



الجامعة الإسلامية العالمية ماليزيا
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA
يُؤَسَّسُ بِسْمِ اللَّهِ الرَّحْمَنِ الرَّحِيمِ
Garden of Knowledge and Virtue



Himpunan
Kimia
Indonesia



PROGRAM BOOK

4th International Conference on Chemistry, Chemical Process & Engineering

"Developing Concepts & Leveraging Chemistry Innovations for Sustainable Future"

27th September 2022

The Alana Yogyakarta Hotel & Convention Center
Yogyakarta, Indonesia

Preface

International Conference on Chemistry, Chemical Process and Engineering will be held in Yogyakarta, Indonesia on September 27th, 2022. The conference is jointly organized by Chemistry Department, Universitas Islam Indonesia, Himpunan Kimiawan Indonesia (HKI), Himpunan Kimiawan Indonesia Cabang Yogyakarta, International Islamic University Malaysia and University College TATI Malaysia. The conference is aimed to disseminate the results of research from universities, research center and government boards and bring synergy between research and industry. In the spirit of green chemistry, chemical and industrial process for sustainable and brighter future, the conference will provide the opportunity for more environmental and efficient technology in the field of chemistry, chemical process and engineering. Topic of interest to be covered in the conference includes, but not limited to:

1. Materials and advance materials
2. Electrochemistry and applications
3. Homogeneous and heterogeneous catalysis
4. Renewable and sustainable energy
5. Environmental chemistry and its aspects
6. Organic synthesis for food and drug
7. Reaction engineering and quality control
8. Computational modeling and chemometric
9. Chemical engineering and process
10. Chemical Education and society

This program book provides some information concerning the schedule, list of presenter and poster presenter, and the venue map. Hopefully, this book helps the participants for intensively listen and get valuable information in the conference. The scientific program of IC3PE 2022 comprises the following:

1. Keynote speakers 5 papers
2. Invited speakers 8 papers
3. Total papers for poster presentation 35 papers
4. Total papers for oral presentation 75 papers
5. Total papers 111 Papers

The topics of the papers are as follows:

Topic	Oral	Poster
Materials and advance materials	25	19
Electrochemistry and applications	2	
Homogeneous and heterogeneous catalysis	3	
Renewable and sustainable energy	1	
Environmental chemistry and its aspects	2	2
Organic synthesis for food and drug	33	12
Reaction engineering and quality control		
Computational modeling and chemometric	6	
Chemical engineering and process	2	
Chemical Education and society	1	3

Chairperson's Foreword

Assalamu'alaikum Wr.Wb

Distiguish keynote speakers, invited speakers, ladies, and gentlemen

Thanks to Allah who gives us health and opportunity to meet in this screen today, in the 3rd International Conference on Chemistry, Chemical Process and Engineering. After successful completion of 1st – 3rd International Conference on Chemistry, Chemical Process and Engineering (IC3PE), we are proud to present this meeting, the 4th IC3PE. The 3rd IC3PE was in 2020, which is in COVID-19 pandemic, the IC3PE was conducted by online mode. With our hope to bring a communicative and memorable sharing event, now, during the recovery situation, the conference is performed in the hybrid mode. The committee tried to organize the meeting very well in order to give the opportunity and facilitate all participants to include in fruitful discussion during the meeting. The conference offered experts and the chance to discuss their ideas and take suggestions for future research. Particularly, some of the keynote speakers and invited speakers are coming physically. There are will also challenges for students to take on new perspectives and building strong networks with experts. SO, thank you very much for our keynote speakers:

Prof. Dato' Dr. Musa Ahmad	(Faculty of Science and Technology Universiti Sains Islam Malaysia, Malaysia)
Dr. Yunus Turkmen	(Department of Chemistry Bilkent University, Turkey)
Prof. Dr. Fitria Rahmawati	(Department of Chemistry, Universitas Sebelas Maret, Indonesia)
Prof. Dr. K. L. Ameta	(Department of Chemistry, Sardar Patel University, India)
Prof. Shaobin Wang	(School of Chemical Engineering & Advanced Materials, The University of Adelaide, Australia)

The 4rd IC3PE will be focusing but not limited on different aspects of chemistry, green chemistry, sustainable process, materials and inorganic chemistry, advance in organic chemistry, electrochemistry and sensor, food chemistry, catalysis, modelling, chemistry education, pharmaceutical. Not only the varied recent advances in those branches of researches, this year, this conference is also hosted by Chemistry Department, Universitas Islam Indonesia, but also co-hosted by Chemistry Department, International Islamic University of Malaysia (IIUM), and Universiti College TATI, Terengganu Malaysia.

Again, Thanks to all our wonderful Speakers, Conference Attendees and Collaborators for making this conference completed successfully.

Prof. Dr. Is Fatimah, M.Si.

Chairperson

International Seminar on Chemistry Education

Remarks by the Chairman of the Indonesian Chemical Society

Assalamu'alaikum Wr.Wb.

Let me welcome and thank all our speakers-online and offline in this conference, 4th International Conference on Chemistry, Chemical Process and Engineering (4th IC3PE) held by the Chemistry Department, Universitas Islam Indonesia.

The Indonesian Chemical Society (*Himpunan Kimia Indonesia*) congratulates the organizer for conducting a successful scientific event this year, which is the continuing routine agenda. HKI is very delighted and support this meeting to witness that in this conference, experienced and young scientists, as well as students come and sit together. The conference is an important meeting for chemists to disseminate, share, celebrate, and also motivate each other in improving research. Since its foundation in 1962, the Indonesian Chemical society has now grown to foster and encourage communication and network for more than 1300 Indonesian chemists to advance their competencies in chemistry for the welfare of Indonesia.

The progress of our world is inseparable from chemistry, chemical processes and engineering, and chemical education. These are important fields that have direct contributions for the sustainable development of our society. In addition, the meeting is hopefully promoting the advancement of the scientific competences that will impact to the continual development of our society, nations and environment for brighter future. As chemists, this is also the time to create bonds and networks that will lead to a fruitful cooperation.

On behalf of the Indonesian Chemical Society, I thank and welcome our keynotes, invited speakers and all participants who attend this conference. I wish you enjoy the good scientific atmosphere in the conference, be actively involved, make new friends and have fruitful meeting.

Sincerely yours,

Prof. Hamzah Fansuri, Ph. D

President

Indonesian Chemical Society 2022

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Chairperson

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Parwanto
Bagus Suprianto

General Information for Participants

ORAL PRESENTATIONS

1. Presenter will be invited into zoom meeting by the committee.
2. Presenter is allowed to choose the mode of oral presentation either online or offline.
3. For online presentation, you might choose asynchronous (by video recording) or synchronous with 7 minutes available and continue with Q&A session for 3 minutes.
4. Each of video or material presentation (ppt) are uploaded to the following link: <https://bit.ly/ic3pe2022-upload> latest on 22th September 2022.
5. The presentation is scheduled in conjunction with other sessions in the conference program
6. The video is presented in MP4 format with at least 480 HD maximum 50 MB with showing the face of the presenter if possible. For an example can be seen on the YouTube channel of Prof. Is Fatimah
7. The video file should be named as follows: ID paper_fullname_affiliation
8. The presentation template can be downloaded on the website of IC3PE <https://chemistry.uui.ac.id/ic3pe/>

POSTER PRESENTATIONS

1. The poster dimension is 160 x 60 cm using stand banner (provided by participants)
2. The presentation file template can be downloaded on the website of IC3PE <https://chemistry.uui.ac.id/ic3pe/>
3. The poster is uploaded to the following link: <https://bit.ly/ic3pe2022-upload> latest on 22th September 2022.
4. The committees are not responsible for the undesirable things related to the poster presentation after the conference is over.

PLENARY SESSION

1. Access to the zoom meeting is open 30 minutes before the event starts.
2. All participants must dress modestly
3. The camera and microphone should be turn off during the session and allow to be turned on as requested by the master of ceremony or the moderator as well.
4. Participants are encouraged to use a virtual background during the event or change the profile picture with the virtual background
5. Virtual background can be downloaded on the website of IC3PE
6. The participants are allowed to deliver the question through the chat application and the moderator will arrange the Q&A session at the end of each session.
7. The name of participants during the conference using the following format
 Presenter : Room_lastname_afiliation (abbreviation)
 Example : Room 1_Wicaksono_UII

PARALEL SESSIONS

1. Oral presenters will be divided into several breakout room in the Zoom Meeting. Please see your room in the conference program and accept the breakout room invitation few minutes before the parallel session starts.
2. This session starts from 13.30 PM until 16.30 PM and will be opened by the invited speaker session.
3. The moderator will open the session with greeting and introduce the invited speaker
4. The invited speaker has maximum 20 minutes of presentation and 10 minutes of discussion.
5. For oral presentation, direct mode or indirect mode each has 7 minutes of presentation and 3 minutes of discussion.
6. The moderator records the video and takes a picture in the end of session.
7. In the end of session, the moderator announces to the presenter to join the main room for award appreciation and closing remarks.

Time Schedule

The 4th International Conference on Chemistry, Chemical Process and Engineering (4th IC3PE) 2022 Tuesday, September 27th, 2022 Indonesia

Co-organizing committees:

- Department of Chemistry, Faculty of Mathematics and Natural Sciences Universitas Islam Indonesia, Indonesia
- International Islamic University Malaysia
- Universiti College TATI Malaysia
- Himpunan Kimia Indonesia (HKI)

Time	Activity	PIC	Media
08.00 - 08.30	Registration	Committee	
08.30 - 08.45	Opening Ceremony	Master of Ceremony Yono Malakiano	Zoom
	Recitation of Holy Qur'an National Anthem of Indonesia Hymn of Universitas Islam Indonesia	Cecep Sa'bana Rahmatillah, S.Si. The Miracle Voice The Miracle Voice	
08.45 - 08.50	Welcoming Address by The Chair Person of IC3PE	Prof. Dr. Is Fatimah, M.Si.	Zoom
08.50 - 08.55	Welcoming Address by The President of Indonesian Chemical Society	Prof. Dr. Hamzah Fansuri	Zoom
08.55 - 09.00	Welcoming Address by The Rector of University College TATI, Malaysia	Prof. Dr. Anuar bin Ahmad	Zoom
09.00 - 09.10	Opening and Welcoming Address by The Rector of Universitas Islam Indonesia	Prof. Fathul Wahid, S.T., M.T., Ph.D.	Zoom
09.10 - 09.15	Photo Session	Master of Ceremony	Zoom
09.15 - 09.20	Entertainment	The Miracle Voice	Zoom
09.20 - 09.30	Coffee break	Committees	
09.30 - 10.30	Plenary Session 1		Zoom
	Prof. Shaobin Wang <i>School of Chemical Engineering and Advanced Materials The University of Adelaide Australia</i>	Moderator	
	Prof. Dr. Fitria Rahmawati <i>Department of Chemistry Universitas Sebelas Maret Indonesia</i>	Dr. Maisari Utami	

10.30 - 12.00	<p>Plenary Session 2</p> <p>Prof. Dato' Dr. Musa Ahmad <i>Faculty of Science and Technology Universiti Sains Islam Malaysia Malaysia</i></p> <p>Prof. Dr. K.L. Ameta <i>Department of Chemistry, School of Liberal Arts and Sciences Mody University of Science and Technology India</i></p> <p>Dr. Yunus Turkmen <i>Department of Chemistry Bilkent University Turkey</i></p>	<p>Moderator</p> <p>Assoc. Prof. Dr. Fiona How Ni Foong</p>	Zoom
12.00 - 12.10	Presentation of Sponsorship	Master of Ceremony	Zoom
12.10 - 12.15	Closing of Plenary Session	Master of Ceremony	
12.15 - 13.30	Break Poster Presentation	Committees	
13.30 - 14.30	Invited Speaker Session (20 minutes presentation, 10 minutes discussion)	Moderator and Associate in Parallel Session	Zoom Room Breakout
	Room 1: Asst. Prof. Dr Wan Hazman Danial	Asst. Prof. Dr. Mohamad Wafiuddin	
	Room 2: Assoc. Prof. Suresh Sagadevan	Gani Purwiandono, Ph.D.	
	Room 3: Prof. Dr. Is Fatimah, M.Si.	Asst. Prof. Dr. Maryam Zahaba	
	Room 4: Ts. Dr. Azharin Shah Bin Abd. Aziz	Asst. Prof. Dr. Wan Zurina Samad	
	Room 5: Asst. Prof. Dr. Erna Normaya Abdullah	Salmahaminati, Ph.D.	
	Room 6: Assoc. Prof. Dr. Mohammad Norazmi Ahmad	Asst. Prof. Dr. Nurasyikin Hamzah	
	Room 7: Muhamad Rafi, Ph.D.	Dr. Tatang Shabur Julianto	
	Room 8: Assoc Prof. Ts.Dr. Ahmed H. A. Dabwan	Amri Setyawati, M.Sc.	
14.30 - 16.30	Oral Presentation (7 minutes presentation, 3 minutes discussion)	Moderator	Zoom Room Breakout
16.30 - 16.35	All participants return into Zoom main room	Committees	Zoom
16.35 - 17.00	<p>Entertainment Awarding Best Poster and Best Presenter</p> <p>Closing Remarks Dean of Faculty of Mathematics and Natural Sciences Universitas Islam Indonesia</p> <p>Closing Ceremony</p>	<p>Chemistry Student Association Committees</p> <p>Prof. Riyanto, M.Si., Ph.D.</p> <p>Master of Ceremony</p>	Zoom

Content

Content	Page
Cover	i
Preface	ii
Chairperson's Foreword	iii
Remarks by the Chairman of the Indonesian Chemical Society	iv
Committes	v
General Information for Participants	vii
Time Schedule	ix
Content	xi
Pararel Session	xii

Abstract			
Author	Paper Tittle	Paper ID	Page
K. L. Ameta	Greener and Sustainable Trends in Synthesis of Heterocyclic Frameworks	Keynote Speaker	2
Fitria Rahmawati	Mineral Resources to Support Electrochemical Energy Conversion	Keynote Speaker	3
Yunus E. Turkmen	Access to Carbo- and Heterocyclic Frameworks via Cyclization and Cycloaddition Reactions	Keynote Speaker	4
Musa Ahmad	Optical Chemical Sensing Materials for Food Quality Monitoring	Keynote Speaker	5
Shaobin Wang	Carbon-based Materials for Catalytic Energy Conversion and Environmental Remediation	Keynote Speaker	6
Wan Hazman Danial	Electrochemically exfoliated graphene materials: recent advances and challenges	Invited Speaker	8
Is Fatimah	Development of Low-Cost Nanocomposites for Water Treatment Applications	Invited Speaker	9
Suresh Sagadevan	Photocatalytic activity of metal oxides nanostructures for the degradation of organic pollutants	Invited Speaker	10
Azharin Shah Bin Abd. Aziz	The Trend of World Industries	Invited Speaker	11
Erna Normaya	Computational Chemistry Aided Towards Fundamental Study of Sensor Development	Invited Speaker	12
Mohammad Norazmi Ahmad	Development of a Chemometric-assisted Green Technology Approach for the Effective Extraction of Multifunctional Food Additives	Invited Speaker	13
Mohamad Rafi	LC-MS/MS-based metabolomics in the context of natural product research	Invited Speaker	14
Ahmed H. A. Dabwan	Green Technology for Achievement Sustainable Development Goals (SDGs); Malaysian Performance as an Example	Invited Speaker	15

PARALLEL SESSION

Room	Invited Speaker	Moderator	Section	Total	Total
1	Asst. Prof. Dr. Wan Hazman Danial	Asst. Prof. Dr. Mohammad Wafiuddin	Materials and advance materials	9	11
			Electrochemistry and applications	2	
2	Assoc. Prof. Suresh Sagadevan	Gani Purwiandono, Ph. D.	Materials and advance materials	6	7
			Homogeneous and heterogeneous catalysis	1	
3	Prof. Dr. Is Fatimah, M. Si.	Asst. Prof. Dr. Maryam Zahaba	Materials and advance materials	10	10
4	Ts. Dr. Azharin Shah Bin Abd, Aziz	Asst. Prof. Dr. Wan Zurina Samad	Homogeneous and heterogeneous catalysis	2	11
			Renewable and sustainable energy	1	
			Environmental chemistry and its aspects	1	
			Organic synthesis for food and drug	7	
5	Asst. Prof. Dr. Ema Normaya Abdullah	Salmahaminati, Ph. D.	Chemical Education and society	1	9
			Computational modeling and chemometric	6	
			Chemical engineering and process	2	
6	Assoc. Prof. Dr. Mohammad Norazmi Ahmad	Asst. Prof. Dr. Nurasyikin Hamzah	Organic synthesis for food and drug	11	11
7	Muhamad Rafi, Ph. D	Dr. Tatang Shabur Julianto	Organic synthesis for food and drug	6	6
8	Assoc. Prof. Ts. Dr. Ahmed H. A. Dabwan	Amri Setyawati, M. Sc.	Organic synthesis for food and drug	9	10
			Environmental chemistry and its aspects	1	
Total					75

Room 1: Abimanyu

Room 2: Gatotkaca

Room 3: Bima

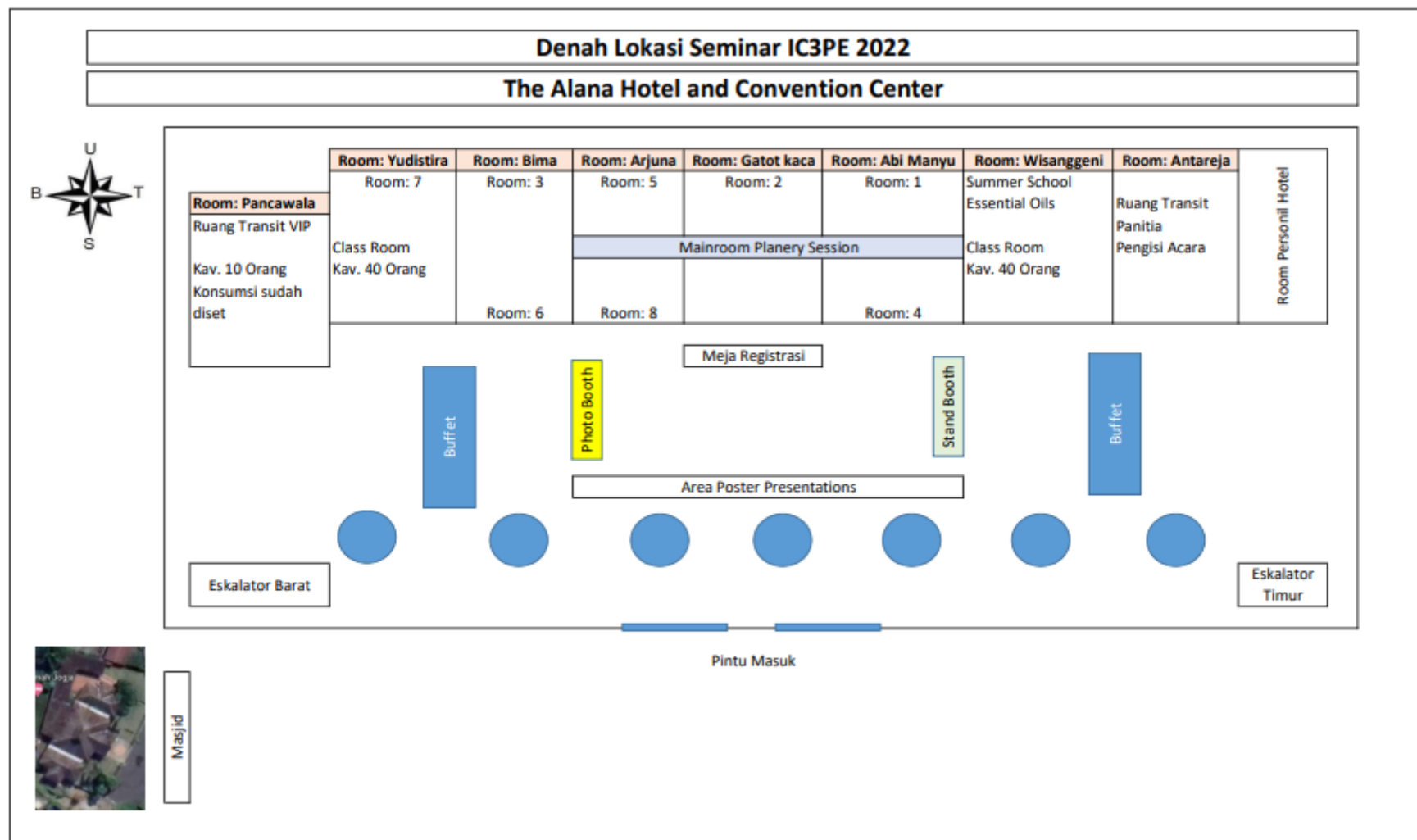
Room 4: Abimanyu

Room 5: Arjuna

Room 6: Bima

Room 7: Yudhistira

Room 8: Arjuna



PARALLEL SESSION ORAL PRESENTERS (ONLINE & OFFLINE)

No	Paper ID	Paper Tittle	Authors	Presenter	Room	Page
1	24437	Preparation and characterization starch of janeng (Dioscorea Hispida Dennst) as filament	Chairul Amni, Marwan, Sri Aprilia, Eti Indarti	Chairul amni	1	18
2	24302	A Review: Silver - Zinc Oxide Nanoparticles - Organoclay Reinforced Chitosan Bionanocomposites for Food Packaging	Lisna Junaeni Muiz, Ariadne Lakshmidevi Juwono, Yuni Krisyuningsih Krisnandi	Lisna Junaeni Muiz	1	19
3	24416	Composing And Characterization Of Barium Strontium Titanate Film Doped With Carbon Dot	Irzaman, Kenji Rizki Mayfarah, Mahfuddin Zuhri, Heriyanto Syafutra, Noviyana Darmawan, Erdiansyah Pratama, Ridwan Siskandar	Irzaman	1	20
4	24431	Physical Properties And Morphology Of MC/KOH/PEG/Graphene	Nur Aainaa, Suhaila Abdullah, Norazlina Hashim, BadrulHaswan Besar, Nurul Anniyah Mohamad Sobri, Lili Shakirah Hassan	Nur Aainaa Binti Mohd Zu	1	21
5	24432	Characteristic of Oil palm shell Pyrolysis: Temperature Selectivity on Phenolic Compound	Joko Pitoyo, Siti Jamilatun	Joko Pitoyo	1	22
6	24481	Studies on the Intercalation of Calcium-Aluminium Layered Double Hydroxide-MCPA and its Controlled Release Mechanism as a Potential Green Herbicide	Farah Liyana Bohari, Sheikh Ahmad Izaddin Sheikh Mohd Ghazali, Nur Nadia Dzulkifli, Siti Nur Atika Baharin, Is Fatimah and Sandeep Poddar	Farah Liyana Bohari	1	23
7	24485	Effect of Titanium Dioxide Nanoparticles Reinforcement in Bacterial Cellulose Nanocomposites	Rizki Eki Almalik, Heru Suryanto, Amminudin, Jibril Maulana	Rizki Eki Almalik	1	24
8	24483	Morphology and Structure of Bacterial Nanocellulose Nanocomposite Reinforced by Titanium Dioxide In Presence of Polyethylene Glycol	Muhammad Rizky Abdillah, Heru Suryanto, Aminnudin, Susanto Arif Sardjono, Jibril Maulana	Muhammad Rizky Abdillah	1	25
9	24428	The Potential of Cocos Nucifera Leaf as Green Corrosion Inhibitor of Copper	W. M. Wan Syahidah, R. Rosliza, F. Atan	W. M. Wan Syahidah	1	26
10	24801	The Assessment of Inhibitive Effect of Citrus X Sinensis Peel on Marine Corrosion of Mild Steel	S. Mohamed Ali and R. Rosliza	S. Mohamed Ali	1	27

11	24741	Inductively Coupled Plasma Mass Spectrometry In-situ Analysis of Suspended Titanium Dioxide Nanoparticles	Mohd Shukri Mohd Aris, Zakuan Azizi Shamsul Harumain, Maryam Zahaba, Wan Hazman Danial, Mohamad Amirul Ikhwan Mohamad Zani, Hazrin Abdul Hadi, and Shahrulnizam Jamen	Wan Hazman Danial	1	28
12	24397	Gas Phase Hydrogenation of Benzene Over Ni and Mo/Activated Carbon Catalyst	Wan Ryan Asri, and Hasanudin Hasanudin	Wan Ryan Asri	2	30
13	24661	Coagulation Activity Of Liquid Extraction Of Leucaena Leucocephala And Sesbania Grandiflora On The Removal Of Turbidity	Rudy Syah Putra, Desi Nasriyanti, Muhammad Sarkawi	Rudy Syahputra	2	31
14	24491	Low-Cost Synthesis of Borosilicate Using Silica from Oil Palm Leaves	Suci Sukma Taruna Asral, Salprima Yudha S, Morina Adfa, Diana Andari, Muhamad Alvin Reagen	Suci Sukma Taruna Asral	2	32
15	24475	In Situ Synthesis of Polyanniline-Silica Composite Using Silica from Oil Palm Leaves	Diana Andari, Salprima Yudha S, Morina Adfa, Suci Sukma Taruna Asral, Muhamad Alvin Reagen, Charles Banon	Diana Andari	2	33
16	24496	Synergetic Effect of Adsorption and Photocatalysis by Zinc Ferrite Anchored Graphitic Carbon Nitride Nanosheet for Removal of Ciprofloxacin Under Visible Light Irradiation	Muchammad Tamyiz and Ruey-an Doong	Muchammad Tamyiz	2	34
17	24454	Optical and Physical of Dy ³⁺ Properties-Dopped B ₂ O ₃ -PbO-ZnO-Na ₂ O-Dy ₂ O ₃ Glasses	Ahmad Marzuki, Devara Ega Fausta, Melya Ayu Mahasindi, Retno Willy Astuti	Melya Ayu Mahasindi	3	35
18	24492	Substitution Effect of Zn ²⁺ with Tm ³⁺ to Optical and Physical Properties of TeO ₂ -ZnO-Bi ₂ O ₃ -Na ₂ O:Tm ₂ O ₃ Glasses	Ahmad Marzukia, Devara Ega Fausta, Melya Ayu Mahasindi, Retno Willy Astuti, Laila Amalia Putri Lestari	Retno Willy Astuti	3	36

19	25435	Isolation of Cellulose Nano Crystals from Water Hyacinth Using Ammonium Persulfate Oxidation Method	Arie Wibowo, Rachmad Santoso, I Gede Bagus Eka Saputra Wiguna, Hermawan Judawisastra, Yogi Wibisono Budhi	Arie Wibowo	3	38
20	24479	Studies of Crystallinity and Morphology Bacterial Cellulose Membrane with Various Addition Graphene	Nafrizal Annas, Heru Suryanto, Aminnudin, Jibril Maulana, Uun Yanuhar	Nafrizal Annas	3	39
21	24489	Prototype of Femur Bone Using Banana Skin Pectin as Sacrificial Agent	Bakti Yuza, David Ali Hermawan, Fujian Ratu, Ahmad Fadli	Bakti Yuza	3	40
22	24543	Adsorption of Methylene Blue onto Magnetic Nanoparticles and Magnetite Nanoparticles Coated with Humic Acid	Kustomo, Sri Juari Santosa, and Andreas Haarstrick	Kustomo	3	41
23	24516	Inorganic Oxides Characteristics Synthesized from Natural Limestone Found in Aceh Province	M. Rizal, M. Ramli, Surya Lubis, R. Mitaphonna	M. Rizal	3	42
24	24453	The Effect of Abrasive Paper Roughness and Heat Treatment Temperature on 316L Stainless Steel Alkali Heat Treatment for Hydroxyapatite Coating	Ahmad Fadli, Agung Prabowo, Zultiniar, Fransisca Kristin and Meilani Kusuma Wati	Agung Prabowo	3	43
25	24434	The Optimization of Dry Reforming Process Conditions with Silica-Based Cobalt Using Response Surface Methodology (RSM)	Ulfa Intan Pratiwi, and Anatta Wahyu Budiman, Margono	Ulfa Intan Pratiwi	3	44
26	23436	The Clay Minerals Characteristics of Benoa Bay Bottom Sediment and Their Environmental Significance; Based on Short Core	Ricky Rositasari, Yunia Witasari and Suratno	Suratno	3	45
27	24486	The empirical model to predict surface area of porous hydroxyapatite particles prepared using latex as a pore-forming template	Silvia Reni Yenti, Ahmad Fadli), David Ali Hermawan, Agung Prabowo, and Bakti Yuza	Silvia Reni Yenti	3	46
28	24748	Pb(II) Adsorption Efficiency by Magnetic Activated Carbon From Activated Coconut Shell	Nelly Wahyuni, Erma Mayuni and Nurlina	Nelly Wahyuni	3	47
29	23856	Comparison of Catalysts Type Toward Production of Chlorella Biomass Yield in Biodiesel for Renewable Energy Model-based ANOVA: Semi Meta-analysis	Dita Ariyanti, Patricya Ingrid Wilhelmina Bolilanga, Novik Nurhidayat, Meka Saima Perdani, Anggi Khairina Hanum Hasibuan, Naufan Nurrosyid, Mirad Fahri	Dita Ariyanti	4	49

30	24891	Process Parameters Optimization of Dry Reforming of Methane over Mg/NaA Zeolite Catalyst using Design of Experiment	Abdul Hadi Abdullah, Ahmad Zamani Ab Halim, Mohd Abu Asshaary Daud, and Amri Hj Mohammed	Abdul Hadi Abdullah	4	50
31	23959	A Review of Potential Desalination Technologies: Opportunities and Challenges	Meiri Triani, Ruli1, Nur Cahyo, Eko Supriyanto, Rasgianti	Meiri Triani	4	51
32	24782	Seasonal patterns of toxic particulate metals and sources apportionment using principal component analysis: A case study of urban river, East Coast Malaysia	Fikriah Faudzi, Asnor Azrin Sabuti, Kamaruzzaman Yunus, Azman Azid, and Mohd Fuad Miskon	Fikriah Faudzi	4	52
33	24973	Post Treatment Mitigation of 3MCPDE and GE in Palm Oil Using Synthesized Cheap Local Porous Material	Siti Aisyah Mohamad, Azharin Shah Abdul Aziz, and Ahmed H. A. Dabwan	Siti Aisyah Mohamad	4	53
34	23374	Antioxidant And Antiaging Activities Of Cinnamic Acid From Indonesian Alpinia Galanga Oil	Dwinna Rahmi, Retno Yunilawati, Bumiarto Nugroho Jati, and Rika Indri Astuti	Dwinna Rahmi	4	54
35	24292	The Synergistic Effect of Paraquat Dichloride, Iron (II), and Lead (II) on DNA Adduct 8-OHdG Formation: an In Vitro Study	Farras Syuja, Budiawan, Ridla Bakri, Intan Cahaya Dani	Farras Syuja	4	55
36	24304	Production of Liquid Smoke from Teak Sawdust (Tectona grandits If.) and its Application as Antimicrobial in Milkfish (Chanos chanos)	Khalimatus Sa'diyah, Christyfan, Sindhuwati, Nanik Hendrawati and Profiyanti Hermien Suharti	Khalimatus Sa'diyah	4	56
37	24307	In-Vitro Formation of 8OHdG Due to Exposure of Paraquat Dichloride with Cu (II) and Ni (II) Metal Salts	Iis Delly Apriyarni, Dr.rer.nat Budiawan, Intan Cahaya Dani	Iis Delly Apriyarni	4	57
38	24323	Synthesis of Camphor Oxazole from Isolates of Sumatran Camphor (Dryobalanops aromatica) and its Antioxidant Activity using the Free Radical DPPH method	Gusman Santika, Antonius Herry Cahyana	Gusman Santika	4	58
39	24935	High Yield Dry Method to Produce Crude Palm Oil from Palm Fruit	Azharin Shah Abd Aziz, Mohd Abu Asshaary Bin Daud, Abdul Hadi Abdullah, Amri Hj Mohammed and Siti Aisyah Mohamad	Azharin Shah B Abd Aziz	4	59
40	24482	Chemtrepreneur, Introducing Entrepreneurial Activity in Colloid Chemistry	Ari Wahyu Saputro, Antuni Wiyarsi, and Jaslin Ikhsan	Ari Wahyu Saputro	5	61

41	24878	Dust Explosion: Raising awareness of combustible dust hazard	S.I. Rani, J. Gimbut, and B.A. Aziz	Siti Ilyani bt Rani	5	62
42	25236	Pre-Design of Nanocellulose Plant as film paper coating	Muhammad Fadil, Naila Faroh and Aniek Sri Handayani	Muhammad Fadil	5	63
43	24433	The Hybrid Prophet-ELM Approach for Atmospheric Methane Analysis	Arum Handini Primandari and Ayundyah Kesumawati	Arum Handini Primandari	5	64
44	24439	Body Care Product Recommendation System Using Item Based Collaborative Filtering Method	Irsyifa Mayzela Afnan and Arum Handini Primandari	Arum Handini Primandari	5	65
45	24449	Integration of SVM and SMOTE-NC for Classification of Heart Failure Patients	Dina Tri Utari	Dina Tri Utari	5	66
46	24450	The Amalgamation of XGBoost and SMOTE for Sentiment Analysis PeduliLindung Application Reviews	Malecita Nur Atala Singgih, Dina Tri Utari	Malecita Nur Atala Singgih	5	67
47	24462	The Innovative Geometric Shape Of The Vortex Finder And The Effect Of Temperature On Flow Velocity, Performance, And Efficiency In Square Cyclones	Abdul Basit, Mohamad Said Kartono Tony Suryo Utomo, Eflita Yohana, Kwang-Hwan Choi	Abdul Basit	5	68
48	24541	Optimization of Calcium Extraction from Stichopus Horrens using Sulphuric Acid	Muhammad Ameerul Haqim Roshidi, Deny Susanti, Widya Lestari, Muhammad Salahuddin Haris	Muhammad Ameerul Haqim Roshidi	5	69
49	24368	Synthesis of Azachalcone Derivatives from Cinnamaldehyde and Its Antibacterial Activity	Laely Amaliyah and Antonius Herry Cahyana	Laely Amaliyah	6	71
50	24427	Synthesis And Antibacterial Activity Test Of Aminoalkylated Eugenol Compounds In Vitro And In Silico	Jufrizal Syahri, Nurlaili, Anisa Aulia Rahim, Roma Dhony, Shinta Okka Zulya, Sri Wahyuningsih	Nurlaili	6	72
51	24441	Novel Chalcone Synthesis from Phloroglucinol and Its Activity Against Multidrug Resistance Strain of S. aureus and E. coli	Wiwit Sepvianti, Aulia Rahman, Arum Sari	Wiwit Sepvianti	6	73
52	24473	Cytotoxic Activity of Cinchona Alkaloids Cinnamate Ester Derivatives on MCF-7 Cancer Cell Lines	Gian Primahana, Puspa Dewi Narrij Lotulung, Teni Ernawati, Ida Rahmi Kurniasih, Andini Sundowo, Nina Artanti and Muhammad Hanafi	Gian Primahana	6	74

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Optimization of Calcium Extraction from *Stichopus Horrens* using Sulphuric Acid

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Abstract. Sea cucumbers, in Malaysia also known as *gamat*, have been used for food and folk medicine in Asia and the Middle East communities. Sea cucumbers have impressive amount of valuable nutrients. One of the most popular uses of the sea cucumber is for wound healing especially *Stichopus horrens*. Previous studies showed that *S. horrens* have a great content of nutrients and minerals. There have been several research showings that nutrients and minerals, such as collagen and calcium, from this species can greatly contribute to wound healing effect. In this study, calcium extraction was conducted and optimized to obtain the optimum amount of calcium from *S. horrens*. The extraction method that was used is sulphuric acid extraction in a water bath shaker and the drying method was used is oven drying. Five gram of ground *S. horrens* dried sample were tested under three different sets of variables which are concentration of solvent, temperature and duration of the extraction. In this study, the data obtained from the extractions were analyzed using Two-Level Factorial design from Design Expert software. From the analysis, concentration of solvent was found to be not significant while temperature and duration of extraction were significant. It is shown that the higher the temperature and the duration of extraction resulted higher amount of calcium extracted. In this study, the concentration of solvent used are 2, 3 and 4 M, the temperature that were used are 40, 60, and 80 °C and the duration of the extraction used are 80, 110, and 140 minutes. By using the Design Expert software, the optimum conditions for the calcium content yield would be using 2 M of solvent concentration, 80 °C for temperature and 140 minutes duration for extraction.



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