger kanagurta*), “kintan” (*Psettodes crumei*), “kerisi” (*Pristipomoides typus*), “kerapu” (*Epinephelus sexfasciatus*), “gelama keling” (*Sciaena dussumieri*), “malong” (*Congresax talabon*), “laban” (*Cynoglossus lingua*), “yu 9” (*Scolidon sorrakowah*) and “bagi” (*Acanthurs nigrosis*). The overall findings reveal that all fish showed a considerable amount of unsaturated fatty acids particularly those with 4, 5 and 6 double bonds. Two physiologically important n-3 polyunsaturated fatty acids (PUFAs), i.e. eicosapentaenoic acid (EPA) and docosahexaenoic acid (DHA), made up more than 50% of the total PUFAs. It can be concluded that fin fish found in Langkawi Island coastal areas are beneficial for human health as they have considerable amounts of PUFAs, especially AA and DHA fatty acids. In the case of heavy metal analysis, the result reveals the safety of the consumption of fish from the human health point of view.

P-58 Non-visual Confined Space Inspection Probe

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Inspection of confined space is generally made using boroscope in the engineering field or also called endoscope in the medical area. Both devices are based on visual inspection and hence require the use of lighting. The current inspection probe inspects the internals of confined space using distance measurements given by sensors mounted on the peripheral of the probe. The readings are recorded in an on-board memory throughout the inspection. The memory content is subsequently dumped to a computer upon which the internal structure of the confined space is reconstructed.

P-59 Gas Chromatography-Mass Spectrometry (GC-MS) Based Metabolic Fingerprinting of three Malaysian Ginger (Zingiber officinale Rosc.) Cultivars

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A comprehensive metabolic fingerprinting of three micro propagated ginger explants, Bukit Tinggi, Tanjung Sepat and Sabah cultivars, was carried out using Gas chromatography coupled with mass spectrometry (GC-MS). The ginger leave tissues were fractionated in a polar (MeOH) and non polar (CHCl₃) solvents, subsequently methoximated and silylated prior to GC-MS analysis. By applying this technique, over 300 metabolites (polar and non-polar) in total were detected in each ginger cultivar. However, only about 25% of these compounds can be definitely characterised by using the Wiley7n.1 and the NIST Mass spectra libraries for the best hit of the molecular ion peaks and the fragmentation patterns. Fatty acids and sugars (mono- and disaccharides) as the main constituents of the ginger leaf tissues besides a small amount of essential amino acids as well as some organic acids. In addition, a distinct GC-MS metabolic fingerprinting in each of the ginger cultivar can be used as “unequivocal pattern recognition” among the ginger phenotype derived from Bukit Tinggi, Tanjung Sepat and Sabah.

P-61 Quantum Markov Chains on a Cayley Tree

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Markov fields play an important role in classical probability, in physics, in biological and neurological models and in an increasing number of technological problems such as image recognition. It is quite natural to forecast that the quantum analogue of these models will also play a relevant role. In this quantum setting there is a problem: the extension to fields of the notion of generalized Markov chains. . In this work we introduce generalized quantum Markov states and chains which extend the notion quantum. Markov chains on spin systems to that on C^* -algebras defined by general graphs. A construction of a generalized d-Markov chains on Cayley trees is given. Certain ergodic properties of concrete examples of quantum Markov chains are studied.

P-65 Modulated Phase of a Potts Model with Competing Interactions on a Cayley tree

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We study the phase diagram for Potts model on a Cayley tree with competing nearest-neighbor, prolonged next-nearest-neighbor and one-level next-nearest-neighbor interactions. The main result is that the introduction of one-level interactions has a strong effect on the phase diagram: Firstly it appears to shift the multicritical Lifshitz point to finite temperature, while it was stuck at zero temperature T for all systems with competing interactions, Ising or Potts, studied on the Cayley tree previously; Secondary, as soon as the one-level interactions is nonzero, the paramagnetic phase found at high temperatures for zero one-level interaction disappears, while Ising model does not obtain such property.

P-66 Griffith-Kelly-Sherman Correlation Inequalities for Generalized Potts Model

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Correlation inequalities play an important role in many areas of statistical mechanics. In addition to describing microscopic structure they also provide information about macroscopic properties: for ferromagnetic spin systems they give monotonicity of the critical temperature, inequalities for critical exponents. In the recent work of N. Macris it was shown that a correlation inequality of statistical mechanics can be applied to linear low-density parity-check codes. In this paper we prove Griffith-Kelly-Sherman (GKS) inequalities for the generalized Potts model. At present there are a lot papers and books where the authors proved correlation inequalities for different models. Formulated in this paper Griffith-Kelly-Sherman inequalities for Potts model are new and proof of these inequalities one can consider as new alternate combinatoric proof.

P-67 A New Method for the Analysis of Combined Operation of Electro-Osmotic Dewatering and Mechanical Expression

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Electro-osmosis is especially effective in removing liquid from sludge of colloidal particles for which conventional mechanical dewatering is not very successful. This work presents results of experimental work carried out to study and analyze the combined operation of electro-osmotic dewatering (EOD) and mechanical expression (ME) by use of the Terzaghi-Voigt combined model for considering creep deformation of the material. The EOD-ME process combines the advantage of electro-osmosis and mechanical dewatering and consequently results in reduced void ratio compared to individual operation. The basic differential equation based on the model is solved analytically by assuming that both an electro-osmotic pressure gradient E_{pg} and the modified consolidation coefficient C_e of the material are constant, resulting in the equation of solid compressive pressure in the material as a function of time and position. The results of dewatering experiments show that the electro-osmotic dewatering can be recognized as a kind of consolidation, since it accompanies an increase in solid compressive pressure in the material. The analytical equation also leads to the equation of the average consolidation ratio U_c , which is a measure of the progress of dewatering; this equation can describe well the empirical results under various conditions. The large water content of bentonite slurry can be reduced by electro-osmotic dewatering-mechanical expression (EOD-ME). The void ratio reduction and hence rate of dewatering is higher when electro-osmotic dewatering (EOD) is combined with mechanical expression (ME) than just a traditional

mechanical expression alone. Therefore, EOD-ME could potentially be an effective dewatering technique for sludge.

**P-69 Efficient Method for the Purification of Coagulated Sewage
Secondary Effluent**

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Constant rate microfiltration experiments are conducted in purification of sewage secondary effluent pretreated with polyaluminum chloride (PAC). Monolithic ceramic membrane having a nominal pore size of 1.0 micro meter with 19 tubular channels is used as a filter medium. The system is capable of selecting the required mode of membrane cleaning, i.e., physical backwashing or chemically enhanced backwashing, based on the set value of the operating parameters. Flow resistance resulted from the formation of the filter cake is reduced by the physical backwashing, but in spite of this, the flow resistance increases gradually in a longer period of operation due to irreversible pore blocking. Hence chemically enhanced backwashing should be conducted occasionally. Sodium hypochlorite is used as cleaning agent and it is injected automatically when pore blocking reached to the preset level. The experimental results showed that the chemically enhanced backwashing is effective in restoring the increased portion of the flow resistance. The fully automatic system was found to be stable regardless of the variable influent quality and could be run at relatively higher flux of 3.0 m/d for a long period of time. The filtrate is free from pathogens and can be reused as reclaimed water for toilet flushing, car washing, etc. Furthermore, the results obtained under various operating conditions indicated that when process optimization is considered, there should be a trade off between the energy consumption and the amount of cleaning agent used per net filtrate volume.

**P-72 The multistage homotopy-perturbation method: A powerful scheme for
handling the Chaotic Lorenz system**

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In this paper, a new reliable algorithm based on an adaptation of the standard homotopy-perturbation method (HPM) is presented. The HPM is treated, as an algorithm in a sequence of intervals (ie time step) for finding accurate approximate solutions to the famous Lorenz system. Numerical comparisons between the multistage homotopy-perturbation method (MHPM) and the classical fourth-order Runge-Kutta (RK4) method reveal that the new technique is a promising tool for the nonlinear systems of ODEs.

P-73 Achirality Via Graphs

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This article is devoted to establish relationship between knots and planar graphs. This relationship enables us to investigate the total numbers of regions and their relationship with corresponding crossings in a reduced alternating achiral knot. It has been shown that the numbers of regions in a reduced alternating achiral knot is always even and the number of crossing is always two less than the number of regions. Finally we were able to establish necessary conditions for achirality.

P-74 Nonlinear Energy-Based Control Method for Aircraft Autopilot

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Air travel has become a very common means for both human and cargo transportation around the world. As more flying hours are required, modern aircrafts rely heavily upon automatic flight control systems although these systems are mainly controlled by human pilots. Future automatic flight control systems may even be able to reduce the number of pilot on duty for a particular flight to one or none. The most important issue to be addressed is still flight safety. Furthermore, as the use of unmanned aerial vehicles is rapidly increasing, automatic flight control systems become the brain of the systems. Therefore, control systems used on the aircraft has to be reliable and robust to undesirable conditions such as breakdowns and wind disturbances. An automatic flight control system using Nonlinear Energy-Based Control Methods (NEM) is proposed to track a particular flight trajectory for landing. This controller ensures the core attitudes of the aircraft such as roll, pitch, yaw and airspeed follows their reference value determined by the given flight trajectory. Simulation results show that the NEM controller is able to track the desired flight trajectory with its corresponding attitude commands in spite of a one-sided engine failure, wind shear, turbulence and parameter changes introduced to the aircraft.

P-75 Development of Duststorm Attenuation Model for Microwave Links

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Duststorms are significant meteorological phenomenon occur for a significant percentage of time in arid and semi arid areas especially at African Sahara and Middle East. Measurements at existing microwave links show that the duststorms can potentially result in serious attenuation in signal level especially at Ku band and higher frequencies with direct impact on telecommunications system performance. Very limited research has been done to predict the attenuation even the scarcity of measured data forces the researcher to work for the duststorm prediction modeling.

A mathematical model has been developed using Mie solution of Maxwell's equations for the scattering of electromagnetic wave by dielectric spherical particles which can predict attenuation in microwave bands. In this proposed model the term visibility is applied to denote the degree of duststorm density instead of total number of dust particles. The proposed mathematical model shows that the microwave signal attenuation due to duststorm depends on; visibility, frequency, dust particles radius, dielectric constant and moisture content during storm. The predicted dust attenuation from the proposed mathematical model are compared with those measured values in Saudi Arabia and Sudan. It shows relatively more close agreement, than the existing model proposed by Goldhirsh.

Based on long term duststorm data, fade margins by duststorm have been investigated for microwave links and presented. In the design of communication systems operating at frequencies above 10 GHz in arid or semi arid areas, it is recommended to consider the duststorm attenuation in radio planning and link budget analysis. A regional propagation map is needed to consider the duststorm characteristics spatially the visibility data and occurrence probability information. Finally, the proposed mathematical model will be useful as a good method to predict the attenuation in microwave signal due to duststorm.

P-76 Effects of Frequency on Fade Slope Based on Measured Rain Attenuation Data in Malaysia

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There is an ever increasing demand for radio-frequency (RF) spectrum by the nations of the world, in order to satisfy the growing demand for long-distance communications. As C-band (4/6 GHz) is already congested, and Ku-band (12/14 GHz) is filling up rapidly, currently interest focus on the utilization of higher bands. Some systems are already designed to operate at Ka-band (20/30 GHz), and it is probable that serious consideration to utilize V-band (40/50 GHz) in the future will be given. However, when operating at the higher frequency Ku-band, the strength of the signal may be temporarily reduced under severe rain conditions. Rain attenuation is an obstacle in a design of radio systems especially in microwave frequencies. Generally, rain attenuation increases as the signal frequency increases, but does this affect the fade slope which is defined as the rate of change of attenuation in (dB/s). This paper will highlight the effect of frequency on fade slope based on measured data of rain attenuation in Malaysia between May 1998 to April 2000 at four different frequencies (15, 23, 26 and 38GHz). The effect of the link length will be also highlighted.

P-77 Smart Antenna Design Based on Direction of Arrival (DOA) and Beamforming Optimization

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This poster presents the design of 16-element linear array antenna based on direction of arrival estimation and beamforming algorithms. Microstrip antenna is used for the array design with optimized dimensions at the operating frequency of 1.85GHz. The paper also investigates the pseudospectra solutions of direction of arrival (DOA) estimation algorithms namely Bartlett, Minimum Variance Distortionless Response (MVDR), Linear Prediction and MUSIC DOA Estimates. The description, comparison, the performance and resolution analyses of these algorithms and how sensitive is their resolution to the changes of the parameters related to antenna design like the number of elements is also examined. The paper further investigates the performance and robustness of three adaptive beamforming algorithms namely, Least Mean Square (LMS), Recursive Least Squares (RLS) and Sample Matrix Inversion (SMI). Among these algorithms, Least Mean Square (LMS) method is chosen and subjected to further analysis to examine how sensitive is its performance to the changes of the parameters related to array antenna design such as the number of elements and array elements spacing. Effects of the iteration number to the mean square error as well as the tracking and convergence rate are also investigated. The information from the chosen DOA algorithm is then fed to the LMS beamforming algorithms to steer the beam to the direction of the desired user while nulling that of the interferer. Using Matlab, the LMS algorithm creates complex weights which are then fed to the array antenna using the commercial EM simulator software namely CST Microwave Studio.

P-78 Applying Computational Materials Design (CMD) toward Efficient Hydrogen Production from Water

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Hydrogen is probably the most promising solution to our global energy problems for the future. However, in order to support the developing hydrogen economy, efficient processes for hydrogen production and storage become necessary. Now a days, the hydrogen production is a large and growing industry. Globally, some 50 million metric tons of hydrogen are produced in a year. The growth rate is around 10% per year.

Hydrogen can be produced using fossil fuels via steam reforming or partial oxidation of natural gas and by coal gasification. Produced in this fashion, hydrogen will generate less CO₂ than conventional internal combustion engines (including the emissions during fuel production, delivery, and use in the vehicle), and thus contributes less to global warming. It can also be produced via electrolysis using electricity and water, consuming approximately 50 kilowatt hours of electricity per kilogram. This method is still expensive.

The direct thermal splitting of water, $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$, which does not generate CO₂ and produces highly pure hydrogen, requires temperatures in excess of 2000 °C thus making its practical implementation very challenging. Here by using *ab initio* calculations, we introduce a simple technique to find the best catalyst that can decrease this direct thermal splitting. As an illustration, we consider cyanocobaltate complexes. These materials are well known for their effectiveness in binding and releasing O₂. By using density functional theory, we calculate the potential energy surface (PES) of a reaction i.e., $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$ on these materials, and determine the energy barrier (which can be related to the direct thermal splitting) for water dissociation of this reaction. We found the energy barrier for the water dissociation decreases significantly using cyanocobaltate complexes compared to the case of two water molecules in the isolated case.

P-81 SMS and MMS to Enhance an Integrated Medical Emergency Model for Malaysia

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The current situation of Malaysian hospitals, healthcare and emergency centers shows that it has no unified medical information and healthcare systems. Several systems are still paper-based and stand alone systems. Although the mobility and Multimedia facilities such as SMS and MMS are very important and widely used now in many applications but it still poorly or not used in such systems. This research work focuses on enhancing the development of an integrated Medical Emergency with the SMS and MMS facilities. The proposed system: uses SMS to guide patient or authorized user to the nearest hospital or health care center, search for hospitals and broadcast important health related information. MMS is used to offer the capability of sending multimedia information such as text, pictures, voice and video to the related medical emergency staff. A medical emergency call center module is created to handle emergency calls. A prototype implementing for the proposed features is created using open source tools. Sample of the results are provided.

**P-82 A Novel Mobile Web Application for an Integrated Medical
Emergency Model**

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Many of the current Malaysian medical information, healthcare, and emergency systems are still local, stand alone, and paper-based systems that do not fully utilize the great facilities of Internet, multimedia, wireless and real time technologies. To overcome many of the current problems; this research project focuses on developing a novel integrated web based Medical Emergency Model using Internet, wireless, multimedia, and real time technologies. This mobile web application is based on W3C web standards which, allows patients or any authorized user to access their account from any mobile phone with capabilities of connecting to the Internet. Features such as searching for health care centers and doctors, providing address and driving directions to the nearest hospital or health care center, requesting an ambulance and viewing personal details are provided. Other features include mobile web based medical dictionary and drug guide that facilitate doctors and nurses in their daily work. In addition, the proposed system offers centralized medical patient records that can be viewed and updated by physicians using any web browser. A prototype for the proposed system is implemented using open source technologies and samples of results are provided.

P-87 Design of a 2.45 GHz RF-CMOS Power Splitter for RFID Reader

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The recent demand for automatic radio frequency identification (RFID) tags, has triggered research for accompanying miniature, low-power reader circuits. This project illustrates the design of a RF-CMOS power splitter for an RFID reader circuit to serve the ISM 2.45 GHz band. The power splitter design is based on a Wilkinson power divider and utilizes on-chip inductors, capacitors and resistors. The design utilizes the 0.18 μm Silterra RF-CMOS technology. Low return loss of 6.9 dB, low insertion loss 3 dB and high isolation 10 dB were obtained from pre-layout simulations. The low insertion loss 1.496 dB was found from post-layout simulation. The overall power splitter circuit is simulated using AWR Microwave Office[®], indicating its S-parameters. The individual inductors were designed using Sonnet[®] to obtain the appropriate inductance at 2.45 GHz. Further refinement of the inductor layout design was done using CST[®] to incorporate the effect of composite CMOS layers. Capacitor and resistor layout, extraction were performed using Cadence[®]. It shows the desired capacitance value of 1.39 pF required 101 fingers and the 2.2 pF required 105 fingers respectively. The high sheet poly resistor is used to implement the 300 Ohms resistor. The high sheet poly resistor had dimensions of 5.08 μm \times 7.96 μm . The floor plan for the power splitter was designed to fit two 1800 μm \times 1800 μm chips. The post layout simulation results indicated satisfactory results which matched all the design requirements.

**P-89 Direct Regeneration and Characterization of Plant Derived from Leaf
in Vitro Culture Patchouli (Pogostemon cablin, Benth)**

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Patchouli has huge potential to serve the pharmaceutical industries due to its fragrance and aromatic essential oils. To serve the needs of the pharmaceutical and perfume industries, there is an urgent need to mass propagate clonal copies of the desired patchouli plantlets. In order to generate genetically identical clonal copies of the desired cultivar, direct regeneration of patchouli plantlets by tissue culture using leaf

explants was successful. The tissue culture formulation for direct regeneration employed Murashige and Skoog medium with 0,5 mg/l 2,4 D (2,4Dichlorofenoksiacetat) in combination with (0, 0.25, 0.5, 0.75, 1 mg/l) BAP (Benzyl Aminopurine). The best response for direct shoot regeneration was observed after 35 days occurred in media containing 0.75 mg/l of BAP without 2,4 D and this gave the highest efficiency of regeneration frequency of leaf (88%) and highest number of shoot per explant (102). For elongation of shoots, MS basal medium gave a better response compared to ½ MS Medium. The average shoot elongation was about 3.3 cm and this gave an average of 7 leaflets per shoot. Elongated shoots were rooted and leaves growth using MS basal liquid medium and MS basal solid medium with or without 1 mg/l NAA (1-Naphthalene acetic acid). The best response for root induction and leaves growth was observed using MS basal liquid medium without NAA and this gave a frequency of 12 roots per shoot with an average length of 2.75 cm. The regenerated plantlets were acclimatized and hardened by transferring the test-tube plantlets into sterile water for 2 days. The plantlets were successfully established in soil containing compost and top soil (1:1) and the frequency of establishment was 90%. The clonal plantlets were verified using RAPD analysis. The results showed a very high frequency of true-to-type plantlets.

P-90 Intelligent Human Posture Recognition in Video Sequences

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Human posture recognition is gaining increasing attention in the field of computer vision due to its promising applications in the areas of personal health care, environmental awareness, human-computer-interaction and surveillance systems. Human posture recognition in video sequences is a challenging task which is part of the more general problem of video sequence interpretation. In this project, an intelligent human posture recognition system using a single static camera is proposed. The project consists of two stages: the first stage is training and evaluation and the second is deployment. In the first stage, the system is trained and evaluated using a dataset of human postures to "teach" the system to classify human postures for any future inputs. When the training and evaluation process is deemed satisfactory as measured by recognition rates, the trained system is then deployed to recognize human postures in any input video sequence. In the training stage, to obtain the human posture datasets, video sequences have been recorded and preprocessed to extract human silhouettes. The training and testing were performed using four different classifiers which are Multilayer Perceptron Feedforward Neural networks, Self-Organizing Maps, Fuzzy C Means and K Means. The recognition rates (accuracies) of those classifiers were then compared and results indicate that MLP gives the highest. Performance comparisons between the proposed systems and existing systems were also carried out.

P-92 Hevea Genetic Transformation for Enhanced Recombinant Pharmaceutical Production by the Use of Hevein Promoter

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Pharmaceuticals produced in the latex cytosol of genetically transformed Hevea can be harvested non-destructively by conventional tapping. This study evaluates the promoter activity of the 5'-untranslated upstream regulating region of hevein gene, which encodes the most abundant soluble protein in Hevea latex. Constructs were prepared with the test hevein promoter fragments Hev P1 (0.35kb), Hev P2 (0.45kb) and Hev P3 (0.73kb) that were inserted 5' to the pharmaceutical genes i.e. human protamine 1 (HP1) and human atrial natriuretic factor (HANF), in pGPTV-Kan expression vector. The expression vectors containing HP1 and HANF were electroporated into *Agrobacterium tumefaciens* GV2260 containing supervirulent plasmid pToK47, which were then used to infect Hevea anther callus. The growth of the putative transformed Hevea callus was monitored on kanamycin selection media. The presence of the pharmaceutical genes (HP1 and HANF), the hevein promoter fragments, and nptII selection marker were verified by PCR on sampled putative transformed callus. The remaining callus

tissues will be sub-cultured and transferred into differentiation media for embryoids formation and plantlet regeneration.

P-93 Accumulation of Lead and Copper in *Rhizophora Apiculata* from Setiu Mangrove Forest, Terengganu, Malaysia

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The accumulative partitioning of Pb and Cu in the *Rhizophora apiculata* was studied randomly in the Setiu mangrove forest, Terengganu. Samples of leaves, barks and roots were collected randomly from the selected studied species. Sediments between the roots of the sampled mangrove plants were also collected. The results from analysis for *Rhizophora apiculata* shows that the concentration of Pb and Cu were accumulated higher in root tissue compared to bark and leaf tissue but lower than surrounding sediment level. The average concentration of Cu for *Rhizophora apiculata* in leaf, bark, root and sediment was 2.73 ppm, 3.94 ppm, 5.21 ppm and 9.42 ppm, respectively. Meanwhile, the average concentration of Pb in leaf, bark, root and sediment was 1.43 ppm, 1.38 ppm, 2.05 ppm and 11.66 ppm, respectively. Results of concentration factors (CF) show that the overall the concentration of Pb and Cu were accumulated much higher in roots system of *Rhizophora apiculata*.

P-94 The Supervirulence Plasmid pToK47 from *Agrobacterium tumefaciens* A281 Improves Transformation Efficiency of *Hevea brasiliensis*

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The present study investigates the ability of the pTok47 supervirulence plasmid form *Agrobacterium tumefaciens* A281 to enhance genetic transformation in *Hevea brasiliensis*. *Hevea* anther callus was transformed via *Agrobacterium*-mediated genetic transformation using two strains of *Agrobacterium* (GV2260 and GV3850) harboring the human serum albumin cDNA and the supervirulent plasmid pToK47 from *Agrobacterium tumefaciens* A281. The transformed callus was selected using kanamycin as the selection agent. The *Agrobacterium* strain GV2260 benefited from the presence of the supervirulence plasmid in giving a higher frequency of 7.4% transformed callus, 344.8% embryogenesis and 11.6% plantlet production compared to the corresponding strain on its own giving 0.9% transformed callus, 204.5% embryogenesis and 4.4% plantlet production. Similarly, *Agrobacterium* strain GV3850 conferred a higher frequency using the supervirulent plasmid, resulting in 3.5% transformed callus, 138.5% embryogenesis and 3.5% plantlet production compared to the corresponding strain on its own giving 0.7% transformed callus, 137.5% embryogenesis and 9.0% plantlet production. These findings were confirmed by the Wilcoxon Signed Rank Test that compared the effectiveness of the supervirulence plasmid in increasing the rate of genetic transformation in the calli surviving in kanamycin growth medium for GV2260 ($p < 0.001$) and for GV3850 ($p < 0.05$). This study showed that both *Agrobacterium* strains benefited from the presence of the supervirulence plasmid in giving a higher frequency of transformed callus, embryoids and plantlets. These results suggest that a highly virulent binary vector system might prove especially useful in generating high frequency transformation of *Hevea*.

P-96 Car Monitoring and Alert Model with MMS and Database Facilities

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As a fact, number of cars is increasing rapidly and so is the number of car theft attempts. Although there are a lot of car security systems that had been produced, but the result is still disappointing. The thieves are inventing cleverer and stronger stealing techniques that need more powerful security systems. It is useless to have alert system with sophisticated sensors but it is unable to alert the users or police. In many cases, the most comprehensive information can be gain if the users can receive an alert message directly. This research project is to develop a car monitoring and alert model integrated with database through GPRS using MMS facilities, so the car owner and the security organization will be alerted immediately after an intrusion to the car happens. A prototype is build and tested and sample of the results are provided.

P-97 Regeneration of Jatropha Curcas Using Leaf Explants

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A tissue culture protocol for regeneration of *Jatropha curcas* using leaf explants via somatic embryogenesis was established. The best response for callus induction from leaf explants was on Murashige and Skoog (MS) medium containing BA (1.0 and 2.0 mg l⁻¹) and IBA (1.0 mg l⁻¹). Callus was maintained in light and dark on MS medium supplemented with 0.5 mg l⁻¹ BA and 0.5 mg l⁻¹ IBA. The best response for shoot induction and shoot multiplication was on treatments containing (1.0 – 2.0 mg l⁻¹) BA. The shoots were elongated and rooted on ½ strength MS medium containing 1.0 mg l⁻¹ NAA (Naphthalene Acetic Acid).

P-98 Accumulation of Selected Heavy Metals (Cu, Pb and Zn) in Muscle, Stomach and Gill of Some Marine Commercial Fishes of Pahang Coastal Water, Malaysia

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The concentrations of Cu, Pb and Zn in gill and muscle of three commercial fish species (*Nemipterus japonicus*, *Selaroides leptolepis* and *Parastromateus niger*) caught in coastal Pahang water were measured using the using Inductively coupled plasma mass spectrometry (ICP-MS). A marked relationship between metal contents of the species studied was observed. The highest accumulation of the metals studied was found in stomach samples, followed by muscle samples and lowest in the gill samples. In all cases, metal levels found were lower than the international standards of reference and the fish examined were not associated with enhanced metal content in their tissues and were safe within the limits for human consumption.

P-99 Rapid purification of nucleocapsid protein for development of Newcastle disease detection immunodiagnostic kit

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This research was mainly focusing on the rapid purification for recombinant nucleocapsid (NP) protein of Newcastle disease virus (NDV) for development of Newcastle disease detection immunodiagnostic kit. In this study, microfiltration was used to purify the NP protein from other bacterial lysate contaminants. Independent variables which include temperature, transmembrane pressure (TMP), and viscosity that affect the microfiltration process were optimized to ensure high yield of NP protein. Initially, a microporous membrane screening using two different sizes of membrane which are 0.1 μ m and 0.45 μ m was performed before further improvement on NP protein filtration was carried out. It turned out to be that 0.45 μ m membrane gave higher yield of NP protein than that of 0.1 μ m membrane. Thus, 0.45 μ m membrane was used to improve the filtration process for NP protein. Based on the Full Factorial Design (STATISTICA 8.0, Statsoft, Inc.), eight sets of experiment were designed to identify the best conditions for the NP protein filtration. From these experiments, the optimal conditions that gave the highest yield of NP protein are; TMP 4.5psi, viscosity 2.39cP at 4°C. Based on ANOVA (analysis of variance), all the independent variables studied do not significantly affect the purification of NP protein. However, based on the lowest p value for each variable corresponding to each response, temperature is the most significant variable for the NP protein yield.

P-101 Arithmetic Version of Boolean Algebra

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In this article we will discuss that the logical results in Boolean algebra can equally be derived with ordinary algebraic operations. We will establish arithmetic versions of the common logical propositions inclusive of Sheffer stroke (Nand connective) and Peirce's arrow (Nor connective) which are very important to design circuit diagrams. We will present the comparison of some basic logical Boolean expressions and their arithmetic version through the truth tables. Finally we will establish the fundamental logical equivalent proposition via arithmetic versions

P-102 Development of Porous Tri-Calcium Phosphate (TCP) by Application of Polyurethane (PU) Foam for Artificial Bone Graft

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The method of producing porous artificial bone has varies correspondingly to time in order to meet the requirements to be applied as an artificial bone graft for instance osteoconductive, osteoinductive and osteogenic properties which determine its quality. However, different methods will produce different properties of porous artificial bone especially in terms of percentage of porosity and pore size. In the proposed experiment, sponge polymeric method is used by impregnating PU foam into TCP slurry. The ratio of TCP powder to water weight (12:25, 13:25, 14:25, 15:25, 16:25) are varied and sintered at controlled temperature (1100°C). This method is possible to reduce the production cost whilst providing the results that is comparable to human cancellous bone.

P-103

Cauchy-Goursat Theorem

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In this article, we have presented a simple and un-conventional proof of a basic but important Cauchy-Goursat theorem of complex integral calculus. The pivotal idea is to sub-divide the region bounded by the simple closed curve by infinitely large number of different simple homotopically closed curves between two fixed points on the boundary. Beauty of the method is that one can easily see the significant roll of singularities and analyticity requirements. We suspect that our approach can be utilized to derive simpler proof for Green's, Stoke's theorems and the generalization to Gauss's divergence theorem.

P-104

Photovoltaic Properties of Semiconductor (ZnSe) / Polymer (PEO Chitosan blend) / Semiconductor (ZnTe) Double Junction for Solar Cells Applications

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A double junction photovoltaic cell has been fabricated using a thin film plastic electrolyte to connect in optical and electrical series thin films of ZnSe and ZnTe semiconductors. The electrolyte used in this work was a thin film of poly (ethylene oxide) (PEO) complexed with $\text{NH}_4\text{I} (+\text{I}_2)$ which was prepared by solution cast technique. In this paper the photovoltaic properties of ZnSe / PEO / ZnTe double junction has been studied for the purpose of solar cells applications. In our earlier studies, thin films of cubic, ZnSe and ZnTe by electrochemical plating on ITO conducting substrates were first fabricated and studied thoroughly as an initial step. Adding Chitosan to the polymer during preparation has improved the rubbery web-like morphology of the polymer and hence leads to better photo-conversion efficiency. The best room temperature conductivity of PEO was observed for sample 45% ammonium iodide with a value of 4.32E-6 S cm^{-1} . An open circuit voltage V_{oc} of 500 mV and a short circuit current I_{sc} of $(2.3 \mu\text{A}/\text{cm}^2)$ were obtained under illumination of 18 W with a neon lamp.

P-108

Lactic Acid Production from Kenaf Fibre

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Lactic acid is a useful polymer that can be applied in various purposes such as preservative, acidulant, and flavor in food, textile, and pharmaceutical industries, and a raw material for lactate ester, propylene glycol, 2,3-pentanedione, propanoic acid, acrylic acid, acetaldehyde, and dilactide in chemical industries. In polylactic acid production, the common starch or cellulose sources which basically used are from food crops sources where their prices are so high resulted in competition with other fields'™ demands. As if the raw materials are considerably high, it may result in high cost production of polylactic acid. Indeed, the fermentation technique also have to ensure contribute to less environment effect since it involved chemical solution. Therefore, in this study kenaf fibre waste has offers cost effective of raw material and this kenaf fibre has been treated for *Lactobacillus rhamnosus* fermentation to produce polylactic acid. The chemical solution used in this study also considered less harm to environment since they are type of organic acid. Hence, this study tried to produce polylactic acid (PLA) that offers cost effective and environmentally friendly. Moreover, the successful obtaining PLA then had been compared to the existing commercial PLA in terms of their properties.

P-112 Analysis of Transient Multiexponential Signals Using Homomorphic Deconvolution Technique

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Transient multiexponential signals with real decay constants occurs in different areas of science and technology. Such signals arise in deep-level transient spectroscopy, fluorescence decay analysis, NMR relaxation data, etc. Due to their nonorthogonality, their analysis has proved difficult using conventional signal processing techniques. Many techniques have been proposed by different researchers but they often produce mixed result. A new method of multiexponential transient signal analysis is hereby proposed and tested. The method based on cepstral deconvolution is fast and computationally inexpensive. The multiexponential signal is initially converted to a deconvolution model using Gardner transform after which the proposed method is used to deconvolve the data. Simulation and experimental results indicate that this method is good for determining the number of components but performs poorly in estimating the decay rates.

P-113 The Development of Tool Life Estimation Model Based on Volume Loss Method

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During high speed hard turning the dominating basic wears in the flank land are abrasive, adhesive, and diffusive. For that reasons the estimation of tool life should based on these three basic wears. A direct estimation method was used for modeling the flank wear based on the volume loss due to abrasive, adhesive and diffusive wears in turning hard materials with higher cutting speed by using ceramic cutting tool. A Matlab simulink based model is developed to simulate the tool life based on the flank wear rate. The Matlab simulink is used to simulate the flank wear rates by increasing the cutting speed during cutting process of hard materials. However there is no special box that can be used in the Matlab software therefore a new model was developed by the researchers. There are 3 subsystems will be used to calculate the volume loss as a result for abrasive, adhesive and diffusive wear respectively. In order to test and validate the simulation to estimate the tool life for the final equation and comparing that with Taylor extension equation, the researchers selected a hardened AISI 52100 bearing steel with a hardness of Rc 62 as a work piece. This is chosen because of its widespread use and industrial significance and the availability of detailed data for this material. The simulation results of the wear progress for three different types show different behavior of tool life.

P-114 Fluorescence Decay Analysis Using Exponential Compensation Deconvolution

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Fluorescence decay experiments is one of the major sources of transient multiexponential signals. A new method for the analysis of fluorescence decay experimental data is proposed. The method relies on the classical Gardner transform to convert the data signal into a convolution model which is deconvolved using exponential compensation deconvolution technique. Eigenvector algorithms are then used to further model the resulting complex exponentials to obtain better estimates of decay rates and number of components. Simulation and experimental results show that this method outperforms previous approaches if the truncation point of the deconvolved data is correctly selected.

P-117 Vision-based hand detecting and tracking for automatic sign language translator

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Vision-based hand detecting and tracking is an important problem in Sign language definition, since hand motions and gestures are used in more natural ways. A number of solutions have been proposed in the current issue, but the problem is still far from being solved since hand exhibits significant amounts of articulation and orientations that cause difficulties in the detection term. To further exasperate this problem, sign language requires that the hand tracking perform in real-time.

This project presents the implementation of real-time hand detecting and tracking that can be used for initiating the system for sign language recognition. By using Haar-like features and ad-boost algorithms for detecting the hand, the system shows a high accuracy for detecting the hand. For motion estimation, we use kalman filter as a pixel-recursive estimator. The system uses one low-cost web camera mounted in front the work area and facing the signer to track the hand in a real time.

P-121 National Disaster Management System

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Abstract: In order to minimize the effect on disaster, in term of environment damaging and number of casualties, an integrated disaster management system is required. The system should be designed to having capabilities of to monitor, control, and manage a disaster, and recover impact of disaster as well. The proposed system is centralized and integrated to cover whole area of a country, which sophisticated intranet based. The objectives of the system are the first, to prevent disaster; the second, to save and minimize the casualties in case of disaster is occurred; the third, to minimize damaging effect in properties and environment. The national disaster management system covers model of prevention, preparation, responding / mitigation, recovery of the disaster.

P-122 One-to-many reversible mapping for IPv6 address management

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IPv6 is the successor of the current IPv4 protocol stack that is expected to soon depleted due to limited number of IP addresses. Meanwhile, in enterprise network the network visibility is of primary concern to the network administrator.

Network visibility means knowledge of who are on the network, what they are doing and what kind of traffic they are generating. This usually requires sophisticated tools and requires a lot of manual intervention in traditional IPv4 network because of the addressing scheme used. It is the very first step to secure the enterprise network.

IPv6 also offers many additional features that are not by default available in IPv4 towards achieving more secure, more efficient network in the future. IPv6 has virtually unlimited address space that can be exploited to improve network visibility in a simpler manner than the existing one.

This research proposes a mapping scheme between the user space and the IPv6 address space which allow one-to-many mapping but yet reversible. This reversibility allows the user to be given a group of IPv6 addresses for his exclusive usage, to protect his privacy/anonymity while allowing the system to achieve network visibility by identifying the different IPv6 addresses owner to know who the users (ID) are, what they are doing and what kind of traffic they are generating.

We have implemented the proposed mechanism in one DHCPv6 implementation and verified the

functionality.

P-126 Unique Class Encryption (UCE) substitution boxes (S-Boxes) using mysterious Quranic objects for block ciphers in ICT Security

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Unforeseen attacks on ICT systems incurred billions of dollars of losses to public and private communities. The current parametric encryption algorithms suffer the unconventional and paranormal attacks. A search for a new paradigm against the unforeseen and paranormal attacks lead to an invention called Unique Class Encryption (UCE) that is based on the non-parametric and mysterious verses of the Al-Quran. Earlier, the Al-Muqatta'at based UCE was developed and tested in a Red-Hat cluster funded under IRPA and completed in 2006. The Al-Muqatta'at UCE was patent filed in 2007. A block cipher is required as a medium to translate the non-parametric Al-Muqatta'at algorithm into a suite so that it can be an embedded system for FPGA chips. This would require the construction of substitution boxes (S-Boxes) with the other non-parametric objects from Al-Muawwidzain and Ayatul Qursi verses. It is a completed Type A research endowment fund project in August 2009. The approach was to construct bigger S-Boxes that have no algebraic relations. The random bijective 8-bit S-Boxes that used the non-parametric and non-deterministic components of the Al-Qura'an would transform the objects into specific values for the S-Box construction. Thus the vital component of the non-parametric UCE block ciphers, that are the S-Boxes were developed. About 13.5 million of 8-Bit S-Boxes were generated. The non-linearity and differential uniformity tests by MIMOS Cyber-security Laboratory showed the standing of UCE S-Box to be equivalent to that of Khazad's block ciphers. Collaborative research with MIMOS Cyber-security Laboratory are using the strong UCE S-Boxes to develop hybrid round functions and key distribution algorithms to construct the UCE block cipher. This on-going phase is conducted under Type B research endowment fund. In an envisaged pre-commercialization phase, the UCE block cipher would be implemented in FPGA chips. The potential use for the UCE encryption chips will be as embedded cryptographic system in VPN routers, gateways, computing machines and security device firmware.

P-127 Development of an Intelligent Robotic Donation Box for IIUM Mosque

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The design and development of an intelligent robotic donation box is presented in this project. The mobile robotic system is equipped with the capability to collect donation from the people within the mosque during a specified period of time before the compulsory prayer commences. Also fitted with the ability to attract the attention of people by making audible sound, recognize person and wait for his/her donation as well as to avoid obstacles due to either a person praying, the wall or any other detected objects. The device covers a given number of rows before returning to place of storage.

P-128 A New Technique to Improve the Machinability of Hardened Steel AISI H13 in End Milling

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Hardened materials like AISI H13 steel are generally regarded as difficult to cut materials because of their high hardness due to high carbon content, which however allows them to be used extensively as the hot working tools like, dies and moulds. The challenges in machining this steel in hardened state led to many research works dedicated towards enhancing its machinability. In this work, preheating technique has been used to improve machinability of the material under different cutting conditions. An

experimental study has been performed to assess the effect of work-piece preheating using induction heating in enhancing machinability of AISI H13. The preheated machining of AISI H13 under different cutting conditions conducted with TiAlN coated carbide tool is evaluated in terms of tool wear, surface roughness and vibration. The results illustrated the advantages of preheated machining by a much extended tool life, better surface finish and stable cutting with much lower vibration/chatter amplitudes. The effects of preheating temperature on the chip morphology were also investigated and it is found that preheating resulted in the formation of relatively stable chips and reduction of chip serration frequency.

P-129 Enhancement of Machinability of Nickel Based Alloy - Inconel 718 by Induction Preheating in End Milling using Ceramic Inserts

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Unique combinations of high strength properties maintained at elevated temperature and high resistance to chemical degradation have made Nickel based alloy, Inconel 718 suitable for application as aerospace components. However, the same properties are responsible for very poor machinability of the material, as Inconel is one of the most difficult to cut materials. The main reason for poor machinability is generation of high heat during machining which lead to premature failure of the tool due to plastic deformation and diffusion. Uncoated and coated tools have been found to be not efficient in cutting this materials and the application of preheated resulted in not significant improvement in their machinability. PCD tools are not recommended for machining this material since it contains iron which acts as a catalyst to convert diamond into graphite at temperatures in excess of 700 0C. PCBN tools are very costly and also did not show very good performance in machining Inconel 718. Ceramic tools have proved to have performed well in machining the material. However, there was so far no work performed performance of ceramic tools in machining Inconel 718 using preheated technique. Since ceramic tools can perform under high temperatures, it was expected that preheated machining using ceramic tools would desired results. In this research work induction heating technique in combination of the application of ceramic tools was adopted as one of the machining techniques in order to improve the machinability of the material. The effect of preheated machining of Inconel 718 has been analyzed in terms of tool wear, surface roughness and chip formation. The advantages of preheated machining are demonstrated by appreciable increase in tool life, better surface roughness values and improved chip formation compared to room temperature machining.

P-130 Development of a Cost Effective Technique to Eliminate Conventional Finishing Operations Applying High Speed End Milling of Silicon

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Silicon has been widely used in different branches of industrial engineering. Most application of silicon is in computer parts or hardware especially for the production of integrated circuit (IC) chips. Machining of silicon is a big challenge and expensive affair because of its inherent brittleness which is a major limitation as the process of removing the material can generate subsurface damage. Silicon is conventionally finished using grinding followed by polishing and lapping to achieve required surface finish and surface integrity. Numerous research works attempted to conduct ductile mode grinding to avoid cracking and subsurface damages. However, it has been revealed that sub surface damages and micro cracks can be avoided if grinding is performed. As a result, lengthy etching operations need to be performed to remove the surface defect created by grinding. Hence, it is extremely important to develop alternative techniques to improve surface finish and avoid/minimize subsurface damages in order to lower the cycle time in machining and finishing of silicon chips. An attempt has been made in this work to investigate the effect of high speed end milling on surface finish and integrity of silicon to minimizing the amount of finishing requirement in machining of silicon, with the objective of reducing cost and

increasing effectiveness of silicon manufacturing process. This work aimed at machining silicon using small diameter (2 mm) diamond coated tools in ductile mode regime by employing high speed end-milling employing high rpm of the spindle (up to 50,000 rpm). A special fixture was designed and fabricated for holding the silicon workpiece during machining. Low values (micro-meter level) of feed and depth of cut employed during machining helped to ensure nano level surface finish that is able to avoid the need of further grinding and even polishing. This process also leads to much lower sub surface damages since machining was conducted in fully ductile mode causing minimum internal stresses as the feed and depth of cut values were kept very low. This new route of machining employing high speed end milling is expected to be more cost effective since the need for the costly and time consuming finishing operations like grinding and polishing could be avoided and the time for final etching could be substantially lowered.

P-131 Rapid Prediction of Residual Strength of sandwich structure subjected to impact loading.

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The prediction of residual strength of damage structure due to a certain loading becomes crucial for manufacturer especially in aerospace industry. A rapid decision whether a certain damage structure found visually from inspections can still fly without any changes or needs to be subjected to minor or major changes to have a permission to fly becomes a main issue.

Until today, the decision is based on the test results performed for a certain structure and material. This method is very expensive, especially if the whole structure or parts of aircraft need to be tested

The Finite element analysis method becomes one of the candidate tools to replace the tests. Unfortunately, the divergence of calculation and high number of elements and nodes should be employed to simulate the behavior which in turn leads to high cost in term of computation time.

This work proposes to simulate the behavior using "macrostructure level". The honeycomb is modeled using array of nonlinear springs which the behavior of spring is obtained from a simple test on a block of honeycomb. With this approach, the behavior of impact and its residual strength can be predicted almost in real time. Also the prediction can be obtained from the damage area visually measured on-site and from the data of damage the residual strength can be predicted on-site.

P-136 Compaction of Fly Ash–Aluminum Alloy Composites and Evaluation of their Mechanical and Acoustic Properties

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The density and elastic moduli of green compacts can be determined by ultrasonic method with the help of pre-prepared diagrams. In this way, pressing conditions can be taken under control easily. In this study, fly ash particles were used as fillers in an aluminum alloy matrix material. The weight fractions of fly ash in the composites were in the range of 5–30%. The resulting composites were compacted at pressures ranging from 63 MPa to 316 MPa. It was observed that the green density increased with increasing compacting pressure and decreased with increasing weight percent of fly ash particles resulting in lightweight composites. The green compact composites were also tested using an ultrasonic nondestructive evaluation method. Results showed that ultrasonic velocities are a strong function of the density and the fly ash fraction in this material and could be potentially used to predict the density and the fly ash fraction as well as the elastic moduli of the metal matrix composite.

P-137 Edge-cracked bimaterial systems under thermal heating

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The problem of thermoelastic edge-cracking in two-layered bimaterial systems subjected to convective heating is considered. The medium is assumed to be insulated on one surface and exposed to sudden convective heating on another surface containing the edge crack. It is known that, when a bimaterial system's surface is heated, compressive stresses arise near the heating surface, forcing the crack surfaces together over a certain cusp-shaped contact length. It is also known that, for a cooled bimaterial system's surface, tensile stresses take place close to the cooling surface and tend to open the crack. So, the edge cracked heating surface problem is treated as an embedded crack with a smooth closure condition of the crack surfaces, with the crack contact length being an additional unknown variable. Superposition and uncoupled quasi-static thermoelasticity principles are adopted to formulate the problem. By using a Fourier integral transform technique, the mixed boundary value problem is reduced to a Cauchy type singular integral equation with an unknown function as the derivative of the crack surface displacement. The numerical results of the stress intensity factors for an edge crack and a crack terminating at the interface, are calculated and presented as a function of time, crack length, heat transfer coefficient, and thickness ratio for two different bimaterial systems, namely a stainless steel layer welded on ferritic steel and a ceramic layer coating on ferritic steel

P-140 Design, Build and Test IIUM Remote Controlled Glider

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The main objective of this subject is to design and build a sailplane that meets certain performance requirement. Simple mission profile was used which include warm up, taxi, takeoff, climb, cruise and landing. The cruising altitude, range and sailplanes requirements and specification has been decided base on certain criteria. The take off weight of the sailplane has been successfully estimated as 1.225 kg. NACA 4412 airfoil was used for the wing section. The fuselage dimensions were estimated. The length of the fuselage from nose to tail is 0.8 meter, and the fuselage cross section will be rectangular in shape. The power available was estimated as 0.2 hp. The static stability analysis shows good results since all three components which are wing fuselage and tail gives desirable stability results. After 13 weeks of hard work, the team had managed to complete the fabrication of sailplane and also had managed to have it flown by a hired RC pilot. The aircraft flew without any difficulty and the objectives was reached, which is to perform an unpowered gliding.

P-142 Lightweight Biodegradable Cotton/Albumen Board (CAB) for Sustainable Environment

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The depletion of petroleum resources coupled with environmental awareness have spurred effort to produce biodegradable materials from natural resources, which is stable during storage and can be safely disposed after their intended time of use. These materials also can form the basis for sustainable and eco-efficient products that often results in lightweight structures having high stiffness and tailored properties for specific applications. Thereby, main objective of this work is to develop biodegradable board materials from cotton fiber reinforced egg albumen composites. The investigation is about the effect of fibre content on the mechanical properties, and thermal stability of the CAB. The composites having 0%,

3%, 6%, 10%, 13 %, and 16% w/w of cotton fibre were considered. An improvement in strength and toughness was observed with increasing fiber content, with the optimum performance was obtained for the fiber content of 10 %w/w. The results have shown that addition of the cotton fibre increased the tensile strength and impact resistance in the range of 0.7 to 10.773 MPa and 1.3 to 19.0 kJ/m² respectively, than that of the pristine albumen. The thermal stability of the composites was characterized by thermogravimetry analysis. The morphological study by SEM has revealed that the wettability of cotton fibre and albumen matrix was good for the fibre loading of 10 % w/w.

P-143

Lightweight Concrete for Greener Environment

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It is generally known that ordinary concrete have been occupied in construction industry because it is relatively low price and uncomplicated processing product. However, the concern is therefore lies in creation of environmental friendly with higher performance type concrete. Evidently, this is an appropriate point to consider a more efficient use of cement involving the use of natural materials as reinforcement. The efforts currently under way in producing a lightweight concrete with use of agriculture waste, coir fiber, and biopolymer, egg albumen in turn to reduce the use of Portland cement which at the same time provide concrete with better properties. The idea of this study is to investigate the physical and mechanical properties of the randomly distributed short coir fiber reinforced cement-albumen composite. Composite samples were prepared by varying the fiber content of 1-11% by weight added to the slurry of egg albumen and cement, so that the ratio of albumen and fiber-cement was 65:35 (volume percent). They were mixed homogeneously using mechanical mixer. The mixture then placed in the molds and compacted by vibration. The consolidated mass was demould after 24 hr cured. The samples finally air-dried for 7, 14, 21, 28 and 35 days. The strength (bending and compression), density (lightweight), water absorption and moisture content were determined in accordance to relevance ASTM standards. The results indicate that the addition of fiber significantly improves the post-cracking flexural stress of composite. Optimum bending strength of ≈ 8.00 MPa was achieved at 5 wt. % fiber content after cured for 35 days. Increasing in fiber content demonstrate the decreased in density with slightly increase the percentage of moisture content and water absorption. Owing to different in bonding strength, the fracture surfaces observed different hydration bond formed between fiber and matrix. These behavior correlates with the interfacial characteristics of fiber-matrix confirmed by SEM. On the basis of the results, this is a good illustration of a holistic approach towards competent exploitation of natural resources, safe disposal of waste, and new making of high quality with comparable cost concrete.

P-149

Wall Climbing Robot

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The Robot, named as TRAIN WALL BOT, is designed which has the ability to navigate on smooth vertical surfaces with the capability to avoid obstacles and overcome it if the height of the obstacles is about 1cm. The design is inspired from train steel wheel movement which uses two actuated legs with rotary motion supplied from the motor. The Robot uses pneumatic system and the suction force is supplied by an air compressor that will turn on intermittently. The sucking system force controls the attachment of the robot to the wall by using 3 vacuum valves and 6 vacuum pads (2 vacuum pads on each leg, and 2 vacuum pads below the body). The robot is controlled using PIC16F877A. The main body of the robot carries the motor and important electronic components. Two limit switches are used to acknowledge the contact with its navigating surface, one is attached with one leg and other is attested with the body part. Vacuum suction is controlled based on the ON OFF priority of the limit switch. IR distance sensor detects obstacles which are higher than 1cm. The simple design of the Robot ensures the capability to walk, climb vertically up to 85° and 90° slope smooth surfaces and avoid obstacles. It has the advantages of faster forward and backward movements which is smooth and more stable (because of the

coupling design) than other existing wall climbing Robots.

P-150 Classifying Users Emotions towards the Quranic Recitation Using EEG: A Preliminary Study

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A preliminary study is done that proposes a method to detect and recognize emotional effects of Quranic recitation towards both Muslims and non-Muslims is proposed. The method uses four basic emotions which are Happy, Calm, Fear, and Sad to classify which of these four emotions the user will invoke when the Quranic recitation is presented to the participants. EEG signals are collected from the brain signals from the scalp. KSDE feature extraction is used to extract the prominent features of the participant and MLP is used to classify which of the four basic emotions was invoked when listening to the Quran. Results show that the most prominent emotion that has been detected by the MLP is Calm.

P-151 Step-Stress Model Using Logistic Regression Model and It's Application in Medicine

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A linear logistic model is proposed for estimating the probability of survival to a specified stage using a step-stress model. Parameter estimates may be obtained numerically for the general case of the k-step model, and explicit solutions are given in the case of the two-step stress model. Of special interest to us is the application of this model to the prediction of mortality in HIV-1 infected individuals that based on clinical of Centers for Disease Control and Prevention clinical stage of disease (A, B and C stages).

P-152 Isolation and screening of lactic acid bacteria (LAB) from non-broiler chicken (Gallus gallus) for potential probiotic

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Lactic acid bacteria (LAB) are important inhabitants of animal intestine and are useful source of probiotic microorganism. Non-roiler chicken could be an ideal source of probiotic that can be utilized in large scale feeding of broiler chicken. In this study, fifty (50) bacterial strains that were randomly isolated from the gastrointestinal tract of non-broiler chicken (*Gallus gallus*) prepared in 5 ml of Phosphate Buffered Saline (PBS) were tested for the identification of LAB. LAB was identified by morphological and biochemical tests. Out of the fifty (50) isolates, eleven (11) isolates were Gram-positive cocci. The eleven (11) isolates have the ability to utilize lactose as part of their metabolism process and all showed negative reactions towards catalase test. The identified strains were then screened for their inhibitory effects against pathogenic bacteria by the disc diffusion method. Eleven (11) strains of LAB isolated produced antimicrobial compounds that were active against pathogenic bacteria especially *Salmonella typhimurium* strains. The disc dipped in broth containing LAB inhibited the growth of pathogenic bacteria by creating an inhibition zone around the disc. With all these tests, LAB were successfully isolated and screened from gastrointestinal tract of non-broiler chicken for potential probiotic purposes.

P-153 Isolation and Characterization of Lactic Acid Bacteria from *Clarias Macrocephalus* (African Catfish) for Potential Probiotic Purposes

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Lactic acid bacteria (LAB) play an important role in aquaculture to develop microbial control strategies since disease outbreaks are recognized as important constraints to aquaculture production and since the development of antibiotic resistance has become a matter of growing concern. In this study 50 bacterial isolates from the intestinal tract of *Clarias Macrocephalus* (African Catfish) were tested for the identification of LAB. Phenotypic characteristic was confirmed by Gram staining and identified by other biochemical test such as catalase reaction, lactose utilization and antimicrobial test. Out of the 50 isolates, 30 were Gram-positive cocci. All 30 isolates have the ability to utilize lactose as part of their metabolism process and showed negative reactions towards catalase test. LABs also produce a variety of compounds with antimicrobial activity, and one of them is termed bacteriocin. Bacteriocins are proteinaceous antimicrobial compounds that exhibit bactericidal activity against species closely related to the producer strain. The main screening method that has been used to screen for the antimicrobial activities of bacteriocin is disc diffusion assay. The bacteriocin demonstrated a broad spectrum antagonistic activity against *Salmonella Thyphimurium*.

P-155 Concept Design of SO_x and NO_x Flue Gas Treatment Based on Electron Beam Technique

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Concept design of SO_x and NO_x flue gas treatment based on electron beam technique has been made. To meet the high quality standard of air, flue gas produced by coal fired power plant has to be processed prior to be released to the environment. Electron beam can be utilized to reduce both type of gas, SO_x and NO_x. The amount of gas should be processed depends on the quality of coal. It is about 25% of the production if the efficiency of SO_x removal is 90%. Such high efficiency of removal can be easy obtained if the electron beam machine is used. The design calculation is based on 400 Megawatt electricity power plant and two electron beam machines of 500 mA, 800 kV installed in parallel. Chamber at which flue gas irradiated is discussed. Chamber dimension and speed of flue gas the in the chamber is determined so the perfect reaction take place. The design calculation is indicated that the camber has a diameter of 3.0 meters to 3.4 meters and the related speed of flue gas in the chamber is around 18.1 to 16.4 meters per second.

P-156 Hybrid Scheme for The Prediction of Microstructural Features of Ferritic Stainless Steel Welds

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There is an increasing use of predictive tools in modeling the microstructural features of welds towards eliminating weld defects and optimizing mechanical properties. Significant attraction in these tools is that they forecast weld character from a variety of process parameters and thus ensure the production of tailored weld microstructure with improved mechanical properties. In this work, a further attempt at enhanced prediction of microstructural features of ferritic stainless steel weld is proposed. The model involves a composite scheme of finite element analysis and artificial intelligence modules. Current predictive schemes are based on exclusive two-step algorithm utilizing decomposition kinetics. The proposed model is a single-step integrative algorithm that speeds up the prediction process with better

flexibility and eliminates the need for reaction kinetics.

P-157 Effect of Thermal Cooling Conditions on the Microstructure of Medium Chromium Ferritic stainless steel

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The characterization of the HAZ of medium chromium ferritic stainless steel welds in terms of phases has not been exhaustive due to the dynamics of the cooling cycle from the weld peak temperature in the transformation range. As a result, the relative contribution of the phases to weld property is difficult to evaluate. In the present attempt, the effect of thermal cooling conditions on the microstructure of medium chromium ferritic stainless steel base metal is investigated. Two thermal cooling scenarios from four transformation temperatures-500; 800; 900; and 1100⁰C- were considered; and the resulting microstructure was characterized using LOM, XRD and microhardness evaluation and compared with the weld of the same metal. The characterization indicates that the transformation temperature determines the types and abundance of phases present in the microstructure of medium chromium ferritic stainless steel. In comparison to fusion welded medium chromium ferritic stainless steel, the low temperature heat affected zone is approximated by annealing temperature of 500⁰C while the high temperature heat affected zone is approximated by annealing temperature of 1100⁰C.

P-158 A Novel Scheme for Weld Microstructure Control Using Cryogenic Liquid

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The total energy input and heat transfer factors influence the after-weld microstructural features and hence properties of the joint. Low heat input welding has been suggested as the appropriate fusion energy in order to avoid unfavourable grain morphologies in the welds. Also, the weld cooling cycle is crucial in the control of weld microstructures particularly the time spend above the critical temperature. This is probably controlled by the heat dissipation mechanism in fusion welds from the peak temperature to the ambient condition. However, the influence of the heat transfer factor in terms of the cooling dynamics on the microstructural features and properties of welds have not been well investigated. Additional cooling can assist in the heat dissipation mechanism; and hence can be extremely beneficial to the control of post-weld microstructure and helps in minimizing the grain growth. In this work, the preliminary result on the effect of cooling in liquid nitrogen prior to welding on grain growth in ferritic stainless steel weld is reported. Ferritic stainless steel cooled in liquid nitrogen is welded under TIG torch. The weld structure is characterized using LOM, SEM and EDX spectroscopy. The result indicates that cryogenic cooling reduced the weld width within 1.72 and 4.90 percent relative to the width of welds cooled in natural atmosphere; and constricts the HAZ by as much as an average of 39 percent. This ensures that the area of the base metal affected and exposed to the weld thermal cycle is reduced and hence probably generates less metallurgical distortion. The cryogenic cooling also generated grain refinement in the range 14% to 36% compared to welds cooled in normal condition.

P-160 DC-AC Link Converter for Wind Generator

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The usage of wind power as alternative source of energy in Malaysia is very scarce and perhaps limited to several private establishments. There is urgent need to locally develop the low cost wind turbine generator that has the capability to not only supply electricity to respective household but can be

connected to power grid so that excess power could be sold back to the local utility company. Recent developments of power electronic converters allow stable supply needed for grid transfer in respect to nature of wind dynamics, enhanced power extraction and low total harmonic distortion (THD). In this project, an inverter circuit with suitable control scheme design is developed to be used with a wind turbine generator. From DC output of the generator, the DC-DC boost converter will step up the voltage to a nominal DC voltage at the grid. The inverter then will turn the voltage to sinusoidal AC to be transferred at grid. The duty cycle of signal controlling MOSFET transistors in the inverter will be controlled voltage source Pulse-Width Modulated (PWM) signal generated by microcontroller PIC16F877A based on pure sine wave data stored in the microcontroller memory. The lab-scale experimental rig involves simulation wind speed by running geared DC motor coupled with 500W wind generator where the prototype circuit will be connected at generator output. Expected circuit output is single phase 240V sine wave voltage which is nominal grid voltage. The next phase of the rig will involve testing the prototype circuit with site installed 500W wind generator. The necessary performance parameter will be evaluated.

P-163 Intelligent Sliding Mode Control using Natural Logarithm Sliding Surface

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Nowadays, active engine mounting system has been considered as the next generation of engine mounts. The system consists of passive mount, force generating actuators, sensors, and electronic controllers. To isolate the vibration, it is necessary to design a controller that able to superimpose the unwanted vibration signal. Different control strategies have been proposed, however most of the control approaches are model based control design in which requires precise mathematical model and its parameters. To solve this problem, an intelligent sliding mode control using natural logarithm sliding surface is proposed. The proposed control method combines the advantages of adaptive and learning capability of neural network and robustness of sliding mode control approach. The effectiveness of the proposed methods is evaluated both on the simulation and experimental result to the a lab-scale active engine mounting system. The results show that the proposed controllers able to reduce the engine vibration effectively in the band of frequency interest from 5 Hz to 30 Hz.

P-164 Formation of Nitride Clad Layer on Steel Surface Using Tig Torch Surface Melting Techniques

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There is an increasing demand for claddings which possess an optimized combination of different functional properties such as high hardness, high resistance to wear and oxidation. In this respect, hard TiAlN cladding has gained much attention. These claddings can be suitable replacements for the conventional ceramic coatings applied in many components of chemical plants and automotive industries to protect against high temperature oxidation and wear. In this work the possibility of the formation of intermetallic and nitride claddings on plain carbon steel surfaces by in-situ melting of preplaced titanium and aluminium powder mixture under TIG torch has been investigated. Addition of 1.3 to 2.2 mg/mm² Ti and Al powder and melting at energy input between 540 J/mm to 675 J/mm in nitrogen environment successfully created more than 1mm thick clad layer consisting of a mixture of titanium-aluminium nitrides and aluminides. All resolidified melt layers produced dendrite microstructures; the dendrite concentration is more near the surface area compared to the deeper melt depth. A maximum surface hardness of around 900 Hv was developed in most of the tracks and this hardness corresponds to high concentration of dendrites within the modified layer. Oxidation at 600°C for 72 hr, of the clad steel gave weight gains of 0.13 mg/mm², compared to 0.37 mg/mm² for the substrate.

P-170

Development of Wheeled Robot for Mine Detection

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In this work, design a hybrid control wheeled robot which is capable of detecting buried landmines and marking their localization in uneasy accessible areas, while enabling the operator to control the robot wirelessly from a distance. As a universal solution to the landmine problem is unlikely to be achieved in the short time, according to what many other researchers think, time is worth spent on trying to solve a specific aspect of the global problem, rather than treating the problem as a whole. The problem becomes even more difficult if the environment is hazardous, presents a potentially wide temperature range, and is subject to rain, dust and other natural factors. Such environments are typical for minefields. Landmines still continue to kill, injure and penalize on a daily basis mainly a civilian population. Replacing human demines or trained dogs in the mine searching task is challenging, and promises better detection capabilities. This paper presents an autonomous mine searching wheeled robot using hybrid controller.

P-171

Antimicrobial Activity of Date Palm Kernel (DPK) Extracts

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The fruits of the date palm (*Phoenix Dactylifera L.*) are an important commercial crop in the Middle Eastern countries. Dates are good source of energy, vitamins and a group of elements like phosphorus, iron, potassium, and significant amount of calcium. However, kernels of date palm are a waste product of many industries, after technological transformation of the date fruits or their biological. Due to the valuable chemical compositions of date seeds, hence it is extensive to widen the use of date kernels with the intention of produced precious product in the future. Thus, the antimicrobial activities of date palm kernels (DPK) were investigated. The kernels were extracted with water and 100%, 50% and 20% of ethanol, methanol and acetone with different polarity index. These extracts were screened for antimicrobial activity using the agar well-diffusion assay. Two bacterial and fungal strains were used in the antimicrobial assay namely *Staphylococcus aureus*, *Pseudomonas aeruginosa*, *Aspergillus niger* and *Candida albicans*. Results indicated that DPKs exhibited antimicrobial activity against tested microorganisms. The strong antibacterial activity was exhibited by acetone extracts against Gram positive bacteria while DPKs extracts showed weak antifungal activity. Therefore, this study proved that *Phoenix dactylifera* could be potential sources of new antimicrobial agents.

P-172

Special Oils for Halal and Safe Cosmetics

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Three types of non conventional oils were extracted, analyzed and tested for toxicity. Date palm kernel oil (DPKO), mango kernel oil (MKO) and Ramputan seed oil (RSO). Oil content for tow cultivars of dates Deglect Noor and Moshkan was 9.67% and 7.30%, respectively. The three varieties of mango were found to contain about 10% oil in average. The red yellow types of Ramputan were found to have 11 and 14% oil, respectively. The phenolic compounds in DPKO, MKO and RSO were 0.98, 0.88 and 0.78 mg/ml Gallic acid equivalent, respectively. Oils were analyzed for their fatty acid composition and they are rich in oleic acid C_{18:1} and showed the presence of (dodecanoic acid) lauric acid C_{12:0}, which reported to appear some antimicrobial activities. All extracted oils, DPKO, MKO and RSO showed no toxic effect using prime shrimp bioassay. Since these oils are stable, melt at skin temperature, have good lubricity and are great source of essential fatty acids; they could be used as highly moisturizing, cleansing and nourishing oils because of high oleic acid content. They are ideal for use in such halal cosmetics such as

skin care and massage, hair-care, soap and shampoo products.

P-173 Development of a new technique for the prediction of chatter formation to improve the product quality during end milling operation

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Chatter is defined as self-excited violent relative dynamic motion between the cutting tool and work-piece. Chatter is undesirable due to its adverse effects on the product quality, operation cost, machining accuracy, tool life, machine-tool bearings, and machine-tool life. A new technique was developed to remove all the adverse effects on machining by the prediction of chatter formation considering the instability of the closed-loop system formed by machine tool structure and metal-cutting process. Machine tool structure indicates the importance of different system components and its prominent mode frequencies whereas the metal cutting process indicates the effect of the instability of chip formation-chip serration frequency. The mechanisms of the formation of chatter explained by the technique were experimentally verified during end milling operation of medium carbon steel (S45C) considering the chips and types of discreteness in the form of serrated saw teeth. The different modes of the vibrating components of the machine tools have been identified using modal analysis and the vibration responses during cutting conditions have been recorded using an online monitoring system. The vibration signals in frequency domain have been analyzed to identify the chatter frequencies and compared with the chip serration frequency in a wide cutting speed range for different cutting conditions.

This work mainly discusses the development of a mathematical model for the prediction of the cutting speed limits for chatter formation considering the resonance effects in between chip serration frequency and prominent mode frequency of the machine components and investigation its effect on surface quality. The Transfer function and dynamic characteristics of the machine tool and cutting process system are taken into consideration for the analysis of the system under various cutting conditions. The dependence of surface roughness generated on chatter amplitude is justified and explained through surface roughness analysis. The surface quality analysis is obtained based on calculation of surface roughness values (Ra) at different cutting speeds along with the resonance speed condition predicted by the developed model. It has been observed that the vibration between the cutting tool and the work piece affects the machining accuracy and quality of surface generated. The developed model is highly useful to identify the chatter formation zone as a result the stable cutting zones can easily be selected to obtain high surface quality as well as machining life and accuracy.

P-175 The Production of Palm-Kernel-Shell-Activated Carbon By K_2CO_3 Impregnation and its Utilization in Malachite Green Removal

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The purposes of this study are to utilize the solid waste of palm kernel shell from palm oil mill and turn it into activated carbon, to determine and optimize the condition for production of the activated carbon from palm kernel shell in term of thermal activation and chemical impregnation, and to study the capability and design the optimum condition of palm-kernel-shell based activated carbon in malachite green adsorption. This study will involve three parts. The first part is the production activated carbon from palm kernel shell. There will be dehydration stage, carbonization stage, activation stage and chemical impregnation stage using K_2CO_3 . The second part is the characterization of palm-kernel-shell-based activated carbon by determine the SEM (Surface and pore structure), ash content, moisture content, and bulk density. Finally, the third stage is the utilization of the PKS activated carbon by performing the decolorisation of malachite green color. The adsorption study was done using shake flask investigation. The result obtained showed that the best product of activated carbon, produced at 750°C at 90 minutes impregnated with K_2CO_3 weight ratio of 1.0. This product was chosen because of cost factor and the percentage removal of MG was high 99.2%. From this study, the best candidate for adsorption of MG

gives 121.416 mg/g adsorption rate. It is recommended for future study that detailed should be conducted on production of activated carbon to produce a larger surface area, this study should be extended on the method of application of Potassium Carbonate in enhancing the pore size of activated carbon, and this study should be continued for removal of other colors especially colors that are high toxicity.

P-177 Environmental Factors Effect On Cotton-Albumen Composite

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Currently, research on the production of composites from natural fibres has an enormous attention from researchers due to environmental awareness, which focusing to produce compostable bio-based composites and renewable raw materials that can be safely disposed after their use without polluting the environment. This research is to fabricate cotton-albumen composite (CAC) which is totally green composite, then it will be exposed to environmental factors such as temperature, water and UV light radiation. Since this materials is easily decompose, it is necessary to study the effect of temperature, water and UV ray on the cotton-albumen composite to find out the changes in properties of the material. After exposure to heat at 60°C and 85°C up to 9 days, it shows that the tensile and impact strength are increased. It shows that heating harden the matrix of CAC thus increases the strength. Meanwhile, exposure to water to 8 hours decreasing the tensile and impact strength. It shows that water is absorbed by CAC and resulting in decreasing bonding strength between albumen matrix and cotton fibre. UV light exposure up to 10 days increases the tensile strength but after 15 and 20 days the tensile strength decreases. It shows that UV light harden the matrix after exposure up to 10 days but after 15 and 20 days UV light reacts chemically thus decompose some of the matrix and fibre molecules resulting in decreasing the tensile strength. In spite of increasing tensile strength, it is found that exposure to UV decreases the impact strength due to increasing brittleness of the albumen matrix.

P-178 Low Bitrate Video Coding for Remote Desktop Operation of CNC Milling

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Scalable Video Coding (SVC) is the extension of the H.264/AVC standard. The SVC has good capability in video transmission systems because of its scalability which can adapt in different network conditions, especially in low bit rate transmission. The objective of this research is to develop the low bit rate video coding for assisting the remote operation of Command and Control (CNC) milling process through virtual simulation and remote desktop interface. The algorithm for low bit rate video coding will be in the downsampling of high resolution layer before the encoding process and upsampling the high layer data in the decoder. Based on simulation results, the proposed scheme shows good performance in maintaining the video quality at 128 kbps while providing high time savings up to 58 % or the encoding process.

P-179 Investigating Computer Forensic Tools and their Searching Techniques

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The advancement and sophistication of the fast-moving field of computer forensic create challenges for computer forensic investigators on how best to extract relevant information pertinent to their investigation. This research analyses three computer forensic tools – Scalpel, Foremost and PhotoRec. Detail study and test were carried out on them to determine each of the tool's capabilities in terms of performance, speed and reliability. We emphasized on the searching methods used by each of these tools in acquiring relevant data that can be used as evidence.

**P-180 Studies On Heat Transfer Enhancement of CNT-GA Nanofluid in a
Laminar Flow Heat Exchanger**

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Most of the commonly used heat transfer fluids have low thermal conductivity. For example, water has a thermal conductivity of 0.6 W/mK the value of copper is 386W/mK. This difference in thermal conductivities between liquids and metals makes one consider enhancement of thermal conductivity and heat transfer characteristics of liquids by suspending metal particles in them. Fluids with nanoparticles dispersed in them are known as Nanofluids. However, CNTs with their high vander waals forces, surface area and high aspect ratio inevitably cause self aggregation. Thus, Gum Arabic (GA) was used to stabilize the CNT dispersion in water. This study aims to study the heat transfer enhancement of CNT-GA nanofluid in a laminar flow heat exchanger. 0.01wt% of CNT and 1wt% of GA concentration was used to prepare the aqueous CNT-GA nanofluid. Experiments are carried out at different temperatures ranging from 40-60C, respectively. Considerable heat transfer enhancement was observed using CNT compared to that of water alone.

**P-182 Methods of Detection of Hazardous Materials using
Quartz Crystal Microbalance**

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The development and construction of new sensors for hazardous materials in the environment becomes an active area of research nowadays. Hazardous materials are known to give an adverse effect to human health and environment. Therefore, the early detection of the presence of those materials is crucial. This paper summarizes some current methods of detection of cyanide, mercury, lead, and hydrocarbons using quartz crystal microbalance (QCM). Quartz crystal microbalance (QCM) is an instrument of mass measuring initiated by Sauerbrey, which is widely used as a measurement instrument of small mass in vacuum, gas and liquid phase. Two methods of detections using QCM for each hazardous material were discussed and compared in this paper. The best methods employed are concluded at the end of this paper.

P-186 Production of Vinegar from Star Fruit Juice by Using Bioreactor

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Vinegar was produced in the lab from fermentation of local star fruit (*Averrhoa carambola*) juice in stirred tank bioreactor. Star fruit was chosen due to its availability in local market and its fruiting season is all year around in Malaysia. The fermentation of star fruit juice into vinegar was produced by decomposing sugar contained in the fruit substrate through alcohol and acetic acid fermentation over a period of three days period with the aid of two microorganisms, *Saccharomyces cerevisiae* and *Acetobactor aceti*. Study to optimise the process parameter conditions used are agitation speed, aeration and the concentration of glucose used. The design of the experiment was conducted using Design Expert software to optimize the parameters condition for optimum production of the acetic acid. Analysis at every 12 hours interval were carried for ethanol concentration, reducing sugar level and acetic acid. The findings in this project can be applied to produce vinegar in large amount from our local tropical star fruit juice. The experiment showed that the optimum condition for agitation found were 300 Rpm, aeration was 0.5 Lpm and glucose concentration was 20% consequently produced 1.6335% vinegar.

P-187 Development of Material Selection Method for the Application of Children Bicycle Frame

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A bicycle frame is a crucial part for cycling performance, efficiency, comfort, and injury prevention. This is especially true in the case of children cyclists that do not have the necessary cycling experience, balance and the fully developed musculoskeletal system of the adults. The selection of the correct materials for a particular product especially a children bicycle frame is a key step in the design and development process because it will carry the load of the rider during cycling. In the present paper few methods have been developed to select material of a bicycle frame for children and teenagers 7–14 years old. This paper will present the development of the material selection methodology based on Ashby's material selection chart for the application of bicycle frame purposes. Two quantitative methods are proposed such as cost per unit strength and digital logic model methods. Also mechanical properties, including tensile strength, yield strength, Young's modulus, toughness, density as well as cost were used as the key parameters in the material selection stage. Among the material selection methods the development of digital logic model is the best suited method which identified that the Kevlar fiber reinforced plastics (KFRP) as the most appropriate candidate material for the application of children bicycle frame.

P-188 Reverse Engineering of Children Bicycle

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Reverse engineering often involves taking something apart and analyzing its workings in detail to be used in maintenance or to try to make a new product or component that does the same thing without copying anything from the original. In order to understand the existing design, materials and manufacturing process of a bicycle frame and also for the future direction in new materials with new design, a comprehensive study on the reverse engineering is essential. Therefore, in this paper, a systematic study on a bicycle frame reverse engineering is performed. The bicycle components were destructed and investigated using the metallurgical microscope and hardness tester for microstructural and microhardness examination purposes respectively. The cost analysis of the new proposed bicycle frame is also given in this paper.

P-191 A New Automated Compact Substation for Distribution System in Malaysia

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This project has developed a new distribution automation system and remote metering system. It is a customized distribution automation system (DAS) for secure fault isolation at the low voltage (LV) downstream, 415/240V by using the Tenaga Nasional Berhad (TNB) distribution system. It is the first DAS research work done on customer side substation for operating and controlling between the consumer side system and the substation in an automated manner. Most of the work is focused on developing very secure fault isolation whereby the fault is detected, identified, isolated and cleared in few seconds. Supervisory Control and Data Acquisition (SCADA) techniques has been utilized to build Human Machine Interface (HMI) that provides a graphical operator interface functions to monitor and control the system. Microprocessor based Remote Monitoring Devices have been used for customized software to be downloaded to the hardware. Power Line Carrier (PLC) has been used as communication media between

the consumer and the substation. As result, complete DAS fault isolation system has been developed for cost reduction, maintenance time saving and less human intervention during faults. This research has developed Automated Meter Reading (AMR) system in addition to DAS.

P-192 Ligninolytic Activities of Some Malaysian White Rot Fungi

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White rot fungi have been known for their extracellular secretion of ligninolytic enzymes. 19 white rot fungi were isolated around Gombak area. The white rot fungi were subcultured until pure cultures were achieved. They were first screened on solid media plates for their lignin modifying enzymes by using Poly R-478 and ABTS. Of the 19 white rot fungi tested 7 were able to decolorized Poly R-478 and 18 showed significant ABTS-oxidation activities. The positive strains were tested on liquid media for lignin peroxidases, Manganese peroxidases and laccase activity. From the result 6 strains were able to secrete the three enzymes, only one was able to secrete two out of three and 18 strains secreted one of the three enzymes.

P-194 Taylor-Newton Homotopy Method for Computing the Depth of Flow Rate for a Channel

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Homotopy approximation methods (HAM) can be considered as one of the new methods belong to the general classification of the computational methods which can be used to find the numerical solution of many types of the problems in science and engineering. The general problem relates to the flow and the depth of water in open channels such as rivers and canals is a nonlinear algebraic equation which is known as continuity equation. The solution of this equation is the depth of the water. This paper represents attempt to solve the equation of depth and flow using Newton homotopy based on Taylor series. Numerical example is given to show the effectiveness of the purposed method using MATLAB language.

P-199 Natural Sources of Antidiabetic Inhibitor from Malaysian Medicinal Herbs

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Diabetes is one of the chronic diseases affecting worldwide population. Presently, there is a growing interest in herbal remedies due to the side effects associated with the use of insulin and oral hypoglycaemic agents for diabetic patient. Therefore an investigation is required in a bionetwork rich and industrially-developed country like Malaysia to use alternative approaches to treat diabetics, such as plant based medicine. In this study, forty types of Malaysian antidiabetic plants were examined on the basis of their use in traditional medicines throughout Southeast Asia, to develop an understanding of the distribution and to give an assessment of the diversity present in the selected plants. Extracts of all 40 species of Malaysian medicinal plants were examined for β -glucosidase inhibition using an in-vitro model. Most of the plants showed varying degree of inhibitory activity (%) but *Centella asiatica* had the maximum percentage of β -glucosidase inhibitory activity (99.03%) while the second best is *Morinda citrifolia* with 96.37% inhibitory activity. Another two potential plants which gave higher inhibitory activity were *Cucumis sativus* (93.95%) and *Euphorbia tirucalli* L. (90.56%). To enhance the percentage inhibition of β -glucosidase inhibitory a study based on statistical design was employed. A mathematical model was developed to show the effects of each factor and their combinatorial interaction on percentage

inhibition. These potential plants with β -glucosidase inhibitory activity can be a hope for millions for treatment of diabetes and will also help in reducing the dependence on synthetic drugs in the future.

P-200 Optimization of Recombinant *Mycobacterium Smegmatis* Phytase Production in Shake Flask

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Phytase, also known as phytate-degrading enzyme, catalyzes the hydrolysis of phytate (*myo*-inositol hexakisphosphate) with sequential release of phosphate and lower inositol phosphates. It has bright future in vast areas such as in animal feed, food industry and green technology, and the total value of phytase industry is estimated to be \$500 million in 1999. Lately, bacterial phytases have become the choice in industries due to favorable properties including thermostability, wide pH tolerance and resistance to proteolysis. The production and characterization of recombinant phytase from *Mycobacterium smegmatis* is the subject of the present study. Results from the investigation of the effect of carbon and nitrogen sources on the cell growth and protein expression in shake flask will be presented, as well as partial characterization of the purified enzyme.

P-201 Improvement of Phytase Properties by Rational Design Intended for Animal Feed

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For application in animal feed, a phytase of interest must have high activity in the broad range prevalent industrial condition and in digestive tract of the animal. The present investigation describes approaches to rationally engineer a phytase with better activity profiles. Computer modelling is used to identify and examine active site of phyFAUIA1 phytase. The factors influencing the ligand binding strength in the active site is analyzed and computational site directed mutagenesis experiments were carried out to evaluate the effects of mutations on the binding strength before and after mutation. From the directive results of computational studies, point mutation was introduced by site directed mutagenesis using polymerase chain reaction (PCR). Mutagenesis is achieved by two steps PCR procedure. Four primers were designed and synthesized: two primers contain mutation at the point of interest which is complement to each other and the other two primers were designed for unique restriction sites. Several numbers of single, double as well as triple mutations have been introduced in phyFAUIA1 gene, and the mutant enzymes will be characterized and compared to computational results.

P-202 Anti-Multidrug Resistant *Staphylococcus aureus* (MRSA) Activity of Euphorbiaceae Leaves Extract

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Multidrug resistant *Staphylococcus aureus* (MRSA) is a major threat to health sector worldwide due to their prevalence, intrinsic virulence & limited therapeutic means. MRSA infections complicate therapy and could double the mortality rate amongst the immuno-compromised, the elderly, infants and patients at the surgical and burnt units. The cost to treat hospitalized patients with MRSA infections is estimated to be between \$3.2 billion to \$4.2 billion per-annum. The emergence of community-acquired MRSA (CA-MRSA) and vancomycin-resistant enterococci (VRE) globally indicates that our current treatment for MRSA infection getting more complicated and need replenishment. Therefore, the search for an alternative anti-MRSA agent is very important to cater this issue. Our research discovers the potential

anti-MRSA agent derived from crude extract of Euphorbiaceae leaves. The technical features of our innovation involved the preparation of alcoholic extract of plant leaves. It is an effective phyto-extract to curb MRSA infections with inhibition and cidal concentration (MIC and MBC) at $0.3\mu\text{g}/\mu\text{l}$ (compared to Oxacillin - MIC & MBC at $0.391\mu\text{g}/\mu\text{l}$). The oral-acute toxicity study (7-days dosed) in mice conducted demonstrates that the Lethal Dose (LD_{50}) of the extract is more than $5\text{g}/\text{kg}$ of bodyweight and considered very low toxicity as compared with Vancomycin (LD_{50} : $5\text{g}/\text{kg}$ of bodyweight) and table salt (LD_{50} : $4\text{g}/\text{kg}$ of bodyweight). This extract can be applied in sanitary industry that can be useful in medical vicinity, hotels, homes usage, food hygienic aspects where public coverage are exposed to high risks of contamination by MRSA.

P-203 A Software Framework for Arabic-based data Automated report generation using the LAMPP stack

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The LAMPP stack is used to develop web-based applications using Linux as the base operating system. Apache as the web server, MySQL as the database while PHP and PEARL serve as the programming languages for the backend services. We introduce a framework to build any application which requires collecting data based on user input and generating statistical graphs as needed and on-the-fly. What other web applications lacks are the ability to deal with the Arabic textual forms when processing statistical data which is composed of Arabic words and numbers, some outputs Arabic words malformed. The framwwork provides the ability to create complex Arabic-based survey reports required for social and scientific applications which are generally used to collect data and process that data to have a complete report automatically generated as a final output. The main modules introduced in this invention are the Arabic PHP Grapher which was built specifically for this project. Others Linux-based text processing scripts for dealing with Arabic-based input are introduced as well. Another project which benefited from these scripts is the Quranic Fuzzy Search Engine, a program to find the “most correct verse” taking a wrongly written verse as input. The main purpose of this framework is to provide the basic programming modular components for building web-applications targeting researchers needing to analyse certain Arabic-based forms or sureveys, generate statistical graphs with embedded Arabic text or just needing to deal with the Arabic text in an open environment depending on Open Source tools freely available. This framework is web-based, it is expected to work on most operating system and architecture, as long as the required dependencies are met such as the LAMPP stack with the GD library enabled.

P-204 Homotopy-perturbation method for heat transfer equations

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In this paper, we present a reliable new algorithm based on the homotopy-perturbation method (HPM) to determine the temperature distribution of a straight rectangular fin with power-law temperature dependent surface heat flux. The solution of the boundary-value problems (BVP) baed on the homotopy-perturbation method (HPM) presented earlier is corrected and extended.

P-208 Effect of Initial Concentration and Adsorbent Dosage on the Removal of Pb from Aqueous Solutions

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Lead is one of the most common but toxic heavy metals that contaminate water resources. Lead (Pb) has detrimental effects on the human body and other living beings. This ion is also known to accumulate in the body more rapidly than it is excreted and retards haemoglobin production, the cause of anaemia. Therefore, it is necessary to remove the toxic Pb from the water and wastewater. Carbon nanofibers (CNF) produced on powdered activate carbon (PAC) were used, in this study, for the removal of lead cations from aqueous solutions. Laboratory studies were conducted to evaluate and optimize two variables (initial concentration and adsorbent dosage). Experimental analyses revealed that Pb uptake by the adsorbent increased from 15.77 to 89.0 mg/g with increasing the initial concentration from 5 to 40 mg/L while increasing the adsorbent dosage from 50 to 1000 mg/L has increased the removal as high as 99%.

P-210 Simulation of Heat-Flow through Sand Mould and Its Verification on Structure and Property of Cast Iron

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The solidification of materials depends on the cooling rate of the materials which is governed by heat flow in the mould and alloy composition. Solidification rate also affects the structure and properties of the materials. In the present study, the heat flow of cold set resin bonded sand mould was simulated using JL Analyzer FEM analysis software. It shows that most of the heat-reserve at the junction of the mould which is nearer to the source of liquid metal and the lowest heat-reserve at the end of the mould. So, the solidification rate is very high at the end of the mould wall whereas it is comparatively low near the sprue of the mould. To verify the model, the gray cast iron was melted at 1350⁰C temperature and poured into a resin bonded sand mould at 1300⁰C. The result shows that depending on the heat-flow through the mould and solidification rate changes the microstructure from chill, mottled and gray cast iron, and hardness changes from 95.1 HRB to 78.78 HRB.

P-213 Corporate Social Responsibility (CSR) Theory & Practical Strategies for Construction Organisations

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Corporate Social Responsibility (CSR) is the continuing commitment by business to behave ethically and contribute to sustainable economic development while improving the quality of life of the workforce and their families as well as the local community and society at large. Engineering and construction is often perceived to have a negative image in its social and environmental responsibilities. The challenges that the sustainable development agenda poses for the industry in terms of its social responsibility also pose a problem for the Industry. Societal and regulatory pressure is increasing, forcing all sectors of development to be socially responsible, and align their business practices with the principles of sustainable development and corporate responsibility in Malaysia and internationally. This paper

P-226 Accessible Building Design: Transportation Buildings - Case Studies of LRT Station of Bandar Tasik Selatan, Ferry Jetty of Penang, Ferry Jetty of Pangkor Island and Puduraya Bus Terminal

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Increasing and improving access to transport systems and mobility of people with disabilities (PWDs) is a necessary element of alleviating poverty and enhancing the quality of life for the inhabitants of a developing nation. More and more nations are aware and accepting the human rights approach to disability where every citizen should have a right to social and economic opportunities. Part of this opportunity includes the right to public transportation as means of travel and mobility for the PWDs. As more countries adapted the United Nations'™ Convention on the Rights of Persons with Disabilities treaty there should be more concerted towards better amenities for the PWDs. An access audit research was conducted throughout Malaysia to determine the level of provisions and effectiveness of accessibility for the PWDs in different typologies of buildings. As part of the research transportation buildings were also audited to examine the quality of service for different modes of transportation all over Malaysia namely intercity bus station, light railway transit (LRT) terminal, car and passenger ferry terminal as well as a passenger ferry terminal. The audits were conducted on four types of disability groups and they are vision impaired, hearing impaired, PWDs on wheelchair, and PWDs on crutches/stick. The research focuses on transportation buildings and not on the transportation system itself. The findings of the research vary from poor accessibility to fairly accessible for different category of disabilities. The way forward as the outcome of this research is the suggestions for improvement and retrofitting of existing transport facilities for accessibility in future.

P-230 Ring-Shape Wearable Pulse Oximetry System for Cardiac Remote Monitoring

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The increasing demand for continuous and robust wearable health remote monitoring systems has recently become an interesting research topic. Indicators acquired by these systems help in identifying hazardous situations; thus, allowing the specialists to interfere and give the medication on the right time. Such systems allow patients to practice their daily activities or work without hospitalizing them or restricting their movement. In this work, a complete wireless wearable bio-sensor system based on Pulse Oximetry (PO) is described in which patient wears a small, light weight and convenient ring-shape PO sensor as an acquiring device. This ring sensor acquires some important indicators, such as oxygen saturation (SpO₂) and Photoplethysmographic (PPG) signal from human body and transmits them via RF transmitter to a host-computer for further processing. In order to incorporate the PO sensor in a wearable probe, the influence of Motion Artifact (MR) on the acquired signals must be reduced. A method based on a Variable Step-Size (VSS) Adaptive Noise Cancellation (ANC) is adopted and developed to overcome the effect of MR. The simulation shows that the developed VSS-ANC has a superior performance in terms of signals purification. Based on this result, the complete system will be built and tested in real-time.

P-231

Application of Universal Design for School Buildings

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Accessibility of the public school is important in the effort to provide accessible schools for both physically normal and physically impaired students. Accessible schools will provide an equal opportunity for the disabled students to go to the same school as normal students do and follow the same syllabus in any school near their home rather than having to go to special school which is normally far from their living area. The main purpose of this research is to audit accessibility of school buildings and its facilities for disabled people in a primary and secondary school at Precinct 8, in Putrajaya, Malaysia.

The methodology used is based on the access audit methodology using the adaptive survey technique, utilizing life simulations, interview and questionnaire survey. The research is carried out together with the Fifth Year Architecture students from the International Islamic University Malaysia Malaysia and experts of access audit. The findings and recommendations from the study will give some insights to the problems faced by the disabled persons. This will enable the owners of the buildings to upgrade their facilities to serve not only the needs of able people but also of the disabled as well. The recommendations proposed by this paper can be used as guidelines for building designers, owners and others involved in the building industry in creating a holistic environment.

P-232 Universal Design for People With Disabilities (PwDs) in Institutions of Higher Learning: Are Our Campuses Friendly?

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Prodigious growth of institutions of higher learning in Malaysia has opened up more opportunities for everyone to catch their dreams. While campuses are more compact and equipped with more sophisticated tools and spaces for teaching and learning, do they give equal opportunities for diverse groups of people to be involved in the campus life? While this paper examines only the case of the International Islamic University Malaysia Malaysia (IIUM), the chilling scenario is actually replicated, of course at different degrees of seriousness, in almost all Malaysian universities, either public or private. The one thing that is positive, at least in as far as IIUM is concerned, is that it has started to embrace the problem and taken the first step to rectify the situation to make life on campus more conducive for students and staff with disabilities.

P-240

The Role of Urban Park in Groundwater Conservation

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About two-thirds of Jakarta's inhabitants and other big cities of Indonesia rely on the groundwater as source of freshwater. However, they always suffer from regular drought due to the diminishing water table levels in their surroundings. This problem is related with the absence of well-planned urban ecosystem. Shallow groundwater condition is affected due to several factors like population density, land use, and urban park or green areas. This study explores the role of urban park in groundwater water conservation. The research covers observation of the urban parks coverage in Jakarta and measurement of soil water status on roots zone beneath the KEconcludes that urban park has ability to conserve water. The bigger the urban park, the better for water conservation purposes. As regard to water conservation status as well as roots zone volume of selected species, tree is more suitable for water conservation as compared to shrub, grass, and bare land. The study also introduces the interlinking parks model in order to improve the urban ecosystem. Hence, the roles of urban landscape planning in water conservation as well as urban

development policy for urban ecosystem are very crucial.

P-241 Optimization of Cooling System for Data Centre

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Development of information technology drives the increase demand of data centers and the invention of high performance of computer facilities which will impact to the increasing of heat dissipation from equipment. The environmental condition in data center must be maintained strictly to avoid disruption and thermally shut down that caused by overheat and loss of cooling. This research primarily focuses on the optimization cooling system in data center by arrangement of racks position and airflow management. Models and simulation of Computational Fluid Dynamics (CFD) are developed for the room and equipment of data center where the effect to temperature and airflow profiles will be observed. A case study of data center design in Kuala Lumpur with 30 racks of equipment and combination of raised floor cooling and spot cooling was carried out. Results of CFD simulation shows the issues of data center cooling and improvement was suggested to improve the distribution of cooling and reduction of hot spots.

P-242 Molecular Cloning and Overexpression of Recombinant Phytase in *Pichia pastoris* System

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Phytases catalyze the hydrolysis of phytate (*myo*-inositol hexakisphosphate), one of the major storage form of organic phosphate in plant tissue with subsequent release of *myo*-inositol, phosphate and phytate-bound minerals. Non-ruminant animals such as chicken, swine and fish can't use the inorganic phosphorus and minerals from their diet effectively because there is little or no phytase activity in their digestive tract. Phytase is added to the animal feed diet to improve phosphorus availability from the dietary phytate while lessen the phosphate pollution level in areas of intensive animal production. In recent years, bacterial phytase become conceivable and more advantageous source of phytase. In the present work, the gene encoding for *E. sakazakii* ASUIA 279 and *Myobacterium Smegmatis* phytases have been amplified by a polymerase chain reaction (PCR) methodology. The amplified phytase genes were extracted, purified then cloned into the pPICZ α A plasmid. Plasmids that harboring the phytase gene were then transformed into *Pichia pastoris* X-33 strain for high yield of enzyme production.

P-247 Antioxidant Study of Methanolic and Ethanolic Extracts of Malaysian Aromatic Plants' Leaves: Towards Industrial Biotechnology

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The aim of this study is to determine the antioxidant properties of methanolic and ethanolic extracts of four Malaysian aromatic plants' leaves, namely knotweed (*Polygonum minus*), curry (*Murraya koenigii*), kaffir lime (*Citrus hysrix*) and fragrant screwpine (*Pandanus odoratus*) as a head start for industrial biotechnology. Total phenolic content (TPC) assay using Folin-Ciocalteu method was used to

assess the presence and level of phenolic compounds in each sample. Antioxidant activity in terms of total antioxidant and free radical scavenging activities of both methanolic and ethanolic extracts was measured by β -carotene bleaching assay and 2, 2, diphenyl-1-picrylhydrazyl (DPPH) free radical scavenging activity assay, respectively. The present results showed that methanolic extract of *P. minus* exhibited the highest total antioxidant activity ($98.2 \pm 0.5\%$) while for the EC_{50} based on DPPH radical scavenging activity assay, the lowest concentration was shown by *P. minus* extracts as compared to the other samples. For both ethanolic and methanolic extracts, moderately strong and strong positive correlations existed between the phenolic content and antioxidant activity based on β -carotene bleaching assay, respectively. Among the eluent systems used for phytochemical analysis using thin layer chromatography (TLC), EWFA showed the largest number of antioxidant active compounds, followed by EMW and CEF. HEA eluent system indicated no presence of antioxidant active compound showing that most compounds were polar. Retardation factor (R_f) values were calculated between 0.2 to 0.6. Relatively, the present results suggested that of the four aromatic plants, *P. minus* and *M. koenigii* have high potential as sources of commercial natural antioxidants regardless types of extracting solvents.

P-248 Streptococcus Pyogenes Proteins Involved in Resistance to Antimicrobial Peptides

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S. pyogenes secrete a large array of molecules that might contribute to resistance against the human's antimicrobial peptides (AMPs). Some of these are anchored in the cell-wall by enzymes called sortases and others are released from the cell after secretion. Two released proteins that have previously been reported to inhibit bactericidal effect of the AMPs are streptococcal inhibitor of complement (SIC) and cysteine protease, SpeB. In this study, several *S. pyogenes* strain SF370 deletion mutants were compared to the parent wild-type strain for resistance to the AMPs LL-37 and LEAP-2. We found that released proteins SIC and SpeB contribute to streptococcal resistance against LL-37; and cell wall-anchored proteins by sortases SrtA and SrtC are also important in streptococcal resistance against LL-37 but not with LEAP-2. Our study conclude that LL-37 kills *S. pyogenes* strain SF370 better than LEAP-2 peptide.

P-255 Extraction and Chemical Analysis of Lemongrass (Cymbopogon Citratus) Essential Oil

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This project is focused on the extraction, identification and analyzation of bioactive compounds from lemongrass essential oil. The first part of the research work is to extract and optimize the potential yield of essential oil using steam distillation from various parts of lemongrass plant which are stems and leaves for doing comparison studies on essential oil. Optimization process is been done by using Design-Expert Software applying parameters such as temperature and extraction time. The process considered extraction yield of essential oil (mass of essential oil per mass of raw material) as responses (leaves and stems separately) of the optimization process. The temperature and extraction time were found to have significant effect on the extraction yield. The stem part produced more oil compared to the leaves part. The bioactive components of essential oil from leaves and stems are then been compared by gas chromatography-mass spectrophotometer (GC-MS). The analysis on chemical composition on both parts showed the existence of bioactive components in both essential oils. Both essential oils from stems and leaves parts consist of components such as limonene, β -myrcene, neral and geranial which have great potential in biological activities such as anti-microbial, anti-cancer and anti-bacterial activities. This project is aim to identifying, quantifying and formulating potential bioactive compound from lemongrass essential oil for future commercialization.

P-256 Isolation of Reduced Glutathione (GSH) from Local Fruits by Mechanical Methods

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Glutathione (GSH) is a simple tripeptide produced by the liver. It is a volatile substance, which is sweet in taste, comprised of the amino acids cysteine, glutamic acid and glycine. In these modern days, the use of traditional medicine by the sufferers of chronic disease is encouraged due to the adverse effects of chemical drugs, and treatment using medicines of natural origin appears to offer more gentle means of managing such disease. Therefore, the practice of traditionally used natural plants as medicines is one of the alternative ways to cure the illnesses. Besides, this study was done in order to investigate the production of GSH from fruits since most of the studies that had been conducted before were done on the isolation of GSH from other sources. In this study the reduced glutathione (GSH) was isolated from a potential local fruit of Malaysia. Three mechanical methods; homogenizer, ultrasonic and autolysis were screened for disrupting the fruits cells for maximum GSH content. Different methods of cell disruption gave different effect on the GSH production. Watermelon (*Citrullus lanatus*) is the best potential local fruit that contain higher GSH followed by Jackfruit (*Artocarpus heterophylus*) and Sapodilla (*Manilkara zapota*), while ultrasonic is the best cell disruption method which can give the maximum amount of GSH, followed by homogenizer method and autolysis method.

P-259 Construction in the Muslim World – A Factual Analysis and Policy Implications

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Widespread poverty, inadequacies in food, shelter and meaningful employment due to the lack of economic development, the lack of easy access to schools and education, the lack of freedom and political representation, etc in some of the least developed developing countries of the Muslim world are common knowledge. Attempts at developing and implementing appropriate strategies have been made and are continuing in effort to bring about economic development to these countries but the situation remained. In this paper the authors argued that one effort to bring about economic development is through the construction sector where construction delivers the much needed basic infrastructures. The latter would then enable economic activities to be carried out and therefore promote socio-economic growth and development. An examination on the size and contribution of the construction sectors of the countries of the Muslim world to their respective economies was carried out and the outcome formed a basis in considering policy implications on how construction could be used as a catalyst to bring about sustainable economic growth and development to these countries. The key results from the examination are: majority of the construction sectors of the countries of the Muslim world make small contribution to their GDP; at per capita level, most of the countries of the Muslim world's construction GDPs are very small; and per capita construction GDP is positively correlated to per capita GDP and GDP from the industrial sector but is negatively related to other sectoral GDPs. In terms of policy implications, topping the list include development of the countries of the Muslim world, in terms of enhancing per capita income or GDP, relies with the generation of construction and industrial sector GDPs and not with other sectoral GDPs and the countries of the Muslim world should promote active and mutual cooperation. In the paper the Muslim world refers to the member countries of the Organization of the Islamic Conference or OIC.

P-261 Assessment of residential satisfaction in newly designed

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Recently, public low-cost housing design in Kuala Lumpur, Malaysia, has undergone changes from the provision of two to three bedrooms with the additions of a dining room, a separate bathroom and a toilet, and a drying area. Although several studies have examined housing satisfaction in Malaysia, no study has been conducted to assess the residential satisfaction of the newly designed and constructed public low-cost housing. This paper provides an assessment of residential satisfaction of public low-cost housing dwellers of Kuala Lumpur by applying four components of satisfaction – dwelling unit features, dwelling unit support services, neighbourhood environment and location parameters. Findings from the study indicate that both mean level of satisfaction and percentage of residents' satisfaction with dwelling unit, support services, location are higher than with neighbourhood condition. Correlation analysis reveals that some of the dwelling unit, support service, neighbourhood environment variables and a few location variables are sensitive to socio-economic characteristics of the respondents. Factor analysis of the residential satisfaction variables shows that 10 factors with 25 variables belonging to dwelling unit (3), neighbourhood (2) and location (2) components explain a major proportion of the variation. Multiple regression analysis shows that the factors comprising of the dwelling unit features, neighbourhood environment and housing location mostly determine residential satisfaction of newly designed public low-cost housing in Kuala Lumpur. The policy implication of this paper is that residential satisfaction of public low-cost high-rise flats can be upgraded through the improvement of residential features, community environment and site locations. Therefore, public agencies for low-cost housing should pay proper attention to these features in order to improve quality of life of the low-income urban community in the country.

P-262 Social housing programme of Selangor Zakat

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Social housing in Malaysia is provided through the public and private sectors. Recently, the Selangor Zakat Board (SZB) has started to provide social housing in the state of Selangor, Malaysia, and so far about 906 units have been delivered under its different programmes. This paper evaluates these programmes by adopting the housing satisfaction model which is currently used as a customer satisfaction tool for public/ private housing in many local governments in UK and USA. The main purpose of this paper is to identify the types of housing programmes adopted by SZB and examine beneficiaries' housing satisfaction in each programme on a comparative plane. In order to examine housing satisfaction, five objective components of satisfaction – housing unit features, housing unit support services, social environment, public and neighbourhood facilities, were analysed through beneficiaries' levels of satisfaction which were measured by applying a Likert scale. The findings of the paper indicate that SZB has been successful to provide moderate level of satisfaction with the housing unit. However, the existence of variable levels of satisfaction with other components implies that there are still scopes to enhance residents' satisfaction with those components.

P-263 A Study of the Factors Determining Residential Location of the Employees of IIUM Gombak Campus, Malaysia

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The mainstream land use models limit the factors determining residential location to the two factors - commute cost and rent. Some models however, incorporate the factor of the size of the housing unit and view it as one of the factors determining residential location, but rarely consider other factors. Although there are certain truths about the aforementioned proposition, it is clear that there may be other factors influencing residential location decision making. The degree to which residence location is driven by workplace location or the converse may also vary by household relationship, tenure, ethnicity and socioeconomic status (Waddell, 1997). On a local context, no systematic study has been made to look at the locational aspect of housing. This paper attempts to identify an array of factors and the extent to which they influence residential location of the employees of International Islamic University Malaysia of Gombak Campus, which is considered as an employment node within the Klang Valley region. Findings of this study revealed that there is a significant relationship between residential location and a number of other factors normally overlooked by residential location models. Those factors include respondents' type of employment within the household, home ownership and the duration of service at IIUM.

P-264 Factors Determining Residential Location of Service Sector Employees of Kuala Lumpur City

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Urbanization in Peninsular Malaysia has grown rapidly especially during the last two decades whereby the rate of urbanization has increased from 53.4% to 65.4% between 1991 and 2000. Current rate of urbanization in Malaysia is 63% and it is projected that the rate will be 75% by the year 2020. Although there are 170 urban centres in Malaysia it is expected that the increase in urban population will mostly concentrate in larger urban conurbations around Kuala Lumpur, Georgetown, Johor Bahru and Kuantan. Against this background, it appears important to study the residential location factor of urbanites because the future urban structure of cities throughout the world is likely to be influenced by the pattern of the residential land use which occupies a major proportion of its total urban land use. Three objectives were set for this study – (a) to investigate the socio-economic, housing and commute characteristics of the employees of KL City; (b) to explore the relationships among social-economic, housing and commute characteristics of the employees of KL City; and to examine the nature and the significance of the relationships between the identified factors and the residential locations of KL City service sector employees.

P-272 A Novel Technique to Produce Fe-C-Al Spheroidal Graphite Cast Iron and Investigate on Its Structure and Properties

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In the present study, an attempt has been made for the production of Fe-C-Al cast iron in different ways. For that, raw materials were melted and superheated at 1550 °C temperature and then the melt was transferred to a special designed crucible for Mg-treatment where the pure magnesium foil was kept in a mild steel box. The melt was poured into a cold set resin bonded sand mould. After casting, the microstructure was observed under optical microscope and hardness test and tensile test were performed. The result shows that Mg recovery of this process is about 60%. It was also shown that the tensile

strength is 478 MPa and the percentage of elongation is 3.5 %.

P-274 Structural Changes of the National Economy and Regional Economic Development In Malaysia

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The economy of Malaysia has undergone changes from its agricultural base to import-substitution during the 1960s and finally to export-orientation after 1968. The later stage was associated with the influx of significant amount of direct foreign investment. These changes of the production base of the country led to concomitant changes in the structure of employment from agriculture to manufacturing and finally to services. Studies so far undertaken mostly concentrate on the macro aspect of this transformation process. A few studies have attempted to analyze the phenomena through industrial concentration. No attempt has been made to study the structural changes of the national economy through analysing the production/ employment structure of the regions / states of Malaysia. It is anticipated that the structural transformation has not been uniform across the different regions of the country. Therefore, this paper provides a spatial analysis of the structural changes in the structure of production and employment that has occurred across fourteen states of Malaysia following the structural changes of the national economy.

P-284 In silico designing of thermostable β -Glucuronidase (GUS)

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This research has used Molecular Dynamics (MD) techniques as an *in silico* method of correlating the experimental studies done on GUS enzyme with computational study and has analyzed and identified the structural factors responsible for thermostability of this enzyme. GUS from *E. coli* is heat labile and inhibited by detergents and products, which hinder its usefulness as a reporter molecules in genetic engineering. Therefore a more thermostable GUS enzyme needs to be designed for industrial applications. Using homology modeling, structures of mesophilic and thermophilic GUS enzymes from *E. coli* and *T. maritima* have been constructed based on the crystal structure of human GUS enzyme. MD simulations of these mesophilic and thermophilic GUS enzymes at temperatures of 300 K and 353 K in vacuum and implicit solvent have provided information on thermolabile regions in the enzymatic structure to be targeted for thermal stability. The RMS deviation of backbone atoms and helical residues from their initial coordinates was analysed for the resulting simulation trajectories. A higher number of charged residues found in the thermostable GUS were found to be responsible for stability of the helices compared to mesophilic GUS. From analysis of salt bridges, the presence of higher number of Glu-Arg and Glu-Lys salt bridge pairs were found to be responsible for thermostability of *T. maritima* GUS. The thermolabile residues 150-155 in wild type *E. coli* GUS structures were identified, and have been suggested as mutation points for experimental studies to improve thermostability. These residues have not been identified before, and are suggested to be replaced with Ala, Arg, Glu, and Lys. The choice of Ala and Arg are supported by previous experimental mutations in other regions of GUS and have resulted in thermostable GUS enzymes.

P-286 Construction and Demolition Wastes and its Management: A Case Study in Klang Valley, Malaysia

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Many activities in construction and demolition projects are generally considered as complicated and unfriendly that may affect surrounding environment and public health. Construction, remodeling, repairing or demotion works of buildings and roads generate large amounts of hazardous and non-hazardous materials. This study highlights the major types of wastes and the specific causes of their generation. We also discuss the present ways of managing those materials. The paper concludes by providing recommendations on how to better manage the C&D wastes. As a case study, Klang valley in Malaysia has been considered. Major construction activities were taken place in Klang Valley and its surrounding areas include Federal Territory of Kuala Lumpur. In the present research project, a modest attempt has been made to highlight a number of issues in waste management, particularly C&D waste management in the Klang valley of Malaysia.

P-287 Homology Modelling and Structural Analysis of Phytases

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Homology modeling is a powerful tool in predicting the three dimensional (3D) structure of a protein using a solved structure within the same family as template. Compared to other methods such as X-ray crystallography and NMR, homology modelling has the advantage of being a fast yet reliable technique in solving proteins' 3D structures, starting from their amino acid sequences. In this study, homology modelling was used to obtain the 3D structure of two different phytases using only their amino acid sequence; phyFAUIA1_H which belongs to the histidine acid phosphatases, and *Bacillus subtilis* SAUIA243 which belongs to the β -propeller phytases. *E. coli* phytase (PDB code 1dkm) was used as a template for phyFAUIA1_H model with 99.512% sequence identity. On the other hand, *Bacillus amyloliquefaciens* (PDB code 2poo) was used as a template for *B. subtilis* SAUIA243 model with 71.268% sequence identity. The BLAST (Basic Local Alignment Search Tool) algorithm was used to find the highest scoring ungapped local alignment between the query and database sequences. This particular score uses the BLOSUM substitution matrix, which is a block substitution matrix that uses segments of blocks corresponding to the most highly conserved regions of proteins. Both models were evaluated and found to be quite satisfactory without being manually modified. Phytases are important constituents in Animal feed industry. These models can now be used to design new phytases, with improve properties such as enhanced enzyme activity, pH tolerance, and thermostability.

P-288 Study on the Effectiveness of Coir Fibre Geo-Textile for Erosion Control Under the Dynamic Approach

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This paper presents the effectiveness of coir geotextiles for erosion control. In the context of sustainable slope management, coir is a cheap and locally available material that can be used to strengthen traditional earthen bunds or protect the banks of river from erosion. Particularly in developing countries, where coir is abundantly available and textiles can be produced by small-scale industry, this is an attractive alternative for conventional methods.

P-289 Recycling of Construction and Demolition Waste

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There are several methods in managing C&D waste including reduce, reuse, recycle and dispose at landfill. Among these methods, recycling is seen as a better option after reduce and reuse due the advantages that this method offers in terms of economy and environment. The aim of this research is to provide general overview on the practices of recycling of C&D waste on construction site. Apart from that, the study also highlighted important issue pertaining to C&D waste including the limitation to the practices and strategies for recycling of C&D waste. The research is conducted through questionnaire survey with respondents ranges from Grade 5, Grade 6 and Grade 7 construction company around Klang Valley. Consequently, this study is believed to develop and increase the awareness of construction industry key players in recycling of C&D waste.

P-290 Investigate the influential factors that impart efficient responses to the structural reliability and sustainability

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Many factorial elements have been overstressed on the professional activities that related to homogeneous construction concept. In this context, professional activities refer to structural reliability. Reliability has to do with the quality of measurement. We hear the term used a lot in research contexts, but what does it really mean? In research, the term "reliable" means dependable in a general sense, but that's not a precise enough definition. What does it mean to have a dependable measure or observation in a structural context? In addition to design activities a professional must be aware of and conversant in site, structural, mechanical and electrical design. Also must be aware of the legal constrictions such as codes, laws, and regulations and of the many industry standards that influence design and construction. Besides, professional rigorously need to know the measurement policy and the conversion according to the present practice of the community. But professional always face problems due to unavailability of suitable and comprehensive factorial references during design period. Now another question arises as what are the essential factors that professional need to consider in their activities? Factors are influenced by the quality and adaptability of the reliability and sustainability. The influences of factors are very important in process design, planning and implementation methodology. The aim of this study is to find the essential influential factors that related with structural reliability and sustainability.

P-291 Computer Aided Design of Potential Inhibitors for Gaucher Disease

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Acid β -glucosidase (GlcCerase) is a lysosomal enzyme, which is important in biodegradation of blood cells in human body. Mutation of GlcCerase will lead to Gaucher disease; the most common lysosomal storage disease. The current available treatments for Gaucher disease are enzyme replacement therapy and substrate reduction therapy; and both are costly. With the help of computer molecular modeling, new drug candidate for Gaucher disease treatment can be designed. In this research, we have successfully designed a lead-candidate to act as a potential inhibitor, as a part of substrate reduction therapy by adapting novel in silico method. Lamarckian genetic algorithm is used to locate the potential inhibitor sites in the acid β -glucosidase and strength of the binding is evaluated using potential mean force (PMF) scores. Good correlation between experimental inhibition constant (K_i) and computational binding score is established with the correlation coefficient of 0.782. This correlation used as to predict the unknown K_i value of the new ligand. N-decyl deoxynojirimycin gave a promising result to be considered as a candidate inhibitor

for Gaucher disease. From the docking score, it is shown to have stronger potential mean force potential of -791.52 kcal/mol and the K_i value projected to be 100 nM. This binding constant is much higher than the binding constants of the known β -glucosidase inhibitors. Hence the newly proposed inhibitor can be used as a better alternative in Gaucher disease treatment.

P-293 Configuring the Nature of Colonial Hospital Architecture In Peninsular Malaysia - Serie 1 - Special studies on the Tuberculosis Ward and Hospital Administration building typologies of Kota Bharu Hospital.

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Colonial hospital architecture in Malaysia is one of the forgotten built heritages in the country. The embarkation of this multifaceted research in haste is due to the Ministry of Health Malaysia's upgrading development of the country's healthcare facilities asset throughout the country under the 9th Malaysia plan that requires demolition and reuse of existing hospitals for new healthcare services and infrastructure. Colonial era hospitals are known intuitively for its tropical and "user friendly" architecture that addresses the local climatic requirements and local culture for ease in visitation. The use of local timber and other building materials were made to last in comparison to today's quality of 50 year lifespan. Although they lack the latest technology in providing convenience of today's definition of "comfort" and "healing environment", their simplicity in addressing healthcare needs of the local populace integrated with nature indeed demand thorough research before all is lost.

The research aims to collect available physical data and historical record of the facilities in digital and manual form so as to be able to extrapolate for further research on its effectiveness in previous and current environment in terms of the following issues:

- (i) micro medical planning and healthcare requirement then and now,
- (ii) building configuration and comparison to other colonial hospital building at home and abroad,
- (iii) spatial provisions and standards
- (iv) building material
- (v) construction and material detailing
- (vi) environmental consideration
- (vii) user considerations – culture, gender, ethnic group.

The methodology use for this research includes literature review, measured drawing, interview, laboratory studies (environmental) and computer modeling; in collaboration with the industry players (MoH, JKR and consultants)

Significance of the research are (i) direct contribution to the green building agenda of the government not only for healthcare building; (ii) historical data in healthcare architecture (iii) infection control strategies then and (iv) cultural significance to local populace

P-296 The Influence of Privacy Regulation on Cultural Norms of the Malay Families Living in Terrace Housing

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This paper reports on behavioural norms and territoriality as part of behavioural and environmental mechanisms used to regulate privacy among Malay families living in terrace housing. In-depth interview was employed involving 11 case studies of Malay families living in three-bedroom two-storey terrace housings in the urban areas. Findings indicate that while most of the behavioural norms employed to regulate privacy are consistent with Malay cultural norms and religious belief, there are a few which are not consistent due to the constraint of terrace housing. Defined territory and the need to respect the neighbours' privacy are found to indirectly affect community intimacy among Malay families living in terrace housings.

P-297 The Design of Private Garden in Intermediate Double-Storey Terrace Houses

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Garden is a space that provides a place for relaxation and enjoyment of nature to the users. A garden may be setup in any suitable space despite the size of the site – be it small or large. In relation to this research, the term ‘private garden’ is used is to refer to the designed open space within the private residential area. This research is primarily focusing on the intermediate double-storey terrace houses in urban area of Kuala Lumpur which have small outdoor space for gardening. Due to space limitation, some of the residents might turn to be creative in designing their private garden but some might find it difficult. Therefore, this research is crucial to investigate how the space limitation may influence the creativity of the residents of particular housing area in designing their private garden by adopting observation and interview as the methods for data collection.

P-298 The influence of Malay crafts in creating the image of the urban street

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Urban street is one of the components in influencing image of the city. The current trend of urban streetscape elements in Malaysia is control by the overflow of external influences which are originated from western countries. More research is conducted in urban design aspect as the weakening of image and character of the city has loosened the identity of Malaysian society. This situation should be given more attention since contemporary and modern elements which characterized our city is not appropriate to the local cultural, in fact make our city less significant with typical worldwide character. Therefore, Malay crafts adaptation in urban streetscape elements is seen as one of the ways to form our own urban image and distinguish urban context in Malaysia from other countries.

P-303 Redesigning Mosque Sundials-(Conservation of Sundials)

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This project is aimed at rehabilitating an important traditional cultural artifact, the sundials of Serkam Pantai Mosque in Malacca. The sundial has traditionally been used before the advent of mechanical clocks and watches to tell time of day and also to indicate the prayer times at the location by using shadow cast from the sun. It is an old heritage but not many are found in Malaysia. Therefore, it is aim to revive the fading of the world Islamic heritage of sundials in Malaysia.

This project shall attempt to study the background of the device, analyze present design of the sundial, and identify problems and issues, to propose design to revise the existing sundial, to enhance the functions of the sundial by proposing alternative designs.

atmospheric (haze) attenuation and scintillation attenuation.

P-314 Solid Waste Generation Characteristics in Some Selected Local Authorities of Malaysia

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The large and increasing amounts of municipal waste (MW) generated each year in several industrialized countries have raised concerns about the economical viability and environmental acceptability of the current generation activities. The planning of an optimal regional waste management strategy requires a reliable tool for predicting the amount and the corresponding composition of MW that is likely to be produced. Further, to carry out integrated solid waste management, direct and indirect participation of local government's authority is essential. This paper focuses on the existing waste management characteristics of a selected local authorities in Malaysia, evaluate the situation and forecast for the future. As a case study, we have considered three local authorities in Selangor State, namely Selayang Municipal Council, Klang Municipal Council and Subang Jaya Municipal Council. This research discusses the concerns about environmental effects associated with solid waste as well as the escalating costs that solid waste consumes from the budget of a local authority.

P-322 Study of the Effects of EDM Parameters on Material Removal Rate, Electrode Wear Rate and Surface Roughness in the EDM of S-Star

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Die-Sinking EDM is one of the most versatile non-traditional methods of machining for producing parts of complex and intricate geometry as well as being able to machine hard and super-tough material. Nevertheless, EDM has a lot of independent variables to be controlled in order to get optimized machining conditions. This project presents a study on the effects of three electrodes (i.e. Copper, Chromium and Brass) on machining characteristics material removal rate (MRR), electrode wear rate (EWR) and surface roughness (SR) during the EDM of S-STAR. Results obtained from the investigation are reasonable compared to related work done by other researchers.

P-324 Stability Characteristics of Water-Carbon Nanotube (CNT) Dispersion using Carboxymethyl Cellulose (CMC) as Surfactant

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The study of nanofluids lately gained importance in scientific community, due to their enhanced thermal conductivity and heat transfer coefficient, which is expected to significantly improve the performance of heat transfer equipments. Nanofluids are dispersion of nanosized particles in a base fluid such as water, ethylene glycol and oil. Especially, carbon-nanotube(CNT)-water dispersion find potential applications as heat transfer fluid in automobile and aircraft engines, and also in nuclear reactors which involve high heat throughput, and therefore need for efficient heat removal. The main focus of current research on nanofluids has been to obtain a stable dispersion of CNT in water since the CNT has tendency to agglomerate and settle down. Recent researchers have tried various techniques to obtain stable dispersion such as functionalization, sonication and use of surfactants. Current literature show that different surfactant such as gum arabic, sodium dodecyl sulphate (SDS), Triton-X etc. have been used to obtain stable aqueous CNT dispersion. In the present study, we have used carboxy methyl cellulose (CMC) as the dispersion agent together with sonication to obtain stable aqueous CNT dispersion. Aqueous CNT suspension with different CNT and CMC concentrations were sonicated for varying

durations and analyzed for sedimentation time using UV-vis spectrophotometer. The most stable CNT-water suspension was obtained for 0.01 wt% CNT and 100 ppm CMC concentrations with 4 hours of sonication time. Effect of CNT and CMC concentrations and sonication times on the stability and sediment time of single walled and multi-walled CNTs are being investigated.

P-327 Differential Resistive Transducer for Power Harvesting for Implanted Devices

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This work is aimed at powering implanted electronic device with sensors meant for collection of biomedical signals. This is done through inductive coupling technique employed not only to transfer power (mW level) but also to make data available to the external world for monitoring purposes. It is primarily an analysis associated with transferring digital signal in order to power implanted electronics for signal acquisition. Hence, this work is aimed to provide both a power as well a signal link between the external world and the implanted electronic devices.

Simulation done using as an initial stage, showing inductive coupling, the primary (transmitter coil) of which is energized by a digital signal in order to reproduce it across the gap across the secondary coil (receiver coil) in the case of a 20 kHz AC signal. An air gap between transmitter coil and receiver coil is simulated through the use of resistor, and the AC voltage received is then rectified into a DC voltage for the implanted electronic circuit.

The overall efficiency of the system is investigated for varying gaps of the space between the transmitter and receiver coils. The focus in this work will be on analyzing the operating frequency, self resonance frequency, total power received on receiving coil. The transmitter-receiver system is investigated for frequency range to be in the Radio Frequency IDentification (RFID).

The current literature have got various approaches, for example, Martinez et al. [1] develop a passive sensor to measure the intraocular pressure (IOP) of eye balls using implantable passive sensors. Sarpheskar et al. in [2] demonstrated work on implanted ultra low power circuits inside human brain for paralysis prosthetics and strokes useful for diagnostic reasons. Gaddam in [3] centered his research on wireless power transfer from external circuit to implanted circuit and achieving the best efficiency for power transfer when the coils are kept at an optimum separation.

In conclusion we will show the feasibility of microwatt transfer power without having to face the trouble of wiring accessibility from external power supply, making it a contactless inductive system utilizing power circuit with high link efficiency. Future work will involves implementing data link transmission from implanted sensor back to the receiver for data archiving and monitoring purpose.

P-335 Linearization Circuit for Transducers for Nonlinear Responses

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Thermistors are nonlinear transducers, and have found wide application in temperature measurement and control in different fields, but they exhibit a strong nonlinearity of the characteristic, which is of an exponential type. This project investigates the possibility of creating a thermistor-based temperature sensor with frequency and analog outputs and a linearized characteristic on the basis of a 555 timer.

It is shown through simulations that the linearization of the characteristic can be achieved without connecting additional elements to the circuit but only through a choice of the parameters of the thermistor and of the frequency-determining circuit elements. The investigations conducted show a good match between the theoretically and experimentally obtained characteristics

P-336 Climatic Data Acquisition System for Satellite Communications

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Several climatic dynamic phenomena such as rain and turbulence can seriously affect the quality of satellite communications. This project presents the design and implementation of a data acquisition system. The system provides accurate vital information to facilitate proper analysis of anticipated problems so that solutions can be incorporated when designing earth-satellite systems.

Signals from the beacon of MEASAT3 located at 91.5°E orbit is received by a 2.4 meter Parabolic dish. The signal is measured in real-time by a Spectrum Analyzer using a General Purpose Interface Bus (GPIB) cable which provides high speed transmission. The system is equipped with a synchronized 0.2mm tipping bucket rain gauge. For data logging and analysis a system was developed using LabView version 8.6. The logging process involves data recording every 0.1 second.

P-338 Development of an Arabic Text-to-Speech System

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Research on Text-to-speech technology has received the interest of professional researchers in many languages which is a consequence of wide range of applications where Text-To-Speech is implemented. However, Arabic language, spoken by millions of people as an official language in 24 different countries, gained less attention compared with other languages despite the fact that it has a religious value for more than 1.6 billion Muslim worldwide. These facts exhibit the need for a high quality, small size, and completely free Arabic TTS with the ability of future improvements. The vowelized written text of Arabic language carries the pronunciation rules with limited exceptions, so rule-based system with an exception dictionary for words that fail with those letter-to-phoneme rules may be a much more reasonable approach. This project propose a rule-based text- to- speech synthesis system for Standard Arabic, named SAraTTS based on open-source software with acceptable naturalness. The simulation results of the proposed system shows good quality in handling word, phrase, and sentence level. Further improvements need to be done for stressed syllable position and intonation.

P-341 A Secure Key Distribution Protocol Based on Hash Functions and a Quantum-authenticated Channel Using 6DP (KDP-6DP)

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Security is the most tedious problem in highly sensitive communications. Quantum security is the key issue in solving the problem. A key distribution protocol based on the use of hash functions is proposed. The essential part of the protocol depends on sending a string of random characters from sender to receiver. Then, a selected hash or a cascade of two hash functions and a long-term shared secret are used to construct the key. Consequently, the session key is generated on-site by independently applying a hash function on the random string at the sender and receiver sides. This protocol requires a reliable method of authentication. Therefore, it is further proposed to use an out-of-band authentication methodology based on the deterministic six-state quantum authentication protocol that is referred to as 6DP.

P-342

Design of Digital Electricity Meter

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Common Electricity meters, which are currently used in houses, shops and some factories are bulky expensive and inaccurate. Such features are incompatible with modern technological trends of miniaturization accuracy and neat devices. This project presents the design and the model of a low cost digital energy meter to overcome the short comings of the present meters. It is anticipated that a new neat design based on integrated circuit technology employing digital measurement techniques will have a great impact on electricity meters locally and worldwide. With a data storage capability and some form of processing, it can provide the consumers with vital information on the trend of their energy consumption. Such information will assist them in rationalizing their consumption. Intelligent energy meters may be seen as most suitable and efficient way to facilitate easy solutions to the problem of rational consumption.

P-343

Security Framework for RFID Dynamic Traffic Management

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Automated traffic control in roaring metropolises can be one of the major issues in our time. The current static security framework is prone to violation of data privacy and information security. This project proposes a feasible security framework for a dynamic traffic control management system. Secure RFID technology with appropriate algorithms and database applied to a Dynamic Traffic Management is able to provide an efficient time management scheme. In previous approach, it is generally assumed that all RFID tags use a default static RFID security. Therefore, the RFID community bears the responsibility to develop techniques and methods of RFID Security to overcome the problems posed by the open Internet technologies, which are anticipated to create a revolution in traffic control management especially in roaring metropolises.

P-344

Unmanned Aerial Vehicle Platform

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Unmanned Aerial Vehicles are in great demand nowadays, because they can perform functions almost impossible by other means. This project employs a low cost platform for aerial surveillance and monitoring. This system can be operated easily to give live TV images in real time. It comprises a remote control system of a camera mounted on a pan-tilt mechanism that provides 2-degrees of freedom, which can be enhanced by a zoom control. The payload restrictions of only 2 kg are met by suitable design and proper selection of light weight components. A patch antenna is used in the video transmitter-receiver system. Live TV tracking, which has been developed earlier, can also be incorporated to auto-track maneuvering ground targets from a remote location.

P-346

A Capacitive Micromachined Ultrasonic Transducer

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A Capacitive Micro-machined Ultrasonic Transducer (cMUT) is presented. It is a new type of transducer that can be used to transmit and receive ultrasonic signals in medical scanners and a variety of other applications. The behavior of cMUT is investigated based on a proposed model of an equivalent circuit by which the characteristics are predicted. The simulation is carried out using microwave office simulator. The various elements of equivalent circuit and the signals produced by the cMUT are discussed and the results are shown in the following sections.

P-349

Thermal Noise Generator and Injector Circuit for Data Encryption

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We know that particles in a gas randomly vibrate with an energy that is proportional to their temperature, so do free electrons in a resistive element.

This project is about designing a circuit capable of noise generation. The noise, then using another circuit, generated is then injected into a normal clock signal for displaying an element of noise infection.

The design for the noise generator is derived from what is in recent IEEE publications, while the measurement procedure is adapted and based on a method given another IEEE publication.

The sampled data on noise is then used to measure capacitance, the parameter of the noise generator circuit..

P-355

Guardian - Prayer Aids for Visually Impaired, Make Your Pray Easier....

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Guardian device is prayer aid that designed for visually impaired or blind ppl, to perform prayer or other duties. It is because, nowadays there are many ppl that suffer from minor to various serious vision disability which make difficulties for those who are independence living. Most common vision problem is praying. Therefore, this device is designed to solve those problems. There are three function; Azan alert, Qiblat compass and electronic beards. The systems used are GPS which is well known about navigator and world clock. Moreover, digital counter system eases you to count number of zikrullah to be more precise and with no worry

P-356

Position-based QoS Multicast Routing Protocol

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Recently, the necessity of applications where many users have to interact in a close manner over mobile Ad-Hoc networks gains high popularity. Multicast communication is essential in this type of applications to reduce the overhead of group communication. For group-oriented multimedia applications Quality of Service (QoS) provision is a basic requirement, which makes an efficient QoS multicast routing protocol a very important issue. This paper proposes a location-based QoS multicast routing protocol via cooperation between Network and MAC layers. Along with this protocol, a location and

group membership management scheme has been proposed. Unlike some of multicast routing protocols, the proposed approach limits maintaining the network topology to certain nodes to reduce control overhead and reduce bandwidth consumption. Our proposed protocol is scalable for large area networks with large multicast members regardless of the network density. Also, it achieves a significant reduction in processing overhead compared to flat QoS algorithms.

P-357 Development of a Robust and Scalable Routing Protocol for Wireless Mesh Networks

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Wireless mesh networks (WMNs) have emerged as a key technology for next-generation wireless networking. Although WMNs can be built up based on existing technologies, field trials and experiments with existing WMNs prove that the performance of WMNs is still far below expectations. Therefore, several challenging research issues need to be resolved. One of the most effective factors to improve the performance of WMNs is the routing protocol used. There are many performance issues need to be improved such as robustness, QoS, security, power consumption, and scalability which is the most critical issue in WMNs. Current researches are trying to develop new protocols or enhance some of the Ad-hoc protocol to be adapted to WMNs. This research aims to design and implement a routing protocol that improves the scalability of the WMNs. To achieve this, a Directional Hierarchical AODV (DH-AODV) routing protocol is proposed. The DH-AODV is taking advantage of the existing fields in the AODV's control packets in order to reduce the load on the network's bandwidth and to quickly detect route breakage. The proposed protocol is designed, implemented and evaluated using Qualnet Simulator. The Ad-hoc on Demand Distance Vector (AODV) is selected as a bench mark. Simulation results indicate that this enhanced routing protocol can 47% reduce the end-to-end delay of data packets, improve the throughput by 11.2%, and decrease the packet loss rate 20% less than the standard AODV.

P-362 Fuzzy Logic Based Algorithm for Disk Scheduling Policy

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Hard disk is an important component in computer system as data storage device. It is being used to store large amount of information in all modern computers. In general, hard disk is slow in their speed improvement. Thus, long service delay for I/O bound processes may occur. Disk scheduling is an important technique for providing a quick response time in query processing. Operating system, being the interface between the user and the hardware, has the responsibility to use hardware efficiently. One crucial part of this function is to decrease the response time and consequently reduce seek time through disk scheduling. Disk scheduling is used when processes running on the machine have multiple requests for data from the disks and a particular order is needed to access them most effectively. The major operation in the disk scheduling head-positioning of a hard disk is a seeking to the desired cylinder number. Current algorithms have no knowledge about the additional information provided by operating system and not been used for improvement of the seek time. This research uses fuzzy model knowledge based for improving the disk scheduling. MATLAB software is used for design purpose and DiskSim simulation environment version 4.0 is used for the simulation. This is implementing on the Ubuntu/Linux machine for the basic POSIX interface to get it run successfully. Incorporating knowledge-based scheduling policy using fuzzy logic improves the average response time, response time standard deviation, average seek distance and average seek time by 10% to 20%. Fairness of this fuzzy based disk scheduling policy also justified.

P-363 Investigation on Tribological Properties of Strontium Modified Piston Alloy Under Lubricated Condition

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Research in tribological areas such as wear and friction has technological and economical significance since they change the shape of the work piece, tool and die interfaces. Thus, they affect the process, size and quality of the parts produced. The magnitude of tribological problem is evident in the countless parts and components that continually have to be repaired or replaced. In the present study, the tribological properties of Al-Si (LM-6 type) alloy have been carried out. The results show that in general, the increase in wear with an increase in input weight, rotational speed and sliding distance up to certain level of the alloy. Then the wear declined for as-cast and heat-treated specimens under both modified and unmodified conditions. The volume of material worn was inversely proportional to the hardness of the alloy and thus, the heat treated alloy responded better than the normal cast alloy. During sliding, measurable debris transfer could be occurred, resulting weight gain of the sliding specimen. However, due to modification, wear of the alloy is minimized, and when it is heat treated, the material loss becomes zero.

p-370 iSpeechNews: a Real Time Speech News Service for Ubiquitous Computing Environment

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ir-SpeechNews is a protocol to deliver a real time news service in form of speech news and lips graphics animation based on user location for Ubiquitous Computing Environment. The protocol requires 5 (five) important hybrid stacks, i.e. 1. user identity, 2. user location, 3. a real time news feeder 4. speech and dictations systems and 5. lips synchronization in responding to user activity.

iSpeechNews is a prototype which is developed using java language based on ir-SpeechNews protocol. The news feeder uses RSS feeder technique, the speech uses speech recognition and dictation technique, the user location uses dynamic 1-k-NN technique by measuring the signal strength of IEEE 802.11 and Bluetooth scanner dynamically, and lips synchronization uses phonetic synchronization technique to synchronize with a computer graphics animation.

User identity is captured from personal device that carried by the user, such as smart phone or PDA. The user identity is the basis of service delivery, without it, there will be no real time news delivery service to the user.

The aim of this protocol is to provide easy interactions between a user and the mobile computing environment in delivering specific form of news such as business and business competitor news, specific personal issue news, etc.

iSpeechNews is a life scenario on how computing environment can deliver intelligent responses, directly, to the user, based on user location, in the form of graphics animation and speech news.

p-371 Screening And Optimization of Process Conditions for Extraction of Xanthine Oxidase Inhibitor from Potential Local Medicinal Plant

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Xanthine oxidase (XO) is an enzyme involved in the formation of uric acid in the body by catalyzing the oxidation of hypoxanthine to xanthine, and then, xanthine to uric acid. Excess serum accumulated with uric acid can lead to a type of arthritis known as gout. Hence, introducing natural remedy as new source of gout medication is highly granted. Twenty organs from eight local medicinal plants were

examined for the inhibition of XO under four process conditions, namely, reaction temperature, reaction time, agitation speed, and ratio of the sample to the solvent. Distilled water and 70% methanol were employed in the extraction process. The degree of inhibition was determined by measuring the absorbance spectrophotometrically at 290 nm associated with uric acid formation. The extracted sample with its solvent system that has excellent XO inhibitory activity at 100 µg/ml in the assay mixture were selected for the optimization of the process conditions by using Central Composite Design (CCD) by Design Expert v.6.0.8. Methanolic extract of *Morinda elliptica* leaves was found to have the highest XO inhibitory activity at 100µg/ml with 89.86%. The second highest was methanolic extract of *Mentha spicata* leaves with 85.14% followed by distilled water extract of *Carica papaya* (unripe papaya) peels with 79.73%. The analysis revealed that the maximum %XOI activity from methanolic extract of *Morinda elliptica* leaves can be reached with these conditions: 32°C, 28 hr, 141 rpm and 1g:16ml. The optimized conditions were verified and the maximum %XOI obtained was 98.20%.

p-374 **An Enhancement of Fault-Tolerant Routing Protocol for
Wireless Sensor Network**

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As more and more real Wireless Sensor Network's (WSN) applications have been tested and deployed over the last decade, the research community of WSN realizes that several issues need to be revisited from practical angles, such as reliability and availability. Furthermore, fault-tolerance is one of the main issues in WSNs since it becomes critical in real deployed environments where network stability and reduced inaccessibility times are important. Basically, wireless sensor networks suffer from resource limitations, high failure rates and faults caused by the defective nature of wireless communication and the wireless sensor itself. This can lead to situations, where nodes are often interrupted during data transmission and blind spots occur in the network by isolating some of the devices. In this paper, we address the reliability issue by designing an enhanced fault-tolerant mechanism for Ad hoc On-Demand Distance Vector (AODV) routing protocol used in WSN called the ENhancement of FAUlt-Tolerant ADOV (ENFAT-AODV) routing protocol. We design and implement a backup route scheme by creating a backup path for every node in the network. When a node gets failure to deliver the data packet through the main route, it immediately employs the backup route to become a new main path for the next data packet delivery to reduce a number of data packets dropped and to maintain the continuity of data packet transmission in presence of some faults (node or link failures). Furthermore, with high failure rate, this proposed routing protocol improves the throughput and the average End-to-End delay and decrease the control packet load in the network. Consequently, the reliability, availability and maintainability of the network are achieved. The simulation shows that proposed routing scheme is better than the AODV routing.

p-375 **The ICT social inclusion among orang asli community
in Gombak area**

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As Malaysia is moving towards k-economy and developed nation by 2020, there is a need for all its citizens to participate in this socio-economic development. Orang asli often have been cited as introverts and lag behind compared to other races in Malaysia. Literatures indicate a few researches have been studied involving orang asli but a dearth is found focusing on ICT education and internet usage among orang asli schoolchildren. This study aims to fill this gap by investigating the computer and internet usage among orang asli schoolchildren in three schools in Gombak area which is close to International Islamic University Malaysia (IIUM). Early analysis of the survey findings indicate most of the respondents are familiar with computer and internet but the level of usage varies. As part of long-term project, the research team plans to install thin client system for use by community of orang asli children who live

around Batu 12 orang asli community area administered by JHEOA.

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Enhancing QoS protection in MPLS networks

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MPLS recovery mechanisms are increasing in popularity because they can guarantee fast restoration and high QoS assurance. In fact, QoS is important for interactive voice and video application and for specific clients. However, link failure always incurs delay and packet losses of the traffic passing through the failed link. Therefore, network has to restore the traffic by switching the affected traffic to alternative path. In this paper, QoS objectives are concerned in this study to redirect the protected traffic with acceptable levels of quality before failure take place. The proposed scheme setup more than one alternative path in advance in order to introduce fast rerouting and the selecting criteria is based on the required bandwidth and end-to-end delay. In this work, we proposed the traffic splitter to split the protected traffic after failure, in case the available bandwidth in the alternative path is not enough to deliver the traffic. Finally, alternative path selection is updated based on current network resource availability. To verify the efficiency of the proposed algorithm, the MPLS network simulator MNS-2 has been used as the test platform.

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A Novel Integrated Web-Based Medical and Emergency Model

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The current situation of medical, healthcare and emergency related system in Malaysia shows that it is mostly separated and not fully computerized. The fully computerizing and combining of medical healthcare and emergency systems will lead to produce a Novel Integrated Medical and Emergency system. This integrated system is being divided into three main parts which is the web based medical and emergency system, intelligent agent, and mobility. The system contains a database that will communicate and cooperated with intelligent agent and mobility. The main drawbacks for the current medical, healthcare, and emergency systems in Malaysia include: Difficulty in searching and reviewing up to date records for patient, doctor, hospital, drug, etc since many of such records are still kept in filing cabinet. The current electronic medical record EMR are not used in all medical centers, stand alone, and not standardized which leads to difficult communicate, harder to manage and exchange the patient data between various medical units. This research project focus mainly on developing an interactive web based Database to serve this integrated model. The main objectives are: To build interactive distributed information system on medical and emergency where all hospitals, health care and emergency centers can view the patient record simultaneously, exchanging, managing and collaborate on sharing resources between medical units. To eliminate the monotonous and time consuming task of filling out numerous medical forms while visiting new physician or new hospital. A prototype for this work is build and sample of the results are shown in this poster.

PP-2 Production of an Online Arabic Vocabulary Games Learning Prototype

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This online Arabic vocabulary games learning prototype is a research-based product from the design and development methods, approaches and phases for elementary learners at the Centre for Foundation Studies (CFS), International Islamic University Malaysia (IIUM). The effort to produce this learning prototype is an attempt to integrate game-based learning in an online environment, to provide new learning experience for learners who have been through a traditional Arabic teaching and learning methods by using ordinary text book. This games prototype aims at increasing the learner's motivation in learning Arabic language through the technology of online games which is the interest of major teenagers nowadays. The exploration of this online game-based learning prototype potential for use in teaching and learning Arabic language in real setting by learners and teachers is also among the steps taken to evaluate the prototype theoretically and practically. The link for website is : <http://www.arabic-games-iium.net>

PP-3 Simulation of a Virtual Transducer Using Potentiometer

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This work attempts to design and implement in hardware a transducer with a nonlinear response using potentiometer. Potentiometer is regarded as a linear transducer, while a the response of a nonlinear transducer can be treated as a concatenation of linear segments made out of the response curve of an actual nonlinear transducer at the points of inflections being exhibited by the nonlinear curve. Each straight line segment is characterized by its slope and a constant, called the y-intercept, which is ultimately realized by a corresponding electronic circuit. The complete circuit diagram is made of three stages: (i) the input stage for range selection, (ii) a digital logic to make appropriate selection, (iii) a conditioning circuit for realizing a given straight-line segment identified by its relevant slope and reference voltage. The simulation of the circuit is carried using MULTISIM, and the designed circuit is afterward tested to verify that variations of the input voltage give us an output voltage very close to the response pattern envisaged in the analytical stage of the design. The utility of this work lies in its applications in emulating purpose built transducers that could be used to nicely emulate a transducer in a real world system that is to be controlled by a programmable digital system.

PP-10 A Breathing Microbattery: Zn/MCM-41/O₂ System

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A high energy density, Zn/MCM-41/O₂ microbattery of 1.5 V, measured 1 cm² area and 100 μm thick, was able to produce current as high as 27 mA. The electrochemical system is popularly dubbed as breathing battery since it utilizes oxygen from ambient air, which is free, unlimited, and does not requires storage. A novel nanoporous inorganic MCM-41 material which consists of hexagonally-ordered pore structure has been introduced as an ionic exchange membrane-cum-electrolyte matrix. MCM-41 material is characterized by its large surface area and pore volume, narrow pore size distribution, tuneable pore size, adjustable hydrophobicity and very good thermal stability. Zn/MCM-41/O₂ microsystem showed promise for near future use in RFID applications and, cosmetic and drug delivery patches.

PP-11 Novel Bioadsorbent for Decolorization of Textile Effluent

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Cost effectiveness, availability and adsorptive properties are the main criteria for choosing the biosorbent to remove organic compounds from wastewater. Considering these criteria, an invention of active biosorbent was prepared by immobilizing the commercial activated carbon with the fungal biomass through the fermentation process. The potential strains were selected based on immobilization capability through the screening test of different types of fungi. It was observed that the strains *Aspergillus niger* and *Penicillium* were able to immobilize 100% activated carbon with its biomass. The immobilized activated carbons on biomass (IACBs) as an active biosorbent were characterized by elemental analysis, surface techniques SEM and FT-IR. The functional groups of the biosorbent were observed by Fourier transformer infrared spectroscopy (FT-IR). The surface morphology of the biosorbent was observed using scanning electron microscopy (SEM). From the characterization study it was observed that significant changes were occurred in surface and structure. The study on the adsorption of dyes showed significant removal of color in aqueous solution compared to the pure activated carbon. The study shows that the new IACB material might be suitable for the removal of heavy metals or toxic dyes from the industrial wastewater.

PP-14 High Yield Cellulosic Citric Acid

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Every year more than 100,000,000 polyethylene terephthalate (PET) bottles are used in Malaysia, Singapore and Brunei. Out of this gigantic figure, 85,000,000 PET bottles end up as garbage and caused the landfills to be filled by the PET bottle toxic wastes that leach into the soil. This may pollute and endangers our environment specifically our drinking water.

This project focuses on the potential of kenaf fibre (KF) as a reinforcing material for poly(lactic acid) (PLA) biopolymer. PLA is a food grade plastic and kenaf fibre is a kind of natural fibre widely available in Malaysia. The fabrication of kenaf bast fibre reinforced poly(lactic acid) biocomposite is expected to be applied as food and beverages containers with the properties that are comparable to man-made based composite. The kenaf fibre content in the PLA was 5%, 10%, 15% and 20% by weight. PLA-KF biocomposite was extruded using Haake twin screw extruder then injection molded for further mechanical characterisation. The kenaf-fibre aspect ratio is 34. Single fibre tests shown that tensile strength and tensile modulus for KF are 119.6 MPa and 6206.1 MPa, respectively. Processing parameters have been determined by using 10 wt% KF at temperature of 180°C and screw rotation of 150 rpm. The theoretical tensile strength and tensile modulus was also predicted by using parallel rule of mixture and the value then compared with the value obtained via experimental.

PP-15 UIAzymes: Sludge Cellulase

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Sewage treatment plant (STP) sludge might be a potentially interesting substrate for enzyme production as sludge contains high organic matters and sufficient nutrients for fungal growth in the bioconversion process. Thus, the invention of cellulases production by the fungi *Trichoderma reesei* was carried out using STP sludge as a major substrate. Production of these enzymes offer wide potential applications especially in the pulp and paper industry, malting and brewing industries, bioethanol industry, animal feed and textile industries. The combined effects of macronutrients in media and process

and realistic human modeling. In order for the system to function, it requires robust method for detecting human form from a given input of video streams. In this paper, we will present a human detection and tracking technique suitable for video surveillance which requires fast computations in addition of accurate results. The techniques we propose include adaptive background modeling for background subtraction, size-filter segmentation, head detection for group segmentation, shadow removal, as well as dynamic human tracking based on stochastic probabilities and histogram in both single and multi-cameras. In single camera tracking, we calculate the possibility of candidate in consecutive image frame belonging to a known human in previous frame based on geometric locations and motion information. In multi-camera tracking, we define certain human appearance model that describes human and match their physical properties obtained from earlier processing. In this paper we also propose several solutions for performance problem in terms of computational complexity within human detection.

PP-23 Hazardless Nanocomposite for Gas Barrier Potential

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Composites based on high density polyethylene (HDPE), ethylene propylene diene monomer (EPDM) and Organically Modified Montmorillonite (OMMT) clays were made by melt compounding followed by compression molding. Tensile testing, X-ray diffraction (XRD) and Transmission Electron Microscopy (TEM) were used to characterize the nanocomposites. The addition of clay, compatibilizer agent (Maleic Anhydride Polyethylene (MAPE)) and the exposure under Electron Beam Irradiation (EB) considerably improved the tensile properties of the composite system. Tensile Strength (MPa) and Tensile Modulus (MPa) were found to increase significantly with increasing clay content and decreasing as the clay content exceeds 4 wt% values. The largest improvement in composite mechanical properties occurred at clay loading levels of 4% (2-8 wt %) with EB Irradiation system followed by MAPE and unirradiated/untreated systems. Nearly 67% increase in tensile strength and 64% increase in tensile modulus were observed with EB irradiated system. The *d* spacings of the clay in nanocomposite were monitored using XRD and the extent of delamination was examined by TEM. The wide angle of XRD patterns showed the increased *d*-spacing of clay layers, indicating enhanced compatibility between HDPE and OMMT with the EB irradiated and addition of MAPE. TEM photomicrographs illustrated the intercalated and partially exfoliated structures of the nanocomposite with OMMT and MAPE system.

PP-36 VisUn-3D : Visualization of User Navigation Using 3D Maps in Virtual 3D Walk-Spaces for Mobile User

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VisUn-3D is a prototype for mobile user navigation using 3D model in a pervasive computing environment.

The contribution and the uniqueness of this work is that , we built a visualization of 3D campus maps inside 3D workspace at our campus environment to navigate several users at the same time by using their mobile device such as PDAs. The 3D rendering and GPS navigation are embedded into various wireless PDA or smart phone devices to allow the navigation of the users.

This approach could navigate more than 2 users in a 3D walk-space and at the same time navigate the users by showing their whereabouts in 3D projection mapped on the same picture. The map shows the location of the user in the scene to navigate to the location of another user to meet on the same image plane.

**PP-41 Immobilization of Cellulases Enzyme on Carbon Nanotubes (CNTs)
for Cellulosic Compounds Degradation**

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The fast growing palm oil industry in Malaysia generates, amongst other wastes, Empty Fruit Bunch (EFB) which consists of cellulosic materials. It is one of the major sources of Greenhouse Gases (GHG). However, the bioconversion of cellulosic materials in EFB, a renewable biomass, to valuable products will be the solution to the disposal problem and hence minimize the pollution. The bioconversion of cellulosic materials is carried out by using cellulase enzyme, which itself was extracted from sludge, immobilized on functionalized carbon nanotubes (CNTs) in the presence of coupling reagent. The process parameters such as reaction temperature, reaction time, pH, and amount of enzyme, CNTs dosage and EDC were optimized by using design expert software. The morphology and the structure of CNTs were characterized by Field Emission Scanning Electron Microscopy (FSEM) and Fourier Transform Infrared Absorption Spectroscopic (FTIR). Firstly, carbon nanotubes were functionalized by acidic treatment. Then, the cellulase enzyme is immobilized on the functionalized (CNTs) in a solution of N-hydroxysuccinimide (NHS) and 1-ethyl-3-(3-dimethylamino propyl)-carbodiimide hydrochloride (EDC). The amount of enzyme attached on (CNTs) will be measured through UV spectrometer to determine the cellulases catalytic activity after immobilization and compare it with the free enzyme. Finally, the immobilized enzyme will be tested in the degradation of cellulosic material of empty fruit bunch (EFB) from palm oil mill effluent.

**PP-53 Recent Finding on Premature Failure of Commercial
Electric Motor Bearings**

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Electric motors and generators use a wide variety of bearing types including deep groove ball bearings, angular contact ball bearings, cylindrical roller bearings, spherical roller bearings, CARB toroidal roller bearings and spherical roller thrust bearings. In small horizontal machines, the most common arrangement consists of two deep groove ball bearings. In larger or heavier loaded machines, roller bearings are typically used. In vertical machines deep groove ball bearings, angular contact ball bearings or spherical roller thrust bearings are typically used, depending on the loads, speeds, temperature and environment of the application.

Most of the causes of premature bearing failures can be readily remedied. It is most important to determine the cause of any bearing failure and carry out the prescribed correction before installing the new bearing. Doing so will minimize the possibility of a recurring failure and will work toward maximizing the probability of attaining normal bearing life.

The recent finding is that premature bearing failures can generally be traced back to improper installation or use, improper selection of a bearing for a specific application, or improper lubrication or improper lubricant.

PP-54 **Finogel – Halal Nanomaterials from Fish Collagen Extracts**

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Finogel is a gelatin extract from fish (perch) skin. It is 100% protein, nano coil-tubular structures, pure white coloration, high solubility and other functional properties. When reconstituted, it behaves like Newtonian fluid. It is categorized as Type A and B due to its molecular composition. It is in the form of dried powder.

Generally, gelatin, one of the most popular biopolymers, is widely used in food (confectionary, dairy products, bakery, low fat spreads, meat product beverages), pharmaceutical (hard capsule, soft capsules, coatings, plasma expanders), wound care (surgical/dental sponges, hydrocolloids dressings) cosmetic, and photographic (silver halide crystal-containing emulsion layer, coating layer, sub-coating layer, anti-halogen layers and non-curl layer) applications because of its unique functional and rheological properties. It can act as binder, bioactive carrier for drug delivery, amino acids supplements, encapsulating agent, wound healing, clarification, texturizer, etc.

Finogel is an improved product. It is quite distinct from all available fish gelatin due to the intrinsic qualities which make it a direct match with mammalian gelatin. In order to achieve improvement in production of Finogel, the production process was studied, modified and optimized. This led to the eradication of associated negative qualities of fish gelatin like fishy odour, low gel-strength, low melting point, turbidity and low yield. In fact, Finogel is quite very high in gel-strength. Gel-strength is a very important parameter of gelatin, measured in bloom and determines its market value. High bloom value commands high price and vice versa.

PP-62 **Electromagnetic Actuated CVT System for Vehicle**

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Electromagnetic Actuated Continuously Variable Transmission (EMA-CVT) system offers an opportunity to meet the challenge due to its improving automotive drivability and better fuel economy and dramatically reducing greenhouse gas emissions. The pushing and pulling of the sheaves of the pulleys are conducted in this study to maintain the desired transmission gear ratio (GR) of the passenger car in all types of the road by developing electromagnetic solenoids. The operation of the solenoid is performed by controlling the output voltage of the wheel speed sensor (WSS) and potentiometer for controlling the eddy current. The response of the electromagnetic actuator is so fast that it can accelerate the vehicle in the time of 0.75 to 1.4s with maintaining the desired torque to the driving wheels. The electromagnetic actuator (EMA) develops the electromagnetic force equivalent to the clamping forces of the pulleys 170-210 N with supplying current in the range of 11-14 amp.

PP-64 **Affordable Unmanned Aerial Vehicle Aircraft for Surveillance**

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Unmanned aerial vehicle (UAV) has been used in defense, traffic monitoring, down to agricultural sector. However, the UAV is usually very expensive and not accessible by public. In this work, we develop a UAV, designed to perform surveillance job at a lower cost to make it affordable for personal use as well as for research purposes. The UAV is able to record video of ambient conditions using wireless camera and locate itself using GPS module to enable real-time video streaming and flight path tracking on 'Google Map'. The UAV possesses two different flight modes namely manually-controlled and auto-pilot modes. By means of RC Joystick, it can be manually maneuvered and with auto-pilot mode, it will autonomously navigate its way to the designated coordinate based on the GPS unit. We use

PP-71

Modelling of an Electromagnetic Intake & Exhaust Control Hybrid Engine

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Modelling of an Electromagnetic Intake & Exhaust control engine for a more fuel-efficient hybrid electric vehicle will be conducted by developing a new electromagnetic system for controlling the ideal A/F mixture into engine and exhaust the emission from the engine. One of the ways the new engine cuts energy use is by reducing friction in the engine with eliminating the rotating and other parts making the engine lighter. The disk motor-generator will be used to couple with the output shaft of the engine which will eliminate the flywheel and the alternator and starter. So the engine will be able to cut carbon emission 90% and improve the efficiency of the engine compared to cars engine on the road today. The proposed engine will replace the cam follower, flywheel, alternator and starter motor with a high efficient motor-generator (designated and a super capacitor will be used as a sole power source for the car driving motor. The motor-generator (acts as a starter) will use power from the battery just to startup the engine. The power of the motor generator and regenerative braking system is used to charge the super capacitor. Since a super capacitor from the electrical motors is available for periods of rapid acceleration, the ICE can be down sized to match only the average load on the car, rather than sized by peak power "needs" for acceptable acceleration. The smaller internal combustion cam-follower-less engine will be designed to run more efficiently and make the power loss from the engine due to heat as low as possible since some of the load on the crankshaft will be replaced by designing the electromagnetic system. Furthermore, during normal operation the engine can be operated at or near its ideal speed and torque level for power, economy, or emissions, with the super capacitor absorbing or supplying power as appropriate to balance the demand placed by the driver. During traffic stops the internal combustion engine can even be turned off for even more economy. It is expected that the wave disk generator equipped with the proposed engine has the potential to make hybrid electric vehicles 4-5 times more efficient than combustion engines currently used in hybrid cars.

PP-79

A real-time PCR technique in the identification of over-stunned slaughtered chicken

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Chickens were water stunned before slaughtered was acceptable in Malaysia under certain condition prepared by MAJLIS FATWA and JAKIM. However, in some country like Brunei this method was not accepted at all. Even in Malaysia, it is unlawful when these chickens were stunned over the current limit that set by JAKIM. The previous study conducted identified a candidate biomarker that suitable to be used in developing a detection method for over stunned chicken. A real-time PCR technique was applied as a detection method in this study using our identified biomarker in developing a set of specific primers. This study was conducted to observe the effectiveness of a detection method developed for identifying chicken that were stunning over the current limit allowable by JAKIM. Results of this study showed that by applying this detection method we were able to differentiate a chicken that was slaughtered according to original Syara'i method compared to the one that over stunned prior to slaughtering and also able to develop a result within 3 hours.

PP-84 Bioprospecting and Economical Source of Chitin and Chitosan~ The Sword Shrimp Udang Minyak (*Parapenaepsis hardwickii*) Malaysia

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Chitin and chitin derivatives (Chitosan) are biodegradable and biocompatible natural polymers that have been used in virtually every significant segment of the economy (water treatment, pulp and paper industry, biomedical devices and therapies, cosmetics and diet additives). Based on above perspectives the potential and economical sources of chitin and chitosan contents were investigated from the local sea food sources. Four different types of shrimps and crabs shell wastes namely Udang Minyak (Sword Shrimp, *Parapenaepsis hardwickii*), Udang Putih (White Shrimp, *Fenneropenaeus indicus*), Ketam Batu, (Mud crab, *Scylla serrata*) and Ketam Bunga, (Blue crab, *Callinectes sapidus*) were collected from the wet market (Pasar Borong) of Kuantan. These samples were chosen as they were most abundant and well-liked shell fishes among the sea foods and locally available in the coastal areas of Malaysia. The chemical extraction of shrimps and crabs shell wastes showed that the percentage of chitin in udang minyak, udang putih, ketam batu and ketam bunga were 78.86%, 73.43%, 75.75% and 71.31% respectively. Whereas the percentage of chitosan in udang minyak, udang putih, ketam batu and ketam bunga were 71.61%, 64.66%, 60.59% and 52.38% respectively. The study portrays that most cheapest and abundant shrimp, udang minyak, the Sword Shrimp, *Parapenaepsis hardwickii* shell wastes have the highest percentage of chitin and chitosan and the highest purity of chitin content compared to others. The study could be instrumental for wider application of higher quality chitin and chitosan in biotechnology and pharmaceutical industries by using this potential resource.

PP-85 Design and Implimentation of a Robust Mobile Multicast-Enabled Router

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Multicast is the most suitable transmission for multimedia application. Since now-a-days most users are mobile, then there is a need to integrate mobility with multicast. However, integrating multicasting with mobility creates many challenges, because the network must deal not only with dynamic group membership, but also with the dynamic locations of mobile hosts. Mobile IPv6 (MIPv6) proposes two solutions to handle the node movement in multicast transmission. The first approach is Bidirectional Tunneling (BT) where the Mobile Node (MN) receives/sends the multicast datagram through its Home Agent (HA). The second approach is Remote Subscription (RS) where the MN re-subscribes to the multicast group through a local multicast router at the foreign network. However, the first approach introduces a serious triangular routing problem while the second one suffers from serious frequent multicast tree reconstruction. In our previous work we have developed a protocol to provide seamless mobile multicast support by developing a set of robust protocols that facilitate and improve senders/receivers mobility, and result in low signaling cost during an ongoing multicast session. The evaluation of the proposed protocols, Robust Multicast using Hierarchical Mobile IPv6 (RM-HM), was mainly based on analytical approach and simulation. This phase of the research aims to provide a comprehensive approach to evaluate the proposed protocol through practical test bed. This was achieved through developing a mobile Multicast router. Results achieved were analyzed and benchmarked with the standard protocol proposed by (Internet Engineering Task Force) IETF.

PP-88 Adaptive Speech Synthesis Module With Emotional Expression

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Computer generated speech replaces the conventional text based interaction methods. Initially, speech synthesis generated human voice that lacked emotional expression. This kind of speech does not encourage users to interact with computers. Emotional speech synthesis is one of the challenges of speech synthesizing research. The quality of emotional speech synthesis is judged by its intelligibility and similarity to natural speech.

High quality speech is achievable using the high computational cost unit selection technology. This technology relies on huge sets of recorded speech segments to achieve optimum quality. On the other hand, diphone synthesis technology utilizes computational resources and storage spaces. Its quality is less than unit selection, however, due to the introduction of many digital signal processing algorithms such as the PSOLA algorithm, more natural results was achievable.

Emotional speech synthesis research has two significant trends. The first is unit selection based synthesis that aims to fulfill market needs regardless of resource utilization, and the second is diphone based synthesis that is often non-commercial, and oriented to develop intelligent algorithms that utilizes minimum resources to achieve natural output.

In this work, the possibilities of achieving high quality speech using low computational cost systems are investigated. The diphone synthesis is chosen as the speech synthesis technology. The existing approaches to emotional emulation are analyzed to determine aspects that could be further enhanced. Two aspects are highlighted: formant relation to emotions and the deterministic nature of pitch pattern relation to emotion.

These algorithms do not receive much attention from the existing approaches. Two algorithms are proposed to address these two aspects: formant manipulation, and deterministic pitch pattern generation algorithm. These algorithms are incorporated into one TTS system.

The quality of speech synthesis of the proposed system is evaluated using the recently developed objective evaluation methods. The results show significantly small values of simulation error, the mean square error values for happy, sad, fear and anger emotions respectively are: 0.03225, 0.12928, 0.02513 and 0.02429. This margin of error value provides an evidence of the accuracy of the proposed system.

PP-105 Newcastle disease vaccines; improvement of virus purification by using high speed centrifugation

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Newcastle disease is one of the main diseases in the poultry industry. The disease has caused severe losses to farmers and governments worldwide. The causative agent for the disease is the Newcastle disease virus (NDV) which is a member of the Paramyxoviridae family. It is one of several serotypes of avian paramyxovirus and is a pathogen of chickens and other animals. NDV are classified into three major pathotypes, depending on the severity of disease produced in chickens. Lentogenic strains do not usually cause disease in adult chickens and are widely used as live vaccines in poultries. Viruses of intermediate virulence that cause respiratory disease are termed mesogenic, while virulent viruses that cause high mortality are termed velogenic. Until now, there is no treatment for the disease. Prevention is to import birds from disease free flocks only or through vaccination that must continue throughout the life of the bird. Most live ND vaccines in field use today are based on lentogenic strains. Vaccines of mesogenic type are still permitted in a few areas. ND vaccines are produced by pure and high quality antigens. There are several methods available to achieve that; sucrose gradient electrophoresis, high speed centrifugation and recently crossflow filtration. In this study, we have optimized the purification of ND virus using high speed centrifugation method. ND virus produced by fermentation in two liter stirred tank bioreactor were purified using high speed centrifugation. The purification experiments were done

according to 3^{**}(3-1) Fractional Factorial Design. Statistical analysis showed that the maximum virus titer can be achieved at virus sample concentration level of about 58.45% (v/v), centrifugation speed of 13729.03 rpm and centrifugation time of 4 hours.

PP-106

Sorbiochin – Adsorbent for Precious Metals

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Platinum, gold and palladium are precious metals which are widely used in industries for catalysts preparation, electronic components, electroplating, etc. Recovery of these trace metals in low concentration from solutions, plating bath, industrial effluents, etc. are essential for economic reasons and pollution prevention. One option is to use a separation technology based on solid phase extraction (SPE) for the recovery of low concentration of the precious metals. Sorbiochin, a melamine–chitosan–formaldehyde resin has been synthesized from biopolymer and was found suitable for preconcentration of trace amounts of gold, platinum and palladium. The Sorbiochin is made into powders or discs and can be used to preconcentrate the precious metals from aqueous solutions. Sorbiochin adsorption of the precious metals is optimum at pH 1. The tendency of Sorbiochin to adsorb the precious metals is in the sequence of Pd(II) > Au(III) > Pt(II), and more than 5 - 50 mg of the metal ions can be adsorbed per gram of the resin. The precious metals can be desorbed almost completely from the resin by eluting with a common chelating agent.

PP-109

Starrageen Softgel

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The instability of gelatin based capsule when filled with certain liquid pharmaceutical formulations has drawn a great concern among scientists. Moreover, the costly expense to obtain gelatin from its sources and its limited availability are also the major disadvantages of using gelatin in industrial scale. The source of gelatin can be a problem for potential areas of use or for particular consumers, especially in obtaining the halal gelatin. An alternative composition from a mixture of carrageenan and a number of starches to replace gelatin in the production of soft gel capsules for packaging of liquid drugs has been discovered. This gelatin replacer has the properties equivalent to those of the gelatin in forming soft gel capsules.

PP-110

Characterization of Experimental Polypropylene Ternary Nanocomposites Produced under Different Process Conditions

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Polymer ternary nanocomposites are credited with better mechanical properties relative to their binary precursor apparently due to the additional strength of the second reinforcing element. They represent emerging paradigms in composite development and application. However research in these emerging composites is limited and evolving. The present paper reports on the characterization of experimental polypropylene ternary nanocomposites produced in the laboratory under different process conditions using multiwall carbon nanotube as secondary filler element. Full factorial experimental design was explored to study the effect of temperature, mixing speed and CNT loading on the morphological and mechanical features of the ternary nanocomposites. Yield strength, tensile strength at fracture and morphological characterization were studied using UTS and SEM machines respectively. The results revealed that process temperature and CNT loading influences the morphological and mechanical properties of polypropylene ternary nanocomposites, whereas, the mixing speed has little effect on these

properties. Specifically, CNT loading in amount less than 1% showed better tensile strength and stiffness while the strength falls off at 1% CNT loading. Morphological studies indicate better dispersion of CNT in the polymer matrix at process temperature of 170⁰C and formation of agglomerates at 250⁰C. The present study suggest that CNT loading and process temperature lower than 1% and 200⁰C respectively produces polypropylene ternary nanocomposites with better mechanical properties and enhanced dispersion of the CNT in the polymer matrix irrespective of the mixing speed.

PP-111 A Programmable Dirham Coin based Hajj Saving Electronic Device

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Hajj, one of the five pillars of religion of Islam requires long-term saving. As most of the Muslim majority countries are developing countries and also facing financial instabilities, savings tend to loose value due to depreciation of the national currencies, political and economic conditions of the countries. As a solution to this problem, hajj saving in gold has been proposed has the solution to this paper money devaluation. Previous studies have proven that there is a significant effect in cost of hajj when it is priced in gold oppose to paper currency.

A novel programmable dirham coin based hajj saving electronic device is implemented in this work. Fitted with a two inch LCD display, the device converts the instantaneous weight of the coin in the saving compartment to alphanumeric numerals for display on the LCD screen. Aside the content value display, another unique feature the device has the ability to extrapolate and display the required amount for completing the hajj fee on a regularly basis, thus each owner is motivated to increase the amount in the saving. A tampered proof unit have been fitted with the device and warning alert sound is triggered incase of unwarranted access of the content.

This works is thus a contribution to the fulfillment of the fifth pillar of Islam and also a step towards establishing a non-inflationary and stable shariah compliant savings and economy.

PP-115 Development of Ternary Nanocomposite for Civil Construction and Fabrication of Process Vessels

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Introduction: Polymer reinforced with Carbon Nanotubes and Nanoclay are receiving research attention for various industrial applications such as automobile interior and exterior accessories, air and space craft, electronics, civil constructions and fabrications of process vessels Problem Statement: Current researches have shown that the thermoplastic-clay nanocomposites have failed to live up to the earlier predictions albeit they have found some niche area of applications. This research work therefore aimed at studying the effect of carbon nanotube as secondary filler on the mechanical properties of polypropylene-clay nanocomposite. Approach: Hybrid polypropylene-clay nanocomposite was prepared in the presence of multiwall carbon nanotubes (MWCNTs) as secondary additives using melt intercalation process. The effect of Multiwall Carbon Nanotubes (MWCNTs) on the polypropylene/clay matrix was investigated in terms of dispersion using XRD, tensile test (ASTM D 638) and notched Izod impact test (ASTM D256). These were compared with the conventional polypropylene-clay nanocomposite. Results: The resulting composite shows about 42% increase in the modulus, 26.20% in the tensile strength and 13.30Kj/m² impact strength when compared with binary combination of PP/Clay nanocomposite. XRD patterns of PP/Clay and PP/Clay/MWCNT nanocomposites show different diffraction peaks which are indications of intercalation mixed with macromixing. Conclusion: This study showed that MWCNT can successfully address the common shortcomings peculiar to PP/Clay nanocomposite and the end product will be suitable in an area where material of high mechanical strength is needed.

PP-125 Multibiometric Based Personal Verification Using the Fusion of Hand and Finger Stripe Geometry

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This project presents a new Multibiometric based Personal Verification system using the Fusion of Hand and Finger Stripe Geometry which is efficient, simple, fast, easy to handle and cost effective compared to other verification techniques. This Hand Geometry based verification comprises of two main attributes, (1) feature extraction by image processing and (2) feature learning by Artificial Neural Network (ANN). For feature learning, Back Propagation algorithm has been applied. This prototype has been trained with 50 samples.

PP-134 Improvement Process of Halal Gelatin Coated Polystyrene Microcarrier

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Polystyrene (PS) are widely used polymer as a core substrate because of its favorable properties such as low specific weight, high chemical resistance and mechanical flexibility and biocompatible. PS as biomaterials has been studied and manufactured for cell attachment however, the adhesion of gelatin on unmodified PS surfaces is generally poor. UV-ozone has been shown to be a highly successful method for the controlled modification of polymers for applications ranging from adhesion and wetting improvement to the production of surfaces for enhanced cell attachment. This research, the surfaces of microsize polystyrene beads (150 Åµm) was modified by UV/ozone treatment system at different treatment time, ozone flow-rate and UV. The maximum amount of gelatin obtained was 63.75 Åµg/ml while the lowest amount obtained for untreated PS (9.947 Åµg/ml). The result found that time is the most significant factor to prepare sample for gelatin immobilization at reduced flow rate and increased ultraviolet (UV) intensity in the range under study. The introduction of carbonyl, hydroxyl and amide group on the polystyrene beads surface was confirmed by ATR-FTIR analysis and it was found that the condition of 45 min, 1 l/min, and 18W immobilized highest amount of gelatin. The best condition for UV/ozone surface modified PS bead as well as gelatin coated PS modified beads was undergoing biological testing and it was compared with commercial polystyrene microcarrier (Plastic Plus). It was found that our developed polystyrene microcarrier; UV/ozone modified polystyrene generated 2.9 x 10⁵ cell/ml and gelatin coated polystyrene generated 3.55 x 10⁵ cell/ml to promote DF-1 cell attachment and better proliferation compared to the commercial polystyrene microcarrier that only generated 1.8 x 10⁵ cell/ml. In addition, this developed microcarrier has advantages of easy sampling and easy cell recovery.

PP-135 Spirulina - A Potential Feed Additive for the Development of Proteolytic Enzymes And Growth of the Tropical Sport Fish Malaysian Mahseer (KELAH, *Tor tambroides*) FRY

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Tor tambroides fry with a mean of 8.0 mm standard length (SL) and weighing (W) 0.06 g werer stocked at the rate of fifty (50) individuals in each of the fifteen 150 l rectangular fibre glass tanks for a period of 5 weeks. The development of proteolytic enzymes (Trypsin and Chymotrypsin) and growth were studied during these feeding treatments. 45% protein diet without additives was treated as control diet. The gut of the fish fry fed on control diet incorporated with 0.10% Spirulina, 0.10% enzyme, and

0.10% vitamin additives were examined. Fish fry fed on diet with 0.10% *Spirulina* showed significantly higher enzymatic activity ($P < 0.05$) and growth compared to enzyme, vitamin and control diet throughout the experiment. Control diet without any additive showed lower activity than those of diets with additives. The study indicates that the incorporation of 0.10% *Spirulina* to a diet could be a vital factor to activate the proteolytic enzymes such as trypsin and chymotrypsin of *Tor tambroides* fry. The study indicates a new approach to produce low cost and nutritionally well balanced feed for Aquaculture.

PP-139

IIUM Micro Aerial Vehicle

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In this project 2nd generation of IIUM Micro Aerial Vehicle (IIUM-MAV-8 and IIUM-MAV-9) models were designed, built and tested successfully. The span dimension of MAV-8 and MAV-9 are, 50 cm and 35 cm, respectively. The total weight of MAV-8 and 9 is less than 200 grams. Both MAV-8 and MAV-9 successfully flew. The performance of MAV-8 and 9 has been proven to be better than the early developed MAV-6 and 7 in term of stability and maneuverability.

PP-144

Biodiesel from Renewable Sludge Palm Oil

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Biodiesel is receiving an increased attention because of increases in crude oil prices, limited resources of fossil oil and environmental concerns. There has been renewed focus on using vegetable oils and animal fats to make biodiesel fuels. The main challenges in biodiesel industry are its production cost and limited availability of fats and oils resources. There are two aspects of the production cost of biodiesel, the costs of raw material and the cost of processing. The cost of raw materials accounts for 60 to 70% of the total cost of biodiesel production. However, there are large amounts of low grade oils from palm oil industry that could be converted to biodiesel such as sludge palm oil (SPO). SPO is a by-product of the palm oil milling process that contains high free fatty acids (FFA). The use of SPO can lower the cost of biodiesel production significantly. The problem in processing SPO to biodiesel is the high free fatty acid content in the oil restricts the conversion to biodiesel when using conventional transesterification process. This invention develops a process to treat the SPO and produce biodiesel within the standard specifications for biodiesel fuel. An acid-catalyzed was used in pretreatment of sludge palm oil with alcohol to esterify the free fatty acids before transesterifying the triglycerides with an alkaline catalyst to complete the reaction. An optimum esterification/transesterification processes were developed followed by separation process for purified biodiesel production.

PP-145

Novel Raw Material For Citric Acid Production

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This invention is based on the liquid state bioconversion for the production of citric acid using renewable sources such as sewage treatment plant (STP) sludge and palm oil mill effluent (POME) as fermentation substrates. Sewage sludge is the largest contributor of organic pollution to water resources as well as to surrounding environments all over the world. Sludge can be a very good source of carbon, nitrogen, phosphorus and other nutrients for many microbial processes. The research is focused to select the potential local isolates of *Aspergillus niger* for the production of citric acid using STP sludge as a new media, to optimize the media for citric acid production, to optimize the operating conditions of stirred tank bioreactor for maximum production of citric acid and to characterize the citric acid production from STP sludge. Fermentation was carried out using local isolates. Nineteen strains of local isolates

Aspergillus niger were selected from laboratory stock and used in order to determine the highest production of citric acid. The findings showed that about 30 g/L of citric acid is produced by optimum fermentation processes.

PP-146

UIAzymes: POME Cellulases

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The Invention of this research is the production of cellulase enzymes with higher activity having potentials in the production of bioethanol through hydrolysis of the cellulosic materials such as rice straw, empty fruit bunches (EFB). Currently cellulase enzymes has potential industrial application in the textile industry for finishing of the cellulosic materials, detergent industry to provide cleaning and fabric-care benefits such as the brightening of colour in faded garments and paper industry in the pulp management and de-inking. Palm oil mill effluent (POME) has been used as a major medium due to the availability and least expensive through bioconversion by filamentous fungi to produce the enzymes. A total of 25 filamentous fungi were screened using POME in which 16 strains were isolated and purified from oil palm industrial residues and 9 strains were of laboratory stock. The *Trichoderma reesei* RUT C-30 was identified as a potential strain in producing cellulolytic enzyme as compared to other genera of *Aspergillus*, *Penicillium*, *Rhizopus*, *Phanerochaete*, *Trichoderma* and basidiomycete groups on the basis of cellulolytic activity. The higher activity of cellulases was achieved by the optimization of media and processes with FPase of 2-5 IU/ml and CMCase of 15-20 IU/ml. The purified cellulases were 10 fold increased. This research explore an alternative and cost effective solution for POME management and would reduce the overall management cost of the industry as well.

PP-147

Electronic Blind Support System

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This invention is an electronic device equipped with ultrasonic and infrared sensors that is able to identify different types of objects on the walkway of a blind person, especially holes and stairs, which are most troublesome obstacles for the blind people. Even after so many researches, white cane is still the most used walking supporting aid for the blind people. This is because almost all the research outcomes failed to address the crucial requirements of the blind support systems, like low energy requirement and light weight. This new device has taken care of these elements in its design; as such it is light in weight as well as consumes less energy.

PP-148

Automatic Car Parking System

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In this innovation a new automatic car parking system has been designed where there is no drive ways inside the parking lot. Thus this parking system needs less space compared to the existing contemporary automatic parking systems. This system is capable of storing and retrieving cars without using conventional AS/RS machines. It consists of a puzzle like structure and a mechanical system, which is capable of moving the puzzle blocks i.e. pallets carrying the cars in desired locations as per the requirements of storing or retrieving the cars. An algorithm works at the background in a pc in handling the dynamic pallets efficiently.

PP-154 Floating Porous Ceramics for High Density Cell Culture in Stirred Bioreactors

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Floating porous ceramics has been successfully developed using protein foaming-consolidation method. This method allows the control of porosity not only by the varied concentration of protein but also by managing the foaming process. Slurries of alumina powders and yolk was prepared by stirring the mixture and the resulting slip was poured into cylindrical shaped molds. Subsequently, they were subjected to drying for foaming and/or consolidation. Foaming process condition determined mean pore size and pore distribution. The dried green bodies of the samples were then burned to remove the pore creating agent followed by sintering at 1550°C for 2 h. Pore size distribution measurement showed that macropores of the sintered alumina porous bodies increased with the increased time and temperature of the drying process and were found in the range 50 - 800 μm . SEM measurement also confirmed this observation. Less foamed samples show lower shrinkage but higher compressive strength. A shrinkage of as low as 7.8% was observed for the sample dried at 110°C but it increased significantly to 29.3% when dried at 180°C. The compressive strength of the 110°C's sample was 5.72 MPa at 43.6% porosity and it decreased to 4.57 MPa at 50.4% porosity when foamed at 180°C. Density varied from 0.9 to 1.5 g/cm^3 depending on the preparation condition. These results have opened a novel preparative way for porous ceramics especially alumina-based porous materials designed for biomedical applications such as cell culture in stirred bioreactor, drug delivery, bone implant etc.

PP-159 Damageless Digital Watermarking Using Complex-Valued Artificial Neural Network

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Several high-ranking watermarking schemes using neural networks have been proposed in order to make the watermark stronger to resist attacks. However, the current system only deals with real value data. Once the data become complex, the current algorithms are not capable of handling complex data. In this paper, a distortion free digital watermarking scheme based on Complex-Valued Neural Network, CVNN in transform domain is proposed. Fast Fourier Transform, FFT was use to obtained the complex number (real and imaginary part) of the host image. The complex values form the input data of Complex Back-Propagation (CBP) algorithm. Because neural networks performs best on detection, classification, learning and adaption, these features are employed to simulate the Safe Region (SR) to embed the watermark, thus, watermark are appropriately mapped to the mid frequency of selected coefficients. The algorithm was appraised by Mean Squared error MSE and Average Difference Indicator ADI. Implementation results have shown that this watermarking algorithm has high level of robustness and accuracy in recovery of the watermark.

PP-161 Intelligent Sliding Mode Control using Natural Logarithm Sliding Surface

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In automotive, engine mount is a component used to support the car engine on the chassis and at the same time isolates engine vibration. Ideally engine mount system should isolate engine vibration caused by engine disturbance force in engine speed range and prevent engine bounce from shock excitation. Nowadays, active engine mounting system has been considered as the next generation of engine mounts.

The system consists of passive mount, force generating actuators, sensors, and electronic controllers. To attenuate the vibration of the engine, it is necessary to design a controller that able to superimpose the unwanted vibration signal with a canceling signal of exactly the same magnitude and a phase difference of 180°. Different control strategy has been proposed, however most of the control approaches are model based control design in which precise mathematical model of the plant is required to be known. To design a simple and robust controller in the field of active engine mounting system, Intelligent Sliding Mode Control using Natural Logarithm Sliding Surface is proposed. It combining the advantages of adaptive, neural network and robustness, sliding mode control strategies to develop model-free control design. The effectiveness of the proposed methods is evaluated both on the simulation and experimental result to the lab-scale active engine mounting system. The results show that the proposed controllers able to suppress the vibration of the engine effectively in the band of frequency interest from 5 Hz to 30 Hz.

PP-162 Preparation of Nutritious Drink from Date Palm Kernels

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This research study was undertaken to explore the potential of use of date palm kernel (DPK) for food industry and to produce edible product, which was nutritious DPK drink. The DPK powder was examined for toxicity by using Brine Shrimp Lethality Bioassay. DPK powder was analyzed for nutritional compounds that results in protein 0.99 mg/g, glucose 0.74 g/L fructose 0.6 g/L and anther traces of simple sugars. Analysis of Mineral elements in the ash showed the average values of Cu, 0.92 mg/L; Ca, 2.04 mg/L; Fe, 0.91 mg/L; Mn, 0.43 mg/L; Mg, 4.99 mg/L and K, 6.74 mg/L. The nutritional values of the prepared DPK drinks were determined. Factorial design was used for optimization with three independent variables, which were the volume of water, amount of sucrose and citric acid. The maximum overall acceptability through the sensory evaluation test was achieved for the DPK drink formulation of 150 mL water, 30 g sucrose and 4.0 g citric acid. Analysis of the results was evaluated using Design-Expert (DX6) software by statistical tools.

PP-165 Fuzzy-based NCTF Control System of Point-to-point (PTP) Linear Positioning System

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Nominal characteristic trajectory following (NCTF) controller, which consists of an nominal characteristic trajectory (NCT) and a compensator, is a practical controller since its design is only based on a very simple open-loop experiment. The objective of the compensator in NCTF controller is to make an object motion follows the NCT and to end the motion at the origin. Its simplicity even more increased by the introduction of fuzzy compensator compared to trial and error original PI compensator. The proposed fuzzy compensator is practical since its all design parameters are based on NCT information and hardware specifications used; which are sensor resolution and actuator rated input; only. Trial and error or uncertain parameters value are completely eliminated. By using a linear positioning system, control performance of the proposed compensator and its robustness are examined experimentally using single axis linear positioning table. The results show that the proposed compensator is effective for the entire displacement range and able to force object motion as fast as determined by the NCT. Proposed compensator has consistently outperformed the PI and existed fuzzy compensators.

PP-166 Practical Robot State Feedback Control Design for Automatic Gantry Crane System using Particle Swarm Optimization (PSO)

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Anti-swing control is required for achieving fast motion without swing motion in automatic gantry crane system. One of the possible solutions is based on anti-swing state feedback control. However, the problem of state feedback control design is conventionally solved by pole placement or linear quadratic regulator (LQR) method via Riccati equation. Unfortunately, they involve trial-and-error approach to specify some parameters needed for the control design. In particular, there is no unified approach to specify Q and R matrices in the state feedback control design using LQR method. The selection of Q and R matrices has no direct relation with the desired time domain response. Therefore, an intelligent-based method for state feedback control design is proposed by employing particle swarm optimization (PSO) algorithm. The close loop poles are prescribed within a specified wedge region whose parameters have direct relation with the desired time domain response. By maximizing the stability radius as the objective in the optimization, the stability robustness is guaranteed in the presence of plant uncertainties. The experimental results show the effectiveness of the proposed method. The controller is able to effectively follow the reference input of trolley position while suppressing the swing of the payload for various conditions of gantry crane operations.

PP-167 Processing of Date Palm Kernel (DPK) for Production of Edible Jam

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This project involved the usage of date palm (*Phoenix dactylifera*) kernel (DPK) to be produced as an edible jam after had been grounded into powder. DPK jams was prepared by adding date palm kernel (DPK) powder, saccharose, pectin, water, citric acid, ascorbic acid and Gum Arabic. Then the experiment design for date palm kernel (DPK) for production of jam was done using the Design Expert. The design shows that there were ten types of jams to be produce according to the content of different material where the parameters such as amount of saccharose, pectin and dietary fibre from Gum Arabic were varied to give the best acceptability of the DPK jams samples. After that the jams sample produce were evaluated in terms of the sensory evaluation which includes taste, texture, aroma, appearance and overall acceptability by the ten panelist selected from students of Biochemical-Biotechnology Engineering, International Islamic University Malaysia. The samples were evaluated based on a five point hedonic scale, where one represented “disliked extremely” and five represented “liked extremely”. All the data then were analyzed by using spreadsheet Microsoft Excel. From the result showed that some of the panelists accept the product while the others reject the DPK jam samples. Finally, this report is the outcome of the research done to find the acceptability of the production of DPK jams.

PP-168 Design and Development of Magneto Rheological (MR) Damper for Active Vibration Control

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Semi-active control devices have received significant attention in recent years because they offer the adaptability of active control devices without requiring the associated large power sources.

Magneto-rheological (MR) dampers are semi-active control devices that use MR fluids to produce controllable dampers. They potentially offer highly reliable operation and can be viewed as fail-safe in that they become passive dampers should the control hardware malfunction. To develop control

PP-176

Blind Encoding Into Qudits

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We consider the problem of encoding classical information into unknown qudit states belonging to any basis, of a maximal set of mutually unbiased bases, by one party and then decoding by another party who has perfect knowledge of the basis. Working with qudits of prime dimensions, we point out a no-go theorem that forbids ‘shift’ operations on arbitrary unknown states. We then provide the necessary conditions for reliable encoding/decoding.

PP-181

Artificial Nose for Alcohol Detection

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Our research presents the development of an artificial olfactory system as a non-destructive instrument to detect and measure concentration of alcohol. The hand-held unit will consist of an alcohol sensor, a microcontroller to calculate the concentration of alcohol and blood alcohol concentration (BAC), and an LCD display, which will display the percentage of alcohol concentration detected.

PP-184

Electron Beam Crosslinked Natural Rubber/Multiwalled Carbon Nanotube Nanocomposite

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The physical properties of the rubber blends are influenced by vulcanization and filler distribution. Normally, rubbers are vulcanized by systems based on sulfur or peroxide with the most common filler carbon black. Radiation can also produce crosslink densities like those obtained by sulphur curing, but the net effects, are similar, though not identical. The type of crosslink formed in this method ($-C-C-$) give rise to better mechanical properties at higher temperature. This work reports on the investigations carried out on natural rubber (SMR) filled with the multiwall carbon nanotubes (MWCNTs). This system of SMR/MWCNTs was subjected to different radiation dosages and compared with nonradiated samples in order to determine the improvement in mechanical properties of the rubber system in the presence of MWCNTs and irradiation dosages. The amount of MWCNTs in this study was varied from 1 to 7 Phr and the irradiation doses were varied from 50 to 200 KGy. Mechanical properties, especially, tensile strength (TS), elongation at break had been studied as a function of irradiation dose and degree of loading with MWCNTs. Gel fraction indicated an increase in the degree of crosslink with the increase in the MWCT and radiation dosage. XRD was carried out to check the increase in the crytallinty of the nanocomposite system. The overall results obtained indicate significant improvement in the mechanical and thermal properties by radiation crosslinking in presence of MWCNTs. These results were further supported by TEM micrograph and nanoindentation.

PP-185

Production of Activated Carbon From (EFB) for Removal of Cadmium

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In this work, various activated carbons have been prepared by steam activation from oil palm empty fruit bunches to study the effect of activation temperature, activation time and steam flow rate. Series of batch laboratory experiments were conducted in order to investigate the feasibility of activated carbon – derived from oil palm empty fruit bunches to find the suitability of its application for the removal of heavy metal (cadmium) from aqueous solution through the adsorption process. Assessment was carried out by studying the influence of removal of Cadmium, pH, adsorbent dosage and agitation rate to select the optimum best production conditions using a 2-level full factorial experimental design for PACs produced. The thermal activation at 600, 750 and 900°C with steam flow rates (2.0, 3.0, 4.0 mL/min), and contact time at 15, 30 and 45 minutes was used for the production of activated carbons. Based on the analysis of variance (ANOVA) and batch adsorption test, the results indicated that activated carbon derived from 900°C, steam flow rate- 2ml/min and activation time- 15min has maximum adsorption capacity at 2minutes (0.273 mg/g) for the removal of cadmium (97.2%), $R^2 = 0.999$ in the aqueous solutions which showed good quality adsorbent with a yield of 17.21% and correlation coefficient $R = 0.992$. The optimum conditions for PACs produced were investigated through an adsorption tests on aqueous solution of cadmium in which was used for comparative studies on the adsorption isotherms (Langmuir and Freundlich) to evaluate or predict the adsorption characteristics of the optimum activated carbon produced. Batch adsorption studies showed that equilibrium time of 2minutes was needed for the adsorption of cadmium on the activated carbon during experiment. The regression coefficient (R^2) showed that Langmuir isotherm ($R^2 = 0.984$) fits the result better than Freundlich isotherms ($R^2 = 0.950$). The characterization of PACs produced was measured to evaluate its high quality. The result of this study demonstrated that activation temperature of 900°C had the most significant effect on the adsorption characteristics as well as yield of the activated carbon produced.

PP-189 A Novel Process Development for Production of Phenolic Acids with High Scavenging Activity from Palm Oil Mill Effluent

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The present investigation is an effort to develop an environmentally sound and cost effective liquid-state fermentation process by introducing a novel strain of *Aspergillus niger* which was isolated locally for the production of phenolics from palm oil mill effluent (POME). The selection of the potential fungal strain showed that IBS-103ZA (IMI 385267) strain gave the highest total phenolic content (639.90 ± 4.19 GAE mg/l) after 72 hours of fermentation at fixed media and process conditions. To enhance the production of phenolic compounds, a study based on statistical design was employed. A two-level Plackett-Burman design was applied where 11 variables consisted of various media components and process conditions were studied for their influence on phenolics production. Out of 11 variables, sucrose, manganese sulfate ($MnSO_4$), and temperature were identified as the most significant variables in improving phenolics production by IBS-103ZA strain. Response surface methodology (RSM) was used to improve the phenolics production. Face-centered-composite-design (FCCD) helped in increasing the total phenolic content significantly from 856.09 ± 2.22 to 940.80 ± 3.72 GAE mg/l. The optimum conditions were found to be at 6.0% (w/v) sucrose, 2.5% (w/v) $MnSO_4$, and temperature of 35.0 °C with other fixed parameters. The antioxidant activity was measured using 2,2-diphenyl-1-picrylhydrazyl (DPPH) scavenging assay and compared with Butylated hydroxytoluene (BHT). The fermented extract with IC_{50} value of 0.45 mg/ml, has strongest antioxidant potency compared to unfermented extract (IC_{50} : 1.13 mg/ml) and the reference compound, BHT (IC_{50} : 0.63 mg/ml). The phenolic compounds (with promising

applications in food and pharmaceutical industries) were finally identified and quantified by high-performance liquid chromatography (HPLC).

**PP-193 Design and Implementation of Voice Security System using
Matlab and Java**

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This research focuses on the design and implementation of voice security system using Matlab and Java by exploiting two mainly techniques, i.e. scrambling and encrypting. The objective of this research is to secure and ensure confidentiality of the transmitted voice signal. Three algorithms will be implemented including scrambler algorithm, naïve algorithm and the proposed selective bits encryption algorithm. The security standard that will be used to simplify and accomplish the project is Advanced Encryption Standard (AES). The effectiveness of our proposed algorithm is evaluated based on the mean opinion score (subjective score), mean squared error (objective) and computing time. The results showed that our proposed selective bits encryption algorithm outperformed other algorithms.

PP-195 VircoSpray – Sprayable Virgin Coconut cooking oil

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VircoSpray is a blended cooking spray between virgin coconut oil and palm olein. It is designed to cater the needs of specific groups such as travelers and adventurers, army staff and diet conscious groups. For travelers and adventures, the VircoSpray can be used for instant cooking, frying and roasting during camping, fishing and picnicking. For army, the spray can be included in the ration due to its lightness and simplicity. The VircoSpray also offers a great benefit to diet conscious groups because the amount of calories can be controlled during cooking and frying. Finally, the making of burger, omelette, pancake, satay, 'roti canai', barbecue and microwave products are more convenient using VircoSpray.

PP-196 Modification of CVD reactor for carbon nanomaterials production

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Chemical vapour deposition (CVD) reactor is one of the processes commonly used for carbon nanomaterial (CNM) production. This method is economical and provides high yield of good quality CNM. However, improvement of the CVD reactor system was necessary due to its long time requirement to complete each batch of production. A two-stage CVD was designed, locally fabricated and modified to overcome the limitations. Improvements included multistage system, which can be used to perform different processes such as floating catalyst reaction, fixed catalyst process, calcination, reduction and oxidation processes. A cooling system was added to reduce the production time. The system was further modified to increase the adsorption capacity of the products. The time requirement for one batch of run was reduced from 8 hours to 3 hours by improving the system.

PP-197 Galactagogue Effects of Banana Flower Extract on Lactating Rats

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Study on the effect of banana flower extract on lactating rats was carried out. It was found that the amount of milk consumed by the pups increased in days of lactation, except when the dam did not feed their pups during a period of one hour milking. Besides that, the statistical data showed that there was a significant difference ($p < 0.5$) in milk yield in lactating rats between the control group and petroleum ether extract group.

PP-198 Product Development from Mudskipper and Giant Snakehead Fish Oils

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Several products from mudskipper and giant snakehead oil were developed. The topical creams were produced in the form of water-in-oil emulsions. The creams are suitable for pharmaceutical uses such as reducing rheumatoid arthritis and wound healing. Other products in the forms of soft gels and capsules could be used as food supplements.

PP-205 Sludge Palm Oil - Novel Source for Biosurfactant Production

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Biosurfactants are surface active compounds derived from microorganisms which exhibit excellent detergency, emulsification activity, foaming and dispersing trait. It is a promising alternative to chemically synthesized surfactant due to its biodegradability, low toxicity, and environmental acceptability. However, the high cost production is a limiting factor for widespread industrial application. One strategy is to optimize the growth media in order to determine optimal nutrient composition for highest yield possible. In this study, optimization for biosurfactant production from locally isolated strains was done in two stages. Initially, one-factor-at-a-time (OFAT) optimization for sludge palm oil (SPO), sucrose, NaNO_3 , FeSO_4 , MgSO_4 , and K_2HPO_4 was carried out in order to find the approximate central value of each nutrient that give best biosurfactant production. In the second stage, face-centered central composite design (FCCCD) was selected to further optimize the nutritional requirements (SPO, sucrose, K_2HPO_4 , and MgSO_4) while fixing FeSO_4 and NaNO_3 concentration at 0.3g/l and 2g/l respectively. SPO was found to be most significant nutrient ($p < 0.001$) for biosurfactant production with optimal value at 80g/l. Sucrose and MgSO_4 gave maximum yield of biosurfactant at lower concentration level while K_2HPO_4 are found optimal at 6-8g/l.

PP-218

Adsorption of Lead From Aqueous Solution by a Novel Carbon Based Adsorbent

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Lead (Pb), due to its bioaccumulation ability, has been noted to have detrimental effects on the human body affecting the metabolism, blood and kidneys (Bansal and Goyal, 2005; Bowen, 1996). It is, therefore, imperative that lead be removed from water and wastewater to protect public health and aquatic lives. Multiwall carbon nanotubes (MWCNT) were reported by Li et al. (2003) to have metal sorption capacity of 3–4 times higher than those of powder and granular activated carbon. However, membrane clogging and separation of the nanomaterials from the filtrate pose a challenge. In this work, a novel composite material consisting of carbon nanotubes (CNT) and granular activated carbon (GAC) was synthesised to solve the filtration problem in a static filter. Various percentages of nickel (1%, 3%, 5 and 7%) were used as substrate catalyst during production of the adsorbent and these were linked to the morphology and adsorption capacity of the novel material in lead adsorption. Analyses showed that increased nickel content in the substrate from 1% to 7%, during adsorbent production, resulted in a rough surface of the CNT and increased lead removal from 24% to 89%. Equilibrium concentrations of lead for the adsorbents were achieved at about 60 minutes of contact time. The novel composite material has the potential to remove toxic materials from water and bring benefit to the society.

PP-223

New Glass Ionomer Cement With Boron

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The present invention relates to a new type of glass ionomer cement (GIC) in which boron has been incorporated as a main constituent. The new formula has resulted in superior physical and chemical properties, which make the glass ionomer an excellent dental restorative material in selected clinical situations. Some of the most important features of this type of cement offer are a coefficient of thermal expansion similar to that of a natural tooth structure, a chemical bond to enamel and dentin that reduce the need for retentive cavity preparation, a slow release of fluoride over a prolonged period of time and a capability to re-uptake the fluoride, as well as good biocompatibility with pulp tissue. The advantageous properties of these cements however will be further investigated to improve their strength and toughness to combat their brittle nature to enhance their resistance to wear, and to eliminate micro leakage that may occur at the interface.

The final outcome will be a patent for a new formula different from the conventional GIC. The new formula has proven to be a successful adjunct to restorative dentistry and hence will have a wide range of applications. It is usually composed of a powder of calcium alumino-silicate and an aqueous solution of poly acrylic acid. Via an acid base reaction, it forms hard white cement as a restorative material that possesses the desirable properties of the silicates and the poly-carboxylate cements.

PP-268 Autonomous Reconnaissance Mission: Development of an Algorithm for Collaborative Multi Robot Communication

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A collaborative team of two resource constrained semi-autonomous hexapod robots have been developed that perform navigation tasks while satisfying communication constraints. Our approach is based on the use of a control structure where each hexapod performs elementary tasks, a behavior-based controller generates motion directives to achieve the collaborative tasks, and controller generates the actuator commands to follow the motion directives. The control technique has been developed for a mission where a target location spread across a static environment has to be visited once by the two hexapods while maintaining a relative given distance with wireless communication. Wireless communication under mobile ad-hoc networks are communication networks that do not rely on fixed, preinstalled communication devices like base stations or predefined communication cells. This wireless networks consist of mobile nodes which are characterized by their decentralized organization and the potentially high dynamics of the network structure, therefore ad-hoc network communication system has been the focus in this multi-robot communication. The ad-hoc network has to provide position data to support localization of the mobile robots, which might be of great importance to guide the robots to specific targets and locations.

Communications standards considered for the ad-hoc network are Wireless LAN, Bluetooth and ZigBee. In this project Bluetooth and ZigBee are integrated on robots for real experiments.

PP-269 PENGUIN Framework- Portable Malware Scanner Engine for Windows

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Malware infection such as Trojan, Autorun and Viruses are common problem faced by windows OS users. In countries such as Taiwan and Russia the infection rate reached 69.1% and 67.99% respectively. In contrast, Linux users virtually didn't face such problem. As such, many are advocating that consumers should switch to Linux. A computer crime and security survey in 205 conducted by Computer security Institute and FBI indicated that virus is the leading cause of loss running to the tune of \$42,787,767. However, due to lack of awareness and user resistance it seems improbable to see a majority of consumers to switch to Linux anytime soon. This situation demands a cost-effective and easy solution for consumers to combat malware in Windows environment.

Taking advantages that Linux OS can mount Windows formatted hard disks; it is possible to create a Linux program to find and destroy malicious programs. Combined with the inability of the malicious programs to run on Linux, it can be safe and effective solution to combat malwares. The solution will consist of five parts; the live Linux system, mount module, scanner engine, database and update server. This project develops a malware scanner engine framework on Linux to detect and eradicate Windows malware. Packaged as a custom Linux distribution, it will mount the hard disks and starts scanning for malware. Detection is done through comparison with a database. The engine is fully developed using BASH scripting and complemented with Zenity for GUI.

PP-299

Switch-it

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Switch-it introduced a new line of compact centralized surge protectors that is designed to power and protects today's demanding electronics and electrical appliances. Switch-it is a space-saving conical surge protector.

PP-300

Modern Congkak

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Malay is proven to be a race which is full of heritage of culture. One of the heritages or customs is traditional Malay games and toys, which most of them cannot survive with other modern games. Congkak is one of the traditional Malay games and toys. It is said to be the oldest board game in this world. Congkak is believed to be created upon the strategy of war in the past time. The problem with old congkak is it is too heavy and too big to be carried by its users, mainly children. The other problem with the old congkak is the color of the congkak is too dull and less attractive to be played by children. It looks more like an artifact than a toy. The modern congkak is then designed to solve the problems. It is designed to be lighter than the old congkak and can be separated into 3 parts to make it easier to be carried and stored. The color scheme is changed into more striking and attractive colors to make it look more like a toy.

PP-301

ALTY

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In a fire, the important thing is to avoid smoke inhalation! It can cause you to pass out before getting to safety. It can cause permanent damage to lungs and airways; Alty Safety.

PP-302

Blotch

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Snatching issue in Malaysia has becoming serious recently. The primary safety that is a concern is lives of the victims. Their valuable things come later. BLOTCH is an anti-snatch handbag that will ensure the safety of the victims first before their belonging. The strips of the handbag will detach once snatched by the snatch thief. After that it will launch the airbag and all the belongings will fall on the ground. In a rushing situation, the snatch thief will tend to run away with an empty handbag or leave the handbag at the place of incident. Consequently, this ensures the safety of the victims and his belongings will be intact.

PP-306 The Secret Behind the Role of Henna Dye in the Traditional Dyeing of Historical Papers

Mandana Barkeshli

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During Taimurid and Safawid periods the masters introduced number of dyes for coloring paper for purpose of calligraphy and paintings. Historical analysis was carried out to identify different dyes, shade of colors used, and the application of techniques recommended in paper dyeing process based on Persian historical treatises.

Among the number of dyes introduced by masters Henna has been the most recommended dye with the ratio of 1:10 henna and water. For this purpose a scientific analysis also carried out in two stages to investigate the effect of henna on paper in lower concentration than advice ratio followed by laboratory work in investigating the fungicidal property of henna dye in the advised concentration. Our experiment showed that henna will act as fungicide only higher than the ratio of 1:10 on aspergillus flavus. The present study revealed the secret behind the henna concentration that has been stressed on the historical recipes.

PP-307 Project: Pest control from herbs for display cases and storage purposes

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natural sources as an alternative to the existing chemicals especially for museum purposes. Pest is one of the main enemies of every museum around the world. They can harm and damage the objects or artifacts in a museum. Pesticides in other word crucially needed to control the pest. But the chemical pesticides does better by not just hazardous to the pest, it is undeniably dangerous to the artifacts and human.

The pesticides from natural sources have traditionally been used since ancient times. In facts they existed years before the chemical pesticides were introduced. It is the first matter used to control the pest. Pesticides from natural sources such as herbs are a very valuable ancient ingredient but not well introduced in Malaysia. Therefore it is aim to publicized the valuable of an ancient ingredients to benefits the generation of today and in the future.

With an intention to control and prevent the museum artifacts from pest attack, the project shall attempt to study the pest, pesticides and the herbs as the alternative pesticides.

PP-315 Qotoa

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The Universal design is relatively new paradigm that emerged from barrier free design. The worlds tend to forget the disable condition and unfortunate environment while always focusing for normality and perfect condition. Handicap is a person if he or she has physical or mental impairment which has record of such impairment or is regarded s having such impairment. This project is focusing on one handed people which having a problem living in the world of two handed people where most of the products use with both hand.

PP-316

Rampardo

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It is quick portable ramp, easy to modify and suitable for all wheelchairs users. The use of an easy and fast way to assess disrupted places. With limited height rise of 3 inch, this quick ramp is only used where simple places aren't accessible for the disable to move hastily with or without any help.

PP-317

i-WATCH

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Now a day, total numbers for mental illness person have been increased all over the globe. As we know a person with mental illness cannot take a good care of themselves without their parents at the side. Problem come when parents has job to do and cannot give 24 hour attention to them.

PP-319

Wiki Woky' Walking Frame

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Walking frame is one of the most famous product designs that have been used for many people especially for senior citizen and disable people. The functionality of this product itself make most of the user loves to have it for their own reasons. In a nutshell, the walking frame shelf must follows the trends, roles and function to be used anywhere which suitable to the environment.

PP-320

Foot Joystick Especially made for Handicaps

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Joy stick beetle is a design joy stick especially made for the handicaps with no arms, giving them a chance to play computer games instead of using their handicap arms which might have an ache to the user.

PP-321

Portable voice stick for visually impaired

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Technology is improving recently and many of the innovations are being planned for various segments of people and for peoples with various ailments. The introduction of the new "Voice Stick"™ a text scanning device for the visually impaired. When the stick scanned in the printed letters, the OCR function recognizes the text and converts the information into voice. The voice is then read back and thus helping the visually challenged. It is quite innovative and a practical product. Sp whatever be the matter, letters in mail etc it works out to be a perfect solution and companion for the visual challenged.

PP-339 A Framework for Data Protection Using a Secure Encrypted Envelop

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Nowadays, it is generally well known that networking is rapidly changing the security landscape very quickly; organizations are exchanging their data with their branches, suppliers, allies, and any other parties, finding themselves exposed to the whole world. In this matter, we proposed a data protection framework based on using a secure encrypted envelop. In order to prove the framework validity a full blown prototype is developed, tested, and compared among other market security solution tool in order to prove that the prototype is a competitive business solution. The invention focuses on encryption security as a solution to protect information and data assets using a secure encrypted envelop to provide security, integrity, and performance. In addition, we used an experimental design in order to prove that the prototype we developed based on the proposed framework is better than similar products available in the market. The main contributions of the invention are the conceptual framework for data protection and the notion of the secure encrypted envelop.

Health and Allied Sciences

P-60 Calophyllum canum: Antibacterial and Anticancer Plant

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Human have used plants as a source of medicine throughout the world since time immemorial. Today there are at least 120 distinct chemical substances derived from plants that are considered as important drugs currently in use in one or more countries in the world. In particular, 60% drugs currently in clinical use for treatment of cancer were found to be of natural origin. Calophyllum canum is a large tree which grows in South East Asia and which is popular for its timber. This plant belongs to the family Guttiferae; a family that boasts species which are rich in bioactive phytochemicals. Some species are believed to having medicinal values and are used against several diseases including anti-inflammatory, anti infectious, astringent and antipyretic. We have successfully isolated two compounds from the methanol extract of Calophyllum canum stembarks that active inhibit the growth of Staphylococcus aureus (ATCC 29213 and ATCC 25923). The cytotoxic study on the extracts revealed that the n-hexane extract had the strongest antiproliferation activity, followed by the methanol extract. n-hexane strongly inhibited the growth of TE1 and MCF7 cell lines. IC50 for n-hexane and methanol extract activity on the A549 cell line was found to be 27.96 µg/mL and 78.9 µg/mL respectively. The compounds (CE0 - CE5) isolated from ethyl acetate extract of C. canum are active to inhibit cell proliferation of human cervix adenocarcinoma cells.

P-86 Production of Autologous Platelet-Rich Plasma from an Animal Model

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There has been recent interest regarding the role of autologous platelet-rich plasma (PRP) on soft and hard tissue healing. Inactivated platelets contain various growth hormones that involve in tissue healing such as platelet-derived growth hormone (PDGF), vascular endothelial growth hormone (VEGF), transforming growth factor-β (TGF-β), epidermal growth factor (EGF) and insulin-like growth factor (IGF). Upon activation, platelets release these hormones from its α-granule. PRP concentration of three to five-fold the baseline level or the count above 1,000,000/ml was shown the ability to promote tissue healing. Even though the protocol for the production of PRP from a large amount of blood has been established in human, the method could not be adopted in animal studies, which require small amount of blood. Lack of method's standardization in PRP preparation has also contributed to the difficulty of getting sufficient PRP for experimental studies. Here, we presented a double-centrifugation technique for the production of autologous PRP from rabbit's blood.

P-95 Posterolateral Lumbar Spinal Fusion in the New Zealand White Rabbit Model: Surgical Techniques

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New Zealand white rabbit posterolateral lumbar fusion model is being used extensively for the efficacy study of bone graft substitutes. The morbidity, mortality and waste of animal during or following the surgical procedures were reported as high as 20%. Familiarization to the surgical technique is crucial to reduce the complications. The aim of this study was to illustrate surgical procedure in posterolateral lumbar spinal fusion in the New Zealand white rabbit model via a lateral approach. The technique was a

modification from the technique by Boden et al. (1995). We performed intertransverse lumbar fusion at L5 and L6 via lateral approach by retracting the paraspinal muscles medially to expose the transverse processes and intertransverse membrane instead of exposing the transverse processes through the intermuscular plane. We found that the tips of transverse processes were easily felt from the lateral border of paraspinal muscles and served as anatomical landmark to locate the intended level of fusion. This method also showed good exposure of the transverse processes with less bleeding observed. No death due to surgical complication was observed out of 30 rabbits operated. An easier and safer method for performing spine surgery was demonstrated and is recommended for future posterolateral lumbar fusion surgery on New Zealand White rabbits.

P-100 Bone Formation at Posterolateral Intertransverse Lumbar Fusion

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This study aimed to compare bone formation in posterolateral lumbar fusion after implantation with hydroxyapatite (HA) granules alone, HA granules mixed with autologous platelet rich plasma (HA-PRP) and autograft. Twenty-four New Zealand white rabbits were used. The rabbits were randomized into two groups of twelve rabbits each based on the graft materials used. All the rabbits underwent single level bilateral posterolateral intertransverse lumbar fusion between L5 and L6 segment of lumbar spines. One side of the animals was implanted with either HA alone or HA mixed with PRP. While the contra lateral side was implanted with autograft, and served as the control. The animals were sacrificed after six weeks post-implantation for undecalcified histological and radiological assessments. Results showed that the control group with autograft healed with a good fusion mass. Interestingly, HA granules only group healed with better bone formation than HA-PRP.

P-107 Human Pathogenic Bacteria In Sea Fish - Siakap (SEA PERCH, *Lates calcarifer*) and Ikan Merah (RED SNAPPER, *Lutjanus sanguineus*)

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The presence of fish spoilage and human pathogenic bacteria in ice-chilled and spoiled Siakap (Sea perch *Lates calcarifer*) and ikan merah (Red snapper, *Lutjanus sanguineus*) were studied. Microbiological analysis was performed and the isolated bacteria were identified up to the species level by using API 20 E identification system. The study portrays that *Vibrio fluvialis*, *Proteus mirabilis*, *Proteus vulgaris*, *Brucella* sp. and *Ochrabactrum anthropi* were the human pathogenic bacteria found in sea perch while *Vibrio fluvialis*, *Proteus mirabilis* and *Proteus vulgaris* were detected in red snapper. In this study, *Vivrio fluvialis* was the fish spoilage bacteria found in both fishes while *Shewanella putrefaciens* was detected specifically in sea perch and *Photobacterium damsala* was detected in red snapper. In fact poor hygienic of fish handling practices and improper fish storage conditions have been observed to be the potential contamination sources of these bacteria. The present findings might be instrumental to aid both the food safety regulatory bodies and the Hazard Analysis Critical Control Point System in setting up new standards and guidelines for the awareness on post harvest fish handling practices in the public fish market and sea food restaurants.

P-116 Production of Recombinant Protein from Mammalian Cell Culture

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Cancer is defined as a group of neoplastic diseases broadly characterized by abnormalities of cellular differentiation, maturation and control of growth. Cancer significantly contributes to the bulk of deaths globally. It is the number two killer, after cardiovascular disease. p53 gene is a specific gene that functions to suppress the growth of tumors. The p53 gene is the most commonly mutated gene known in human cancer. When p53 is lost of its function this may permit the cell to divide without control. The aim of the research is to produce recombinant protein that can be use to prevent or to treat the cancer. Recombinant protein is produced by cloning of a specific mutation of the p53 gene isolated from HSC4 cells and inserted into a plasmid vector. The gene interest is cut by restriction enzyme of EcoRI and HindIII and then cloned into CMV plasmid. The gene is amplified by polymerase chain reaction (PCR) and detected by agarose gel electrophoresis. The cloned p53 gene is transfected to H1299 cell line in order to observe recombinant protein expression.

P-120 Bacterial Pollution in Molluscs Arch Clam, *Orbicularia orbiculata* and Blood Cockle, *Anadara granosa* of Pahang Estuary, Malaysia

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A study was conducted on physico-chemical parameters and bacterial pollution in *Orbicularia orbiculata* (Wood, 1828) and *Anadara granosa* (L.) at Pahang estuary from January to February 2009. The temperature was ranged from 28.00°C-29.87°C, pH 7.79-8.10, specific conductivity 51.49-55.89 mS/cm, salinity 18.74-30.10 ppt., TDS 33.63-39.59 g/L, DO 6.80-7.50 mg/L. The nitrate concentration was found to be highest at Station 3 (14.09 µg at N-l) and lowest at Station 2 (7.04 µg at N-l). The nitrite concentration showed highest concentration at Station 4 (7.07 µg at N-l) and lowest concentration at Station 2 (1.67 µg at N-l). Similarly the phosphate content was higher (10.78 µg at N-l) at Station 3 and lowest at Station 2 (2.34 µg at N-l). A total of 60 *Orbicularia orbiculata* and 40 *Anadara granosa* samples were subjected to microbiological analysis. The bacteria were isolated using non selective agar such as TSA agar and selective agar before they were identified using conventional methods in combination with API identification kit. A total of nine bacterial species were identified from *Orbicularia orbiculata*. They were *Escherichia coli*., *Aerococcus viridans* 1, *Aerococcus viridans* 2, *Gemella morbillorum*, *Kocuria varians*, *Micrococcus* spp., *Pseudomonas aeruginosa*, *Staphylococcus sciuri*, *Streptococcus pneumoniae*. Whilst, Nineteen bacterial species were identified in *Anadara granosa* such as *Aeromonas hydrophila* group 1, *Aerococcus viridians* 1, *Aerococcus viridans* 2, *Chromobacterium violaceum*., *Enterobacter gergoviae*, *Erwinia* spp., *Escherichia coli*, *Enterococcus avium*, *Gemella morbillorum*, *Kluyvera* spp., *Vibrio fluvialis*, *Vibrio cholerae*, *Vibrio parahaemolyticus*, *Lactococcus lactis*, *Leuconostoc* spp., *Staphylococcus capitis*, *Staphylococcus lentus*, *Staphylococcus epidermidis*, *Staphylococcus xylosus*. The finding indicates that the edible molluscs of Pahang estuary was polluted with pathogenic bacteria which could be harmful for human consumption.

P-124 Bioassay-direct Fractionation and Contact Bioautography Technique for Antimicrobial Activities of Marine Sponge

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The sponge (1L82008) possessed the highest antimicrobial activity among four sponges and three corals species investigated. The sponge tissue was extracted with methanol and followed with water and examined against two Gram-positive bacteria (*Staphylococcus aureus* and *Bacillus anthracis*), two gram-negative bacteria (*Escherichia coli* and *Pseudomonas aeruginosa*) and two fungi strains (*Candida albicans* and *Cryptococcus neoformans*) using disc diffusion method. The results showed that methanol extract had stronger antimicrobial activity against *B. anthracis* (400µg/disc) than water extract. Since the methanol extract was found to be active, it was used for further bioassay-directed fraction in order to isolate the active compounds. The dichloromethane and *n*-butanol fractions were found to be active at concentration 400µg/disc. Purification of *n*-butanol fraction was done by using normal phase column chromatography eluted with *n*-butanol:acetic acid:water (12:3:5). Based on thin layer chromatography (TLC) profiles, the same fractions were collected, concentrated and assayed for antimicrobial activity against *B. anthracis*. The results showed that fractions (87-123) and fractions (124-183) were the most active fractions. The TLC of the active fractions were then developed using the same mobile phase and subjected to contact bioautography against *B. anthracis*, which showed inhibition zone at different retention time, indicating the presence of antimicrobial components.

P-132 A novel diabetes diagnosis using complex-valued autoregressive technique

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In this research, a new method of biomedical signal diagnosis using complex-valued autoregressive (CAR) modeling approach has been developed.

The CAR coefficients were computed from the synaptic weights and coefficients of a split weight and activation function of feed forward multilayer complex valued neural network.

The performance of the proposed technique has been evaluated using PIMA Indian diabetes dataset with two different complex-valued data normalization techniques and four different values of learning rate. An accuracy value of 81:28% has been obtained using this proposed technique.

P-133 Teeth identification Using Autoregressive Modeling Technique

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The Adult dentition contains 32 teeth, 16 teeth in each jaw and this is divided into four equal quadrants so that each quadrant contains eight teeth consisting of two incisors, one cuspid (canine), two premolars (bicuspid), and three molars. Teeth numbering system is from 1 to 32, beginning at the maxillary right third molar (J1) extending across the maxilla to the left third molar (J16), then continuing to the left mandibular third molar, and going around the mandibular arch to the right third molar.

In this research, a new method of teeth shape identification and classification techniques using autoregressive modeling techniques for is proposed. Performance analysis of the newly proposed shape classification techniques has been evaluated using centroidal and complex boundary signatures.

Accuracy as high as 100% have been obtained using the proposed ANN-based shape identification technique on teeth shape recognition experiments. The newly developed shape modeling approach have been found to be invariant to rotation, scale, translation and choice of the starting point of the boundary

pixels and have been applied to model variation in shapes sizes.

P-206 Potential Non-invasive Tracheobronchial Targeted Delivery of DNA by PLGA Microspheres

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DNA-based intervention is potentially effective at treating chronic respiratory diseases. However, DNA is a delicate material requiring suitable carrier system for optimal inclusion into the body's system. Inhalable PLGA microspheres is discussed here as a more efficient mode of DNA delivery via pulmonary. Large scales of DNA-loaded PLGA microspheres were fabricated by two-step w/o/w double-emulsion solvent evaporation using two types of surfactants (Tween 20 & Pluronic L92). Microspheres were harvested by centrifugation, washed 3 times with distilled water, snap frozen in liquid nitrogen and lyophilised overnight. Lyophilised microspheres were kept at 4 °C in a sealed container with silica gel. Four independent batches for each surfactant type were fabricated. Surface morphologies of lyophilized microspheres were observed by scanning electron microscope (JEOLJSM-6400, Japan). Microsphere diameter (size) and distribution were measured prior to freeze-drying by laser diffractometry (Mastersizer 2000, Malvern Instruments, UK). The bulk density of lyophilised microspheres was calculated from the volume occupied by a known mass of microspheres loaded into a measuring cylinder and tapped 5000× (Tap Density Volumeter, Copley Scientific, UK). Volume measurements were repeated for four independent batches of microspheres, subsequently used in the inhaler experiments. Deposition pattern was evaluated using a Multi-Stage Liquid Impinger (MSLI) (Copley Scientific), interfaced with Monodose™ inhaler containing a hard gelatin capsule, pre-loaded with 30 mg ± 2 of dry microspheres. DNA concentration was measured by UV absorbance. The fabrication was optimised so that the median diameter, produced, fell within the desired range for inhalational of the particles, i.e. geometric diameter of > 5 µm (below which, particle tend to be exhaled automatically) but < 10 µm (to avoid RES uptake). Although the size produced by both surfactants were significantly different, but both retained similar aerodynamic diameters due to insignificant different in their density. Substantial deposition of microspheres at tracheobronchial region is a strong evidence to suggest these PLGA microspheres as a better generic carrier to deliver active DNA-based therapy to the region.

P-215 Low Level of BRCA-1 Mutations in Malaysian Breast Cancer Patients

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Women who carry BRCA1 mutations have a probability of about 80% for developing breast cancer, and 40 to 60% for developing ovarian cancer during their lifetime. We screened for mutations in exon 11A of the BRCA1 gene in 35 breast cancer patients with family history of breast cancer and 35 without family history. The control groups included 35 normal women with family history of breast cancer and another 35 with no family history. Genomic DNA was extracted and segment A of exon 11 was amplified by polymerase chain reaction (PCR) using published primers.

Protein Truncation Test (PTT). was utilized to screen for mutations in the amplicons. Sequencing was also carried out for selected samples to confirm the results. PTT mutations were detected in neither patients nor control groups.

P-228 Video-Assisted Thoracoscopic (Vat) Thymectomy for Myasthenia Gravis (MG) - Experience in a Single Institution

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Background: Thymectomy is a safe and effective modality of treatment for myasthenia gravis. VAT thymectomy offer the advantage of thymectomy with less invasive and more cosmetic approach compared to the standard open approach.

Purposes: To study retrospectively the outcome of VAT thymectomy for myasthenia gravis in our centre (Hospital Universiti Kebangsaan Malaysia).

Materials and methods: All patients who underwent VAT thymectomy for myasthenia gravis between 2001 till 2006 (period of 6 years) were included in the study. Successful VAT thymectomy is considered as remission, significant reduction in medication and dosage, and significant reduction in the Osserman classification or symptom without increase of the medication. Patients were followed up under regular interval.

Results: Twenty-five patients underwent VAT Thymectomy for MG. In a patient, a second VAT thymectomy was done for residual thymus gland. The mean duration of follow up is 28.9 months. Out of the 26 VAT thymectomy done, 22 (84.6%) were concluded as successful (reduction of Osserman classification or significant reduction of medication). All the 22 patients who were considered successful had reduction of Osserman classification and 9 of them became asymptomatic. Four patients were concluded as unsuccessful. Two had no deterioration of symptoms or increase in medications while the other patients had no deterioration of symptom but needed more medications. One of them had another VAT thymectomy for residual thymus gland and subsequently had reduction of Osserman and medications. No patient had deterioration of symptoms and there was no perioperative mortality. The complications which occurred in our series were mainly respiratory (residual pneumothorax, pleural effusion, hemothorax and lung collapse). Most of the patients were extubated within 24 hours post-operation. All the patients needed only oral analgesic after being transferred out from ICU.

Conclusion: VAT thymectomy is a safe and effective treatment for myasthenia gravis. It offers the advantage of surgical treatment with better cosmesis, less duration of hospital stay, less pain and minimal chest wall disruption. It should be the method of choice in treating generalized myasthenia gravis whenever possible.

P-267 The Ligation of Intersphincteric Fistula Tract (LIFT) for Fistula-in-Ano: Sphincter Saving Technique

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Background: The study was designed to assess results of total anal sphincter saving technique by ligating the intersphincteric fistula tract (LIFT) for the treatment of fistula-in-ano.

Material and method: A prospective observational study in forty-five fistula-in-ano patients treated by ligation of intersphincteric fistula tract (LIFT) technique from May 2007 to September 2008. All patients had fistulas arising from cryptoglandular infections. They were followed-up by a standard protocol to determine the recurrence rate, healing time and related morbidity associated with the procedure.

Results: Forty-five patients were included in the study of which five patients (11.1%) were recurrent fistula-in-ano after previous surgery using other recognized treatment procedures. The mean age was 42.6 years. The mean follow-up was nine months ranging from two months to sixteen months. Primary healing was achieved in thirty seven patients (82.2%). The healing time ranged from four to ten weeks and the mean was eight weeks. Eight patients (17.7%) had recurrence after a period between three months to eight months of surgery. No significant morbidity was noted in any of the forty five patients.

Conclusion: A new technique for fistula-in-ano surgery aimed at total anal sphincter preservation appears to be safe, easy and have a good early outcome.

P-328 Mixed Spices Increase Serum Adiponectin Protein (Adipokine) and Insulin in STZ Induced Hyperglycemic Rats

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Spices are used in food around the world with a view to enhance the flavor/aroma of dietary preparations. Apart from this aspect spices are also used in herbal medicines practice/treatment. Therefore spices have been studied extensively in relation to their effectiveness in the prevention/control of certain disease conditions. Numerous studies have shown that spices consumed as part of food provide best control over diabetes (hyperglycemia). Therefore, this project was designed to study the effect of mixed spices, namely cinnamon (*Cinnamomum zeylanicum*), cloves (*Syzygium aromaticum* or *Eugenia caryophyllata*, turmeric (*Curcuma longa*), and bay leaves also known as curry leaf (*Murraya koenigii*) on serum glucose, insulin and adiponectin protein concentration in rats induced hyperglycemia with streptozotocin (STZ). Sprague Dawley rats aged three months were injected with 40mg/kg/body weight with STZ in the abdomen in order to induce hyperglycemia. The rats were acclimatized with diets prior allocation to the doses of mixed spices. After having developed hyperglycemia the rats were divided into four groups i.e. 0 (control), one, two and three gram per day. The aforementioned spices were ground and mixed in equal ratios and added to stock diets 0, 1, 2 and 3 gram of the mixed spices in the feed to be fed daily. The total duration of the feeding was 40 days, and followed by 20 after effect of the spices. From the rats blood was collected on the day, 0, 21, 31, 41 from the tail and 61st day from heart puncture of the rats. The blood samples were immediately processed for serum separation after each collection and stored for later analysis at -70 C. The serum glucose, insulin and adiponectin protein concentration. The statistical analysis of the results indicated that serum glucose was significantly ($P < 0.05$) reduced whereas the insulin and adiponectin protein concentration was significantly higher ($P < 0.05$) in three gram spices compared to 0, 1 and 2 gram fed spices groups. This study indicates that spices provide control over hyperglycemia through increased adiponectin and insulin in circulating blood.

P-329 Islamic Fasting Cause Changes in Anthropometry and Bioelectrical Impedance Analysis (BIA)

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Muslim observes fasting in the Holy Month of Ramadan as an obligation. Therefore, this study was designed to study the effect of fasting on the anthropometry and body composition in fasting subjects. Twenty five volunteers (male & female) from the International Islamic University Malaysia (IIUM) were recruited in Ramadan. Age, sex, weight, height, waist & hip circumference and menstrual cycle status (in case of females) were recorded on day 1 and body weight and waist & hip circumference were also recorded on day 21 of Ramadan. Similarly, bioelectrical impedance analysis (BIA) was performed on day 1 and 21 for the assessment of changes in body composition. From body weight & height basal metabolic Index (BMI) was determined. Measurable waist-hip ratio was determined from the waist and hip circumferences. After 21 days of Ramadan fasting body weight was significantly ($P < 0.001$) reduced in the obese individuals. There was significant ($P < 0.01$) reduction in waist hip ratios in obese male and female. In the present study BIA showed no significant change in the intra or extra cellular water, however there has been shift of water between the two compartments which seems to be a physiological phenomenon during fasting. Infact, there was a strong positive correlation ($r = 0.9$) between the fat free mass and total body water and similarly there was a strong negative association ($r = -0.9$) with total body water. This study indicates that Islamic fasting could be a useful tool for the management of body weight without having major shift in the body composition.

P-330

Antimicrobial Activities of Some Coleus Spp

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Coleus spp. is a large and widespread genus with over 150 species. Coleus spp. or locally known as Ati-ati plant is found in several parts of South East Asia including Malaysia. As a member of Mint families, Coleus spp. was believed to have antimicrobial properties. In this study, 3 species of Coleus spp plants [Coleus amboinicus, Coleus blumei (purple leaves hybrid) and Coleus blumei (red leaves hybrid)] were screened for their antimicrobial activities. All samples were freeze-dried, grinded and extracted using 60% methanol. Disc diffusion method was used for assaying the antibacterial properties against five foodborne microbial (Bacillus subtilis, Staphylococcus aureus, Escherichia coli, Pseudomonas aruginosa and Candida albicans). The results showed that all methanolic extracts (concentration 200µg/disc) inhibited the growth of Staphylococcus aureus . Coleus amboinicus show higher antibacterial activity than the other plants against Bacillus subtilis, Escherichia coli and Pseudomonas aruginosa. While extracts of all the plants did not show any antibacterial activity against Candida albicans. These results established a good support to the use of Coleus species plant in herbal medicine and to act as a base for the development of natural antimicrobial in food industry.

P-331

The Evaluation of Total Phenolic Compounds in Coleus Spp

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Coleus spp. is a large and widespread genus with over 150 species. Coleus spp. or locally known as Ati-ati plant is found in several parts of South East Asia including Malaysia. As a member of Mint families, Coleus spp. was believed to have a lot of phenolic compounds. In this study, 5 species of Ati-ati plants [Coleus amboinicus, Coleus blumei (thick green leaves hybrid), Coleus blumei (thin green leaves hybrid), Coleus blumei (purple leaves hybrid) and Coleus blumei (red leaves hybrid)] were randomly collected from Kuantan area and screened for their total phenol compounds. Only stem and leaf parts of the plants were used in this study. All samples were freeze-dried, grinded and extracted using 60% methanol. The content of total phenolic compounds in the extracts was determined using modified Folin-Ciocalteu methods and calculated as Gallic Acid Equivalent (GAE) per 100 mg fresh weight sample. The absorbance of the developed colour in the sample mixtures was measured at 760 nm using UV-VIS spectrophotometer. The results showed that the amount of phenolic compounds in all 5 species of Ati-ati plants was ranged between 8.1-11.1% GAE/100 mL. The amount of phenol compounds in Coleus amboinicus was the lowest (P<0.05) compared to the other samples. Coleus blumei (thin green leaves hybrid) has highest amount of phenolic compounds but not significantly different (P>0.05) with Coleus blumei (red leaves hybrid). This study showed that Coleus spp. has potential to be developed as neutral functional food.

P-332

Determination of Antioxidant Properties in Ati-Ati Plants

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Coleus spp. are widely used in the region of tropical countries such as Vietnam, India and Indonesia as remedies for abdominal colic, respiratory disorders, painful menstruation and fever. In Malaysia, Coleus spp. are locally known as 'Ati-ati' plant and used primarily as ornamental. The use of Coleus spp. as remedies in Malaysia was previously unknown. The study was aimed to determine the total antioxidants content in three different Coleus spp., namely, Coleus amboinicus Lour. (CAL), Coleus blumei (purple

hybrid) (CBP) and *Coleus blumei* (mix colour hybrid) (CBMC). The quantities of total antioxidants in different parts (stems, petioles and leaves) of the plants were also evaluated. Fresh CAL samples were randomly collected from Jakarta, Indonesia and samples of CBR and CBMC were randomly collected from Kuantan, Malaysia. Samples were freeze-dried, ground and extracted using methanol. The antioxidants content of the extracted samples were measured on the basis of scavenging activity of the stable 1,1-diphenyl-2-picrylhydrazyl (DPPH) free radical (DPPH radical-scavenging assay). Ascorbic acid and butylated hydroxyl anisole (BHA) were used as positive control. Absorbance at 517 nm was determined after 30 min, and the percent inhibition activity was then calculated. Results showed that the total antioxidants content in CBR and CBMC were significantly higher ($P < 0.05$) than in CAL but there was no significant difference ($P > 0.05$) of total antioxidants content in CBR and CBMC. Different parts of CAL have the same ($P > 0.05$) amounts of total antioxidants content. In CBP and CBMC, the leaves have the highest ($P < 0.05$) content of the total antioxidants followed by petioles and stems. *Coleus blumei* showed greater amount of total antioxidants content compared to *Coleus amboinicus* Lour. The study showed the potential of *Coleus* spp. from Malaysia to be developed as natural functional food.

P-361 CA19-9 as a Non-Invasive Marker for Disease Activity in Hepatitis B Patients: Is there any Role?

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The combined elevation of tumor markers carbohydrate antigen 19-9 (CA 19-9) and carbohydrate antigen 125 (CA 125) has been shown to be associated with the severity of liver fibrosis in patients with liver disease. We assessed the association between CA 19-9 and viral hepatitis B activity which will allow us to know the usefulness of CA 19-9 as a surrogate marker for the disease activity in hepatitis B patients.

Methods: A prospective study involving 60 patients with hepatitis B surface antigen positive carrier was performed. These patients were divided into 2 groups according to HBeAg positivity. Tumor marker CA 19-9 was determined using routine laboratory methods and correlated with the disease activity by measuring hepatitis B viral DNA (HBV DNA) and serum alanine transaminase (ALT) and aspartate transaminase (AST) levels.

Results: Eleven (18%) were HBeAg positive and 49 (82%) were HBeAg negative. The mean (standard deviation) age in the former group was 40.7 (11.7) years and in the latter group was 40.8 (12.5) years ($p = 0.98$). There was no significance difference between the two groups with respect to the levels of serum ALT/AST, HBV DNA and CA 19-9. There was no significant correlation seen between CA 19-9 and serum ALT/AST. It was the same with the levels of HBV DNA.

Discussions and conclusion: The use of CA 19-9 as a non-invasive marker for disease activity in patients with hepatitis B infection was not useful. There was no role of CA 19-9 in hepatitis B patients to assess the disease activity.

P-364 Modified Dynamic Gracilis Neosphincter for Faecal Incontinence: An analysis of functional outcome at a single institution.

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Background – We undertook a prospective longitudinal study of patients with end-stage faecal incontinence who underwent gracilis muscle transposition as a neo-anal sphincter with external low frequency electrical stimulation of the nerve to gracilis combined with biofeedback. **Method –** 31 Patients (21 male, 10 female: median age 22 years, range – 4 to 77) with end stage faecal incontinence were operated for traumatic disruption (11-35%), congenital atresia (11-35%), iatrogenic injury (6-20%) and perineal sepsis (3-10%). Assessment of outcome was clinical, anal manometry (maximum resting –MRP and maximum squeeze pressures MSP), the Cleveland continence score (CCS) and the Rockwood quality of life scale (FIQL).

Result – At median follow up of 67 months, a successful result (CCS<9, FIQL>or= 9) was seen in 22 (71%). Of 9 with an unsatisfactory result, 4 reverted to a permanent stoma, 3 use constipating agents or enemas to evacuate and 2 await a second procedure (contralateral gracilis -1, artificial neosphincter-1). MRP and MSP improved significantly after operation [MRP; pre.vs post, mean (SD), cm.water – 13.8 () vs. 20.9 (11.3), p=0.01 and MSP; 36.6(22.4) vs. 95.4 (71.2), p=0.001]. In a subset of 17 assessed before and after operation, CCS (mean, SD) improved from 19.2 (3.4) to 5.2 (5.6) , p=0.0001 and FIQL (mean, SD) showed an improvement in all four domains ; pre vs. post – lifestyle – 1.0 (0.0) vs. 3.29 (0.9), p<0.0001; coping/behaviour – 1.0(0.0) vs. 3.29 (0.9), p<0.0001 ; depression /self perception – 1.0 (0.0) vs. 3.57 (0.65), p<0.0001 and embarrassment – 1.0(0.0) vs. 3.29(0.99), p<0.001.

Conclusion – A modified dynamic gracilis neo-anal sphincter for end-stage faecal incontinence is a cost-saving procedure which helps restore and sustain continence with improvement in quality of life in a majority. The procedure was most effective in those after traumatic injury compared with congenital atresia and sepsis causing native anal sphincter loss.

P-365 Successful Enhanced Recovery Program After Colorectal Surgery in the County Hospital Setting

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Introduction: In recent years, some enhanced recovery protocols after colorectal surgery have gained some acceptance as they have shown to improve patient recovery and decreased length of hospital stay. However, these pathways require strict adherence to standardized postoperative care to achieve better outcome. .

Objective: The enhanced recovery program requires patient education and compliance to achieve better outcome. This study was designed to assess the feasibility of such a program in a large county hospital with a diverse patient population.

Methods: A retrospective review of 54 consecutive patients who underwent colorectal resection without an ostomy by a single surgeon. Of the 54 patients, the first 27 were consecutive patients who were treated with a traditional intra and postoperative manner prior to institution of the enhanced recovery program, while the latter 27 were treated using a protocol with overall goals of early feeding and ambulation, intravenous fluid restriction and limited narcotic use. A Student's T-test was used for numerical values and a chi-squared test for categorical values.

Results: From April 2008 to July of 2009, 54 patients underwent laparoscopic and open colorectal resection without an ostomy for benign and malignant disease processes. There were no differences between the groups in terms of age, gender, disease process (benign vs malignant) and type of procedure (laparoscopic vs. open). There was a statistically significant difference in the patients treated with the enhanced recovery protocol in terms of a shorter length of postoperative stay (median 4 days (IQR 4,5) vs. 6 days (IQR 5,8) p =0.003) and less total intravenous fluids administered on the day of surgery (mean fast track vs not fast track, p-value) and up to three days following surgery (mean fast track vs not fast track). There were no differences in terms of complication and readmission rates.

Conclusion: The enhanced recovery program has shown to be effective in reducing hospital stay in patients undergoing colorectal resection without any increase in complication and readmission rate. Strict adherence to standard protocol to enhance recovery can be successful in county hospital patient population.

P-366 The Effect of Lead Exposure of Mice During Pregnancy on the Morphology of Epididymal and Testicular Spermatozoa of their Offspring

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The aims of this study were to assess the differences in the percentages of abnormal morphology between the epididymal and testicular spermatozoa of mature male offspring mice whose mothers were injected with various doses of lead acetate during gestation. Seventy two healthy female mice were divided into three major groups according to the number of injections involving 1, 2 or 3 injections at 8th day; 8th and 13th days; and 8th, 13th and 18th days of gestation period, respectively. Each major group was subdivided into four minor groups according to the dosage of lead administration of (0, 25, 50 and 100) mg/Kg. The percentages of abnormal morphology of epididymal and testicular spermatozoa were studied and the data were statistically analyzed.

The results of the present study proved that an increased number of injections and/or dose of lead acetate injected to the mothers during gestation cause an elevation in the percentage of abnormal morphology of both epididymal and testicular spermatozoa of the male mice offspring. In conclusion this study demonstrated that lead acetate when exposed prenatally have toxic effects on the sperm abnormal morphology in the offspring male mice most likely by interfering with the phase(s) of spermatogenesis and/or spermiogenesis.

P-368 The Prevalence of Depression among Elderly Patients Attending Primary Care Clinics in Kuantan, Pahang, Malaysia

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Identifying factors associated with depression among elderly population is important in order to improve their quality of life. A cross sectional study was conducted among elderly in three primary care clinics Kuantan, Pahang in assessing the depression and its associated factors. The respondents were selected through convenient sampling and interviewed by using reconstruct standardized questionnaire which includes social-demographic background, medical illness, ability to perform basic activities of daily living (ADL), cognitive function and depression assessment. Out of 600 elderly that attended the clinics from 1st December 2006 to 31st January 2007, 182(30.3%) respondents agreed to enroll in the study. The respondents comprised of Malay (93.4%), females (54.4%) and married (71.4%) elderly. Most of them were living with their family (92.3%), received formal education background (64.8%), had no past history of recent hospital admission (81.3%) and median income per capita of RM 250 per month. Most respondents (90.7%) suffered from chronic illness, 19.8% were functional dependent (according to Barthel index), 15.4% had cognitive impairment (according ECAQ) and 17.0% had depression (according to GDS-14). The study revealed that depression were found significantly difference with increasing age, marital status, occupation, living arrangements, history of hospital admission and presence of cognitive impairment. These findings highlighted that high prevalence of elderly attended the primary care clinics have a depression that require greater attention in health intervention by healthcare professionals.

P-369 **Comparing the sensitivity and specificity of otoacoustic emission screeners in diagnosing noise-induced hearing loss from air conduction pure tone audiogram in a hearing conservation programme**

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One of the key components of hearing conservation programme is the yearly pure tone audiogram (PTA) obtained from workers who are at risk of developing noise-induced hearing loss from occupational noise exposure. Although it is the current gold-standard for assessing one's hearing threshold, a number of limitations are associated with the PTA. It is not an objective test, it is time consuming, it needs trained technician and a sound-proof room (or at least a very quiet ambience) and it is deemed not sensitive enough to detect subtle changes in the cochlea due to early exposure to noise as it assesses the whole auditory pathway and not just the cochlea, where damage from noise mainly occur. A likely alternative would be otoacoustic emission (OAE), an objective test that measures the emission of outer hair cells which ideally would reflect early damages from sound, and takes only fraction of the time to do PTA to complete. Our objective is to see whether screening OAE can be used instead of PTA for early detection of NIHL. A total of 72 workers from a quarry in Kuantan recently underwent PTA, TEOAE, DPOAE and DDPOAE. The association between PTA and OAE (right and left ear) was tested using McNemar's test and the proportion between the pass and refer cases of OAE and PTA findings was noted to be significant. We will then report on the sensitivity and specificity of different types of OAE as stated above when compared to PTA as gold-standard.

P-372 **Molecular Study of Hepatitis C Viral RNA Extracted From Local Isolates in Pahang, Malaysia: Genotyping, Subtyping and Base Sequencing**

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Hepatitis C virus infection affects approximately 170 million individuals constituting about 3% of the world's population. Most of those infected face the risk of developing liver cirrhosis and/or liver cancer. In Malaysia, hepatitis C prevalence is 1.6% and is still the foremost infection among multiple blood transfusion groups. The current mainstay treatment of HCV is pegylated alpha-interferon in combination with ribavirin, incurring considerable expense on local health services. In fact, less than 50% of treated patients respond favorably to the given therapy. Understanding the characteristics of the RNA genome of the local HCV genotypes can serve as foundation for future development of rapid diagnostic techniques. In addition, it has the potential for helping in designing small interfering RNA (siRNA) to be utilized in studies related to specific silencing of vital viral genes. However, despite the plethora of global HCV studies, there is relative scarcity HCV research in Malaysia. In this present study, HCV isolates from infected haemodialysis patients were studied, focusing on the characterization of their genomes, by genotyping and base-sequencing. The nucleotide sequence of the conserved 5'UTR region of HCV genome revealed several sequence patterns across the 4 main HCV genotypes available in the study panel. Phylogenetic analysis of the NS5B region showed a predominance of HCV genotype 3a. The revealed sequence patterns have the potential for designing probes that could differentiate the predominant HCV genotype 3 from other genotypes. Analysis of the secondary structure of genotype 3a showed conserved loop structures that could be targeted by small interfering RNA molecules. In conclusion, molecular studies of local HCV strains provide a new dimension for the improvement of current HCV detection and genotyping methods, aid in better understanding of the molecular epidemiology of the virus infection and may form the basis for future in-vitro studies on viral molecular pathogenetic mechanisms and

discovering pathways for inhibiting viral replication.

**P-373 The Effect of Noise on Cardiovascular Parameters Using
Isolated Rat Heart**

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Prolonged exposure to loud noise can have lasting adverse effects on health. Noise damages not just the auditory system but also systematically by activating the sympathetic nervous and hormonal systems. This will lead to changes in blood pressure, heart rate, and other circulatory factors, which consequently can result in many cardiovascular diseases. In addition to that elevated noise levels can create stress, increase workplace accident rates. The present study was undertaken to evaluate the effect of acute and chronic high intensity noise on the isolated hearts of rats using the Langendorff apparatus by determining the effect of noise on the coronary perfusion pressure CPP (mmHg), heart rate HR (beat/min) and left ventricular diastolic pressure LVDP (mmHg), as well as to investigate its effect on plasma blood glucose concentration and lipid profile (Cholesterol, triglycerides and high density lipoprotein) as compared to control group. The rats were divided into four groups and they include exposure to noise of intensity 80-100 dBA on duration of 12 hours exposure (acute effect), 8 hours daily for 20 days (chronic effect), 20 days into 3 days exposure and 2 days without 8 hours per day (intermittent effect) and the control group. Noise of 80 – 100 dBA was found to cause significant increase in CPP, LVDP and HR ($P < 0.05$) for acute and both chronic groups versus control. Plasma glucose, cholesterol, TG and HDL were significantly increased in its concentration as a value ($P < 0.05$) for the acute and chronic continuous compared to no noise exposure while the concentration decrease for the chronic intermittent but still higher than the baseline controls. The present study showed that the high intensity noise does affect the cardiovascular parameters adversely.

PP-18 Efficacy and Safety of Viva QS® Capsule for Nicotine Addiction in Malaysian Adult Smokers

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We conducted a randomised, double-blind, placebo-controlled study to evaluate the effectiveness of Viva QS® capsule, a supplement consisting of twelve herbs, for the management of nicotine addiction. Smokers meeting study criteria were recruited into the study. Follow-up was undertaken for 6 months, with three assessment time points for smoking status and withdrawal symptoms. Brief counseling was provided at each follow-up via telephone call at week 4 and 12. At week 24, face-to-face follow-up was done and self-reported abstinence was validated by measuring expired carbon monoxide level and cotinine in urine and/or saliva samples. Result: Of 155 smokers recruited, mean age was 35.2 ± 8.36 years. Mean baseline Fagerström test for nicotine dependence (FTND) score was 5.03 ± 1.39 . 7-days point prevalence quit rate was 22.4% at week 24 [Viva QS = 30.7% vs. placebo = 13.9%]; $p = 0.015$; OR = 2.74 (CI = 1.197-6.282), 34.7% at week 12 [42.7% vs. 26.2%]; $p = 0.038$, OR = 2.08 (CI = 1.04-4.16) and 24.5% at week 12 [32% vs. 16.7%]; $p = 0.031$; OR = 2.35 (CI = 1.07-5.17). Most common adverse events reported were sore throat (Viva QS = 28.8% vs. placebo = 36.6%), dry mouth (17.8% vs. 16.9%) and cough (11% vs. 8.4%) There were no significant differences in all adverse events reported by subjects in both groups. Conclusion: Viva QS® at least doubled smoking cessation rate vs. placebo in smokers with moderate to high level of nicotine dependence without any significant adverse effects.

PP-27 Acetylcholine Esterase as a Possible Marker for the Detection of Halal Way of Slaughtering

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Introduction: Different methods of slaughtering are being practiced because of differences in religious guidelines and environmental issues (use of electricity) or convenience of handling etc. Variation in methods of slaughtering results in different conditions namely, release of varying amount of blood and different degree of movement of its body parts prior to death. These issues are related to the release of neurotransmitter (NT) at the neuro-muscular junction (NMJ) eventually is subject to be released from the body through the blood flow.

Experimental design: Muscle samples from chicken in small pieces were collected immediately after slaughtering. Slaughtering was carried out using sharp knife. Two different conditions pertaining to the Islamic guidelines of slaughtering were investigated, such as whether the neck was severed (S+) or not (S-) from the body during slaughtering and whether the animal just after slaughtering was released (R+) or not (R-). The level of acetylcholine esterase mRNA involved in the degradation of acetylcholine, a NT at NMJ was investigated by RT-PCR.

Results: The level of acetylcholine esterase mRNA was not detected in the sample obtained from the chicken slaughtered following Islamic guidelines i.e., neck should not be severed and body should be released just after the slaughtering (R+S-).

Conclusions: Level of acetylcholine or acetylcholine esterase can be used as a biomarker to identify if the slaughtering is performed following Islamic guidelines.

**PP-28 Selenium Addition to Green Papaya Extract Improves
Epidermal Wound Healing**

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Introduction: Wounds due to injuries for various reasons and for the diabetic patients have been a major public health concern. In the search for a wound healing agent of herbal origin, we have earlier reported the efficiency of the green (unripe) *Carica papaya* extracts [Food Chem Toxicol. 2008. 46: 2384-2389]. Here we report that addition of Se with green papaya extract results in further improvement of wound healing efficiency.

Results: During the first phase (0-4 days) of healing of epidermal wound (induced by biopsy puncture on mouse epidermis, 5 mm in diameter) use of the water extract (WE) without Zn or Se results in maximum reduction, i.e., ~70% of the initial wound area by day 2. However, 14 days are required for the complete healing. Average shortest time (day) taken for the complete healing was observed using the PBS extract (PE) with Se at 0.5 or 1.0 mg/g of the extract. Most efficient healing, as calculated by comparing total time required for healing with or without extracts, was observed with Se addition with the PE or WE. Notably, unlike the water extract, the PBS extract does not contain any tannin while it contains more protein than water extract. However, total yield, as measured by extract (mg)/papaya flesh (100g), is comparable for both PBS and water extracts.

Conclusions: Green papaya extract prepared in PBS if added with appropriate amount of Se can be used as a potential natural source of wound healing which at the same time will be safer than synthetic drugs.

**PP-55 Fucoxanthin -- An Anticancer, Antioxidant and Apoptosis-Inducing
Agent from Malaysian Brown Seaweeds**

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Seaweeds are the raw materials for industrial production of agar, carrageenan and alginates. They continue to be widely consumed as food in Asian countries. Seaweeds serve as an important source of bioactive natural substances. Seaweeds contain carotenoids, dietary fibres, proteins, essential fatty acids, vitamins and minerals. This study has been successfully conducted to extract, isolate and purify fucoxanthin, a class of carotenoid, from five types of Malaysian brown seaweeds, namely *Turbinaria turbinata*, *Padina australis*, *Sargassum duplicatum*, *S. binderi* and *S. plagyophillum*. Preliminary studies showed that apart from possessing antioxidant properties, fucoxanthin remarkably reduced the viability of human colon cancer cell lines. Treatment with fucoxanthin induced DNA fragmentation, indicating apoptosis.

PP-56 Production of Anti-Cholesterol Compounds from Malaysian Rubber Seeds

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Phytosterols are triterpenes similar to cholesterol, both in structure and in function. They play major roles in several areas, namely in pharmaceuticals (production of therapeutic steroids), nutrition (anti-cholesterol additives in functional foods, anti-cancer properties), and cosmetics (creams, lipstick). The sterols found in rubber seeds have been proven to lower serum cholesterol levels in laboratory experimental rats. The primary mechanism of action of phytosterols is the inhibition of cholesterol uptake from the intestine. Because of their structural similarity to cholesterol, these sterols are able to compete with dietary and endogenously secreted cholesterol for absorption. Phytosterols have been also shown to exert significant unique biochemical effects in both animals and humans. The present work has been performed to extract and identify phytosterols from Malaysian rubber seeds. Major sterols that were found in the study were campesterol, stigmasterol, and sitosterol.

PP-63 A Portable Myoelectric-Robotic System to Prevent Muscle Stiffness and Numbness

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Electromyography is a clinical measurement of electrical activities from muscle tissue. In this work, we develop a myoelectric-robotic system to acquire human electromyogram (EMG) signal which is portable to be used in preventing muscle stiffness and numbness. The problem of muscle stiffness and numbness occurs due to long period of muscle passivity. This is a major problem faced by individuals who are elderly, bedridden or wheelchair bound during their recuperation periods. The proposed system can monitor and record muscle activity of the individual noninvasively, and activate a robotic system to perform a series of pre-specified tasks. We anticipate the human-robot synergism could engage the affected individuals more effectively by providing some 'excitement' in activating their muscles to avoid stiffness and numbness.

PP-91 Medicine for wound healing from the discarded seeds of Tamarind

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Introduction: Tamarind indicus belongs to the subfamily Caesalpinioideae. Seeds from tamarind comprises of testa (20-30%) and kernel (70-75%) are rich in various biochemical components such as protein (131.3 g/kg), oil (48.2 g/kg) and fiber (67.1g/kg). In an effort to make use of tamarind seeds we have studied its possible pharmacological benefits for wound healing. Results: Induced wound (5 mm in diameter) on mouse epidermis were treated topically with various forms of tamarind seed extracts. Depending on the reduction of the size of the wound, it was observed that extracts prepared in PBS (PE) was found at least equally efficient as the commercially available wound healing agent, i.e., Socoseryl (PC). In both these cases, average time requirement for complete wound healing is 10 days (n=7). Other forms of extracts using water (WE), ethanol (EE) and methanol (ME) required an average 11 days for complete healing while the wound left untreated require at least 14 days (n=5-7). Unlike the synthetic wound healing agent, treatment with the extracts did not result in development of inflammation. Conclusions: Extracts from tamarind seed which is otherwise a waste, can be used as a potential natural source of wound healing which at the same time will be safer than synthetic drugs and will be more economical.

PP-276

PET/SPECT Test Phantom

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It is vital to test the response, reliability and to determine image artifacts produced by the nuclear medicine tomography systems due to some systemic limitations before their use in clinical studies. That cannot be reliably achieved by scanning patients. Different types of test phantoms are commercially available with accurately/precisely known composition, which helps in acquiring prior knowledge about the capability and drawbacks of a nuclear medicine tomography system. A cold regions insert, that can be placed into a cylindrical tank of a commercially provided PET/SPECT phantom has been developed (for R A Carlson's phantom - which consists, hot, cold and linearity inserts where the hot regions insert is comprised on a "V" shaped eight pairs of various sized holes with a cold background). The new produced cold regions insert, consists solid plastic rods, 5 cm long (each) with same diameters and exactly the same arrangement as hot region holes pairs insert of R A Carlson's phantom. Both inserts have been attached with each other by aligning hot and cold regions for similar cross sectional views. The data acquired by this arrangement provides a simple way for measurement and comparison of the performance of a system i.e., image resolution in terms of position and size of hot and cold regions in the phantom, region(s) detectability. Also the accuracy of scatter, attenuation correction and image reconstruction techniques in nuclear medicine tomography may be tested.

APPRECIATION

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