



الجامعة الإسلامية العالمية ماليزيا  
INTERNATIONAL ISLAMIC UNIVERSITY MALAYSIA  
يُؤَيِّدُ رَيْسُ الْإِسْلَامِ أَمِيرًا رَاجِيًا بِمَلَيْسِيَا

IRIIE 2010  
Research, Innovation & Invention Exhibition 2010 (IRIIE 2010)

ENHANCING QUALITY RESEARCH &  
**INNOVATION**  
for  
**SOCIETAL  
DEVELOPMENT**





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

*Irwandi Jaswir, Hammed A. Monsur, Hamzah M. Salleh  
Department of Biotechnology Engineering, Kulliyah of Engineering  
International Islamic University Malaysia*

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**

*Ataur Rahman, A.K.M Mohiuddin, A.H.M. Zahirul Alam  
Mechanical Engineering, Kulliyah of Engineering  
International Islamic University Malaysia*

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**

*Shahrul Naim Sidek, Mohd Ismail Mokhtar, Abdul Mushawwir Mohamad Khalil  
Mechatronics Engineering, Kulliyah of Engineering  
International Islamic University Malaysia*

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