



# The 2013 UKM FST Postgraduate Colloquium

Proceedings of the Universiti Kebangsaan Malaysia,  
Faculty of Science and Technology 2013  
Postgraduate Colloquium

---

## Selangor, Malaysia

3–4 July 2013

### Editors

**Abdul Munir Hj. Abdul Murad**  
**Choong Chee Yen**  
**Eddie Shahril Ismail**  
**Mohamad Yusof Maskat**  
**Mohd Salmi Md Noorani**  
**Nazlina Ibrahim**  
**Nurul Huda bt Abdul Karim**  
**Redzuan Yahya**  
**Rozida Mohd Khalid**  
**Wan Rosmanira Ismail**  
**Wee Suk Ling**  
**Zahari Ibrahim**

Universiti Kebangsaan Malaysia, Selangor, Malaysia

All papers have been peer reviewed.



Melville, New York, 2013  
AIP Proceedings

Volume 1571

## **Editors**

**Abdul Munir Hj. Abdul Murad**

**Choong Chee Yen**

**Eddie Shahril Ismail**

**Mohamad Yusof Maskat**

**Mohd Salmi Md Noorani**

**Nazlina Ibrahim**

**Nurul Huda bt Abdul Karim**

**Redzuan Yahya**

**Rozida Mhd Khalid**

**Wan Rosmanira Ismail**

**Wee Suk Ling**

**Zahari Ibrahim**

Universiti Kebangsaan Malaysia

Faculty of Science and Technology (FST)

43600 UKM Bangi

Selangor, Malaysia

E-mail: munir@ukm.my

cychoong@ukm.my

esbi@ukm.my

yusofm@ukm.my

msn@ukm.my

nazlina@ukm.my

n\_huda@ukm.my

redzuwan@ukm.my

rozidakhald@ukm.my

wrismail@ukm.my

slwee@ukm.my

scezi@ukm.my

Authorization to photocopy items for internal or personal use, beyond the free copying permitted under the 1978 U.S. Copyright Law (see statement below), is granted by the AIP Publishing LLC for users registered with the Copyright Clearance Center (CCC) Transactional Reporting Service, provided that the base fee of \$30.00 per copy is paid directly to CCC, 222 Rosewood Drive, Danvers, MA 01923, USA: <http://www.copyright.com>. For those organizations that have been granted a photocopy license by CCC, a separate system of payment has been arranged. The fee code for users of the Transactional Reporting Services is: 978-0-7354-1199-9/\$30.00



© 2013 AIP Publishing LLC

No claim is made to original U.S. Government works.

Permission is granted to quote from the AIP Conference Proceedings with the customary acknowledgment of the source. Republication of an article or portions thereof (e.g., extensive excerpts, figures, tables, etc.) in original form or in translation, as well as other types of reuse (e.g., in course packs) require formal permission from AIP Publishing and may be subject to fees. As a courtesy, the author of the original proceedings article should be informed of any request for republication/reuse. Permission may be obtained online using RightsLink. Locate the article online at <http://proceedings.aip.org>, then simply click on the RightsLink icon/“Permissions/Reprints” link found in the article abstract. You may also address requests to: AIP Publishing Office of Rights and Permissions, Suite 1N01, 2 Huntington Quadrangle, Melville, NY 11747-4502, USA; Fax: 516-576-2450; Tel.: 516-576-2268; E-mail: [rights@aip.org](mailto:rights@aip.org).

ISBN 978-0-7354-1199-9 (Original Print)

ISSN 0094-243X

Printed in the United States of America

**AIP Conference Proceedings, Volume 1571**  
**The 2013 UKM FST Postgraduate Colloquium**  
**Proceedings of the Universiti Kebangsaan Malaysia, Faculty of Science and Technology**  
**2013 Postgraduate Colloquium**

**Table of Contents**

**Preface: The 2013 UKM FST Post-Graduate Colloquium**

- Abdul Munir Hj. Abdul Murad, Choong Chee Yen, Eddie Shahril Ismail, Mohamad Yusof Maskat,  
Nazlina Ibrahim, Nurul Huda bt Abdul Karim, Redzuan Yahya, Rozida Mohd Khalid,  
Wan Rosmanira Ismail, Wee Suk Ling, and Zahari Ibrahim 1

**APPLIED PHYSICS**

**Effect of Cr doping in the microstructure, electrical and magnetic properties of  $\text{In}_{2-x}\text{Cr}_x\text{O}_3$  system ( $x=0.1$  and  $x=0.2$ )**

- H. Baqiah, N. B. Ibrahim, and M. H. Abdi 3

**A study of PV/T collector with honeycomb heat exchanger**

- F. Hussain, M. Y. H. Othman, B. Yatim, H. Ruslan, K. Sopian, and Z. Ibarahim 10

**Effect of nanosized PbO on the electrical transport properties of  $(\text{Bi}_{1.6}\text{Pb}_{0.4})\text{Sr}_2\text{Ca}_2\text{Cu}_3\text{O}_{10}$  superconductor**

- Nabil A. A. Yahya and R. Abd-Shukor 17

**Electrochemical impedance spectroscopy study on corrosion inhibition of benzyltriethylammonium chloride**

- Mohd Nazri Idris, Abdul Razak Daud, and Norinsan Kamil Othman 23

**Impedance spectroscopy characterization of inverted type organic solar cells based on poly(3-hexylthiophene-2,5-diyl)**

- Riski Titian Ginting, Chi Chin Yap, Muhammad Yahaya, and Muhamad Mat Salleh 29

**Friedmann equation with quantum potential**

- Ch'ng Han Siong, Shahidan Radiman, and Bijan Nikouravan 35

**Inhibitive effects of palm kernel oil on carbon steel corrosion by alkaline solution**

- M. Y. Zulkafli, N. K. Othman, A. M. Lazim, and A. Jalar 42

**Influence of temperature on corrosion inhibition for carbon steel by rice straw extract in HCl solution: Synergistic effect of cationic surfactant**

- Rabiahtul Zulkafli, Norinsan Kamil Othman, and Azman Jalar 48

<b>Preparation of patterned graphene-ZnO hybrid nanoflower and nanorods on ITO surface</b> Sin Tee Tan, Akrajas Ali Umar, Marjoni Imamora Ali Umar, Riski Titian Ginting, Muhammad Yahaya, Chi Chin Yap, Muhamad Mat Salleh, Burhanuddin Yeop Majlis, and Fitri Yenni Naumar	54
<b>Oxidation behaviour of ferritic stainless steel grade Crofer 22 APU at 700 °C in flowing Ar–75%CO<sub>2</sub>–12%H<sub>2</sub>O</b> Nurul Atikah Shariff, Norinsan Kamil Othman, and Azman Jalar	59
<b>Effect of simultaneous electrical and thermal treatment on the performance of bulk heterojunction organic solar cell blended with organic salt</b> Nasehah Syamin Sabri, Chi Chin Yap, Muhammad Yahaya, and Muhamad Mat Salleh	65
<b>Effect of compatibilizer on impact and morphological analysis of recycled HDPE/PET blends</b> Mohd Nazry Salleh, Sahrim Ahmad, Mohd Hafizuddin Ab Ghani, and Ruey Shan Chen	70
<b>Effect of ultrasonic treatment on tensile properties of PLA/LNR/NiZn ferrite nanocomposite</b> Dalila Shahdan, Sahrim Hj. Ahmad, and Moayad Husein Flaifel	75
<b>Mechanical characterization and morphology of polylactic acid /liquid natural rubber filled with multi walled carbon nanotubes</b> Adilah Mat Ali and Sahrim Hj. Ahmad	83
<b>Thermal efficiency of single-pass solar air collector</b> Zamry Ibrahim, Zahari Ibarahim, Baharudin Yatim, and Mohd Hafidz Ruslan	90
<b>Study on electrical power output of floating photovoltaic and conventional photovoltaic</b> Mohd Syahriman Mohd Azmi, Mohd Yusof Hj. Othman, Mohd Hafidz Hj. Ruslan, Kamaruzzaman Sopian, and Zafri Azran Abdul Majid	95
<b>Effect of Hf substitutions on the formation and superconductivity of Tl-1212 type phase TlSr<sub>2</sub>(Ca<sub>1-x</sub>Hf<sub>x</sub>)Cu<sub>2</sub>O<sub>7-δ</sub></b> Annas Al-Sharabi and R. Abd-Shukor	102
<b>OSLD energy response performance and dose accuracy at 24 - 1250 keV: Comparison with TLD-100H and TLD-100</b> A. B. A. Kadir, W. Priharti, S. B. Samat, and M. T. Dolah	108
<b>Effect of graphite oxide solution concentration on the properties of multilayer graphene</b> Marjoni Imamora Ali Umar, Chi Chin Yap, Rozidawati Awang, Muhamad Mat Salleh, and Muhammad Yahaya	115

<b>Cyclic voltammetric study of Co-Ni-Fe alloys electrodeposition in sulfate medium</b>	
I. Hanafi, A. R. Daud, and S. Radiman	120
<b>Effect of RF power and annealing on chemical bonding and morphology of a-CNx thin films as humidity sensor</b>	
N. F. H Aziz, R. Ritikos, S. A. A. Kamal, N. S. Mohamed Hussain, and R. Awang	125
<b>The inhibition of carbon steel corrosion by lignin in HCl and H2SO4</b>	
S. Yahya, N. K. Othman, A. R. Daud, and A. Jalar	132
<b>Investigation of SiO2:Na2O ratio as a corrosion inhibitor for metal alloys</b>	
N. Mohamad, N. K. Othman, and A. Jalar	136
<b>Morphological and microstructural studies on aluminizing coating of carbon steel</b>	
Zaifol Samsu, Norinsan Kamil Othman, Abd Razak Daud, and Hishammuddin Hussein	141
<b>Study on thermal properties and crystallization behavior of electron beam irradiated ethylene vinyl acetate (EVA)/waste tyre dust (WTD) blends in the presence of polyethylene graft maleic anhydride (PEgMAH)</b>	
Syuhada Ramli, C. T. Ratnam, S. H. Ahmad, and Nurul Athirah	146
<b>Condensed tannins from acacia mangium bark: Characterization by spot tests and FTIR</b>	
Muhammad Azizi Bharudin, Sarani Zakaria, and Chin Hua Chia	153
<b>Epoxidized natural rubber toughened aqueous resole type liquefied EFB resin: Physical and chemical characterization</b>	
Umar Adli Amran, Sarani Zakaria, and Chin Hua Chia	158
<b>Ash'arite's atomistic conception of the physical world: A restatement</b>	
Firdaus Pozi, Faizal Mohamed, and Mohd Yusof Othman	163
<b>Radiological risk assessment of environmental radon</b>	
Norafatin Khalid, Amran Ab Majid, Redzuwan Yahaya, and Muhammad Samudi Yasir	169
 <b>BIOSCIENCE AND BIOTECHNOLOGY</b>	
<b>Therapeutic activity of crude ethanolic extract of <i>Artemisia herba alba</i> against <i>Trypanosoma evansi</i> in rabbits</b>	
Fathy M. Awad, Zainal Abidin Abu Hasan, Abdinasir Yusuf Osman, and Nazlina Ibrahim	177
<b>Membrane proteins associated with sperm-oocyte interaction: A proteomic comparison between Kedah Kelantan (<i>Bos indicus</i>) and Mafriwal (<i>Bos taurus × Bos indicus</i>) sperm</b>	
Ali Ashrafzadeh, Sheila Nathan, Iekhsan Othman, Tee Ting Yee, and Saiful Anuar Karsani	180

**Optimization of CMCase production from sorghum straw by *Aspergillus terreus* SUK-1 under solid substrate fermentation using response surface methodology**

El Mubarak Musa Tibin, Najeeb Kaid Naseer Al-Shorgani, Nawal Noureldaim Abuelhassan,  
Aidil Abdul Hamid, Mohd Sahaid Kalil, and Wan Mohtar Wan Yusoff

184

**Identification of potential local isolated for biosurfactant production**

Zahra Shafiei, Wan Mohtar Wan Yusoff, Aidil Abdul Hamid, Nasrin Moazami, Ainan Hamzah,  
and Taybeh Fooladi

191

**Production of biosurfactant by indigenous isolated bacteria in fermentation system**

Tayebeh Fooladi, Aidil Bin Abd Hamid, Wan Mohtar Wan Yusoff, Nasrin Moazami,  
and Zahra Shafiee

197

**Development of a caseinase assay for PCR independent detection of *esp* gene carriage among *enterococci***

Ayokunle Christopher Dada, Ahmad Asmat, Yook Heng Lee, and Gires Usup

202

**Orthodontic treatment effects on inflammatory marker profiles in saliva before and after 2 archwire changes**

Zulham Yamamoto, Ikmal Mohamad Jaafar, M. A. W. Rohaya, Intan Zarina Zainol Abidin,  
Sahidan Senafi, Zaidah Zainal Ariffin, and Shahrul Hisham Zainal Ariffin

208

**Changes in oxidative stress in transgenic RNAi ACO1 tomato fruit during ripening**

Najat Mohamed Eglous, Zainon Mohd Ali, Maizom Hassan, and Zamri Zainal

215

**Disorganization of cell division of methicillin-resistant *Staphylococcus aureus* by methanolic extract from *Phyllanthus columnaris* stem bark**

A. Siti Noor Adnalizawati, I. Nazlina, and W. A. Yaacob

222

**Comparative study on the effect of *Eurycoma longifolia* and *Smilax myosotiflora* on male rats fertility**

Amal Salem Farag Mahmoud and Mahanem Mat Noor

227

**Isolation and characterization of full-length putative *Alcohol dehydrogenase* genes from *Polygonum minus***

Nur Athirah Abd Hamid and Ismanizan Ismail

234

***In vitro* expansion of *Lin<sup>+</sup>* and *Lin<sup>-</sup>* mononuclear cells from human peripheral blood**

H. Siti Norhaiza, M. A. W. Rohaya, Z. A. Intan Zarina, and Z. A. Shahrul Hisham

238

**Molecular genotyping of HCV infection in seropositive blood donor**

Siti Noraziah Abu Zarin and Nazlina Ibrahim

246

<b>Biological activities of aqueous extract from <i>Cinnamomum porrectum</i></b> H. Siti Farah, I. Nazlina, and W. A. Yaacob	250
<b>Amino acid substitutions in the thymidine kinase gene of induced acyclovir-resistant herpes simplex virus type 1</b> Ainulkhir Hussin, Norefrina Shafinaz Md Nor, and Nazlina Ibrahim	254
<b>A preliminary transcriptomic analysis of lichen <i>Dirinaria sp.</i></b> A. R. Siti Nurhani, A. M. Abdul Munir, S. Mohd Wahid, and A. B. Farah Diba	258
<b>Extraction of intracellular protein from <i>Glaciozyma antarctica</i> for proteomics analysis</b> S. Nor Faizura, K. Farahayu, A. B. Mohd Faizal, A. A. S. Asmahani, R. Amir, N. Nazalan, A. B. Farah Diba, M. Nor Muhammad, and A. M. Abdul Munir	264
<b>Screening of polymorphisms for MTHFR and DHFR genes in spina bifida children and their mothers</b> M. Z. Husna, I. Endom, S. Ibrahim, N. Amaramalar Selvi, H. Fakhrurazi, R. Ohnmar Htwe, Y. Kanehaswari, A. R. Abdul Halim, S. W. Wong, K. Subashini, O. Nur Syahira, and S. Aishah	271
<b>Identification of significant medium components that affect docosahexaenoic acid production by <i>Schizophytrium sp. SW1</i></b> Vidyah Manikan and Aidil A. Hamid	277
<b>Indigenous microorganisms production and the effect on composting process</b> Nurul-Ain Abu-Bakar and Nazlina Ibrahim	283
<b>In silico analysis of β-mannanases and β-mannosidase from <i>Aspergillus flavus</i> and <i>Trichoderma virens</i> UKM1</b> Chai Sin Yee, Abdul Munir Abdul Murad, and Farah Diba Abu Bakar	287
<b>Cloning, expression and crystallisation of SGT1 co-chaperone protein from <i>Glaciozyma antarctica</i></b> Nur Athirah Yusof, Farah Diba Abu Bakar, Travis Beddoe, and Abdul Munir Abdul Murad	292
<b>Accumulation of nickel in transgenic tobacco</b> Nik Marzuki Sidik and Noor Farhan Othman	298

#### ENVIRONMENTAL SCIENCE AND NATURAL RESOURCES

#### **Community structure, diversity and total biomass of tree species at *Kapur* dominated forests in Peninsular Malaysia**

N. A. Nik Norafida, M. S. Nizam, and W. A. Wan Juliana 302

<b>Current status of subfamily Ichneumoninae (Hymenoptera: Ichneumonidae) from Malaysia and Singapore</b>		
A. F. Norhafiza and A. B. Idris	308	
<b>A taxonomic review of the genus <i>Triclistus</i> Foerster, 1868 (Hymenoptera: Ichneumonidae: Metopiinae) from Malaysia</b>		
Nahla Mohamed, Salmah binti Yaakop, and Idris Abd Ghani	311	
<b>Food selection of the Malayan tapir (<i>Tapirus indicus</i>) under semi-wild conditions</b>		
Boyd K. Simpson, M. N. Shukor, and David Magintan	317	
<b>Activity pattern of selected ungulates at Krau Wildlife Reserve</b>		
M. A. Mohd Sanusi, M. A. Shukor, W. A. Wan Juliana, and C. Traeholt	325	
<b>Determination of Opiinae parasitoids (Hymenoptera: Braconidae) associated with crop infesting <i>Bactrocera</i> spp. (Diptera: Tephritidae) using <i>COI</i> and <i>Cyt b</i> sequences</b>		
Safiah Shariff, Salmah Yaakop, and Badrul Munir Md. Zain	331	
<b>Relationships between parasitoid wasps (Hymenoptera: Braconidae: Opiinae), fruit flies (Diptera: Tephritidae) and their host plants based on 16S rRNA, 12S rRNA, and ND1 gene sequences</b>		
N. J. Ibrahim, B. M. Md-Zain, and S. Yaakop	340	
<b>Morphology of salivary gland and distribution of dopamine and serotonin on red palm weevil (RPW), <i>Rhynchophorus ferrugineus</i> (Coleoptera: Curculionidae)</b>		
A. S. Nurul Hidayah, O. Nurul Wahida, M. N. Norefrina Shafinaz, and A. G. Idris	345	
<b>Description of five species of <i>Xanthopimpla</i> Saussure 1892 (Hymenoptera: Ichneumonidae: Pimplinae) from Malaysia</b>		
Angeline David Dass and Idris Abd. Ghani	349	
<b>Field incidence on <i>Brontispa longissima</i> (Gestro), an invasive pest of coconut</b>		
Anuar W. A. Wan Khairul and A. B. Idris	355	
<b>Field population abundance of leafhopper (Homoptera: Cicadellidae) and planthopper (Homoptera: Delphacidae) as affected by rice growth stages</b>		
M. M. Hafizal and A. B. Idris	359	
<b>Distribution of <i>Litsea</i> complex (lauraceae) and their association with soil properties in different forest types of Peninsular Malaysia</b>		
Shamsul Khamis and M. S. Nizam	363	

<b>Petal anatomy of four <i>Justicia</i> (Acanthaceae) species</b>	368
A. J. Amirul-Aiman, T. Noraini, C. A. C. Nurul-Aini, and A. R. Ruzi	
<b>The structure of cystoliths in selected taxa of the genus <i>Ficus</i> L. (Moraceae) in Peninsular Malaysia</b>	372
B. Ummu-Hani and T. Noraini	
<b>Pollen morphology of <i>Rhizophora</i> L. in Peninsular Malaysia</b>	377
A. B. Mohd-Arrabe' and Talip Noraini Noraini	
<b>Temporal variation of vegetation litterfall and oil characteristics at Tasik Chini Biosphere Reserve, Pahang</b>	382
M. N. Nurhanim and W. A. Wan Juliana	
<b>Palynological study of the genera <i>Ruellia</i>, <i>Ebolium</i>, <i>Asystasia</i>, <i>Blepharis</i> and <i>Dicliptera</i> (Acanthaceae) of Yemen</b>	389
S. Anisa Al-Hakimi, Haja Maideen, and A. Latiff	
<b>Leaf anatomical characteristics of <i>Bouea</i>, <i>Mangifera</i> and <i>Spondias</i> (Anacardiaceae) in Malaysia</b>	394
G. Mohd. Norfaizal and A. Latiff	
<b>The potential of quartz rock at Kg. Padang Biawas, Negeri Sembilan for solar silicon application</b>	404
Haniza binti Zakri and Azimah binti Hussin	
<b>Heavy mineral distribution in stream sediment of Tapah area, Perak, Malaysia</b>	411
Mahat Hj Sibon, Habibah Jamil, Mohd Rozi Umor, and Wan Fuad Wan Hassan	
<b>Geochemical study of Palong Pluton at Negeri Sembilan-Pahang border</b>	420
Khairil Izam Bin Selamat Din and Mohd Rozi Umor	
<b>Application of vertical electrical sounding (VES) in subsurface geological investigation for potential aquifer in Lahad Datu, Sabah</b>	432
Hardiansyah Saleh and Abdul Rahim Samsudin	
<b>Delta zoning based on sediment dispersal in Pahang River Delta</b>	438
Atiqah Sahmad @ Abdul Samad, Che Aziz Ali, and Kamal Roslan Mohamed	
<b>Dolomites petrography and geochemistry of the Chuping Formation, Malaysia</b>	445
Noorhashima Binti Adenan, Che Aziz Ali, and Kamal Roslan Mohamed	
<b>Wind-wave simulation in South China Sea: Preliminary results of model evaluation using different wind forcing</b>	454
Nurul A. idah Abd Rahim, Liew Juneng, and Fredolin T. Tangang	

<b>Distribution of fecal sterols in surface sediment of Sungai Tebrau, Johor</b>	460
N. Nordin and M. M. Ali	
<b>The relationship between sea surface temperature and chlorophyll-a concentration in fisheries aggregation area in the archipelagic waters of spermonde using satellite images</b>	466
S. Nurdin, M. A. Mustapha, and T. Lihan	
<b>Spatial distribution of <i>Rastrelliger kanagurta</i> (Cuvier 1817) in the South China Sea Exclusive Economic Zone (EEZ)</b>	473
N. A. Razib and M. A. Mustapha	
<b>Classification of mangroves vegetation species using texture analysis on Rapideye satellite imagery</b>	480
M. A. Roslani, M. A. Mustapha, T. Lihan, and W. A. Wan Juliana	
<b>Determination of mangrove change in Matang Mangrove Forest using multi temporal satellite imageries</b>	487
N. A. Ibrahim, M. A. Mustapha, T. Lihan, and M. A. Ghaffar	
<b>Chlorophyll-a and nutrient distribution of Pahang coastal waters during southwest monsoon using satellite images</b>	493
F. Shaari, M. A. Mustapha, M. M. Ali, and T. Lihan	
<b>The ecology of fiddler crab <i>Uca forcipata</i> in mangrove forest</b>	498
Mohammad Mokhtari, Mazlan Abd Ghaffar, Gires Usup, and Zaidi Che Cob	
<b>Growth study of branching coral <i>Acropora formosa</i> between natural reef habitats and <i>in situ</i> coral nurseries</b>	505
Loke Hai Xin, Julian Hyde, Zaidi Che Cob, and Kee Alfian Abdul Adzis	
<b>Development and growth of larvae of the volute, <i>Cymbiola nobilis</i> Lightfoot</b>	512
Noorsakinah Md Noor, Zaidi Che Cob, and Mazlan Abd. Ghaffar	
<b>Coagulation-flocculation in leachate treatment using modified micro sand</b>	518
Nur Hanani Thaldiri and Azhar Abdul Halim	
<b>Treatment of automotive wastewater by coagulation-flocculation using poly-aluminum chloride (PAC), ferric chloride (<math>FeCl_3</math>) and aluminum sulfate (alum)</b>	524
Abdul Fattah Abu Bakar and Azhar Abdul Halim	
<b>Effects of leachate on geotechnical characteristics of sandy clay soil</b>	530
N. S. Harun, Z. Rahman Ali, A. S. Rahim, T. Lihan, and R. M. W. Idris	

<b>Vertical profiles of bacterial-sewage derived biomarkers in marine sediment</b> N. F. Amiruddin and M. M. Ali	537
<b>Prediction of sedimentation using integration of RS, RUSLE model and GIS in Cameron Highlands, Pahang, Malaysia</b> A. H. A. Ghani, T. Lihan, S. A. Rahim, M. A. Mustapha, W. M. R. Idris, and Z. A. Rahman	543
<b>Vertical distribution of Pahang River plume</b> T. M. Taher, T. Lihan, and M. A. Mustapha	549
<b>Indoor/outdoor of PM<sub>10</sub> relationships and its water-soluble ions composition in selected primary schools in Malaysia</b> Noorlin Mohamad and Mohd Talib Latif	556
<b>Fish scale deformation analysis using scanning electron microscope: New potential biomarker in aquatic environmental monitoring of aluminum and iron contamination</b> Dewi Hidayati, Norela Sulaiman, Shuhaimi Othman, and B. S. Ismail	563
<b>Life cycle inventory for palm based plywood: A gate-to-gate case study</b> Shamim Ahmad, Ismail Sahid, Vijaya Subramaniam, Halimah Muhamad, and Anis Mokhtar	569
<b>The concentration and distribution of selected heavy metals (Pb, Cd, Cu and Zn) in soils collected from the rice fields of MADA in Kedah, Malaysia</b> Nasser Alrawiq, J. Khairiah, T. M. Latif, and S. B. Ismail	576
<b>Life cycle inventory for the production of germinated oil palm seeds at a selected seed production unit in Malaysia</b> Nik Sasha Katrina Khairuddin, B. S. Ismail, Halimah Muhamad, and Choo Yuen May	583
<b>Mercury exposure on potential plant <i>Ludwigia octovalvis</i> L. - Preliminary toxicological testing</b> Huda S. M. Alrawiq and I. Mushrifah	589
<b>Influence of wind magnitude and direction to the variability of Pahang River plume distribution</b> A. Dawi, L. Tukimat, A. R. Sahibin, and A. R. Zulfahmi	596
<b>Benthic macroinvertebrate as biological indicator for water quality in Sungai Penchala</b> Akmal Mahazar, Mohammad Shuhaimi-Othman, and Ahmad Abas Kutty	602
<b>Benthic macroinvertebrates diversity and water quality assessment at Sungai Congkak recreational area, Hulu Langat, Selangor</b> M. Mustaqim-Alias and A. K. Ahmad	608
<b><i>Chironomus</i> group classification according to the mapping of polytene chromosomes</b> Syafinaz Salleh and Ahmad Abas Kutty	614

<b>Recreational stream assessment using Malaysia water quality index</b> Hanisah Ibrahim and Ahmad Abas Kutty	620
<b>Distribution of surfactants in sea-surface microlayer and atmospheric aerosols at selected coastal area of Peninsular Malaysia</b> Nur Ili Hamizah Mustaffa, Mohd Talib Latif, and Masni Mohd Ali	625
<b>Tropospheric ozone variability during the monsoon season in Malaysia</b> Fatimah Ahamad and Mohd Talib Latif	632
<b>Effect of DNA type on response of DNA biosensor for carcinogens</b> Nor Diyana bt. Md. Sani, Lee Yook Heng, Salmijah Surif, and Azwani Mat Lazim	636
<b>Heavy metals content in acid mine drainage at abandoned and active mining area</b> Hazirah Hatar, Sahibin Abd Rahim, Wan Mohd Razi, and Fathul Karim Sahrani	641
<b>Effectiveness of the bran media and bacteria inoculum treatments in increasing pH and reducing sulfur-total of acid sulfate soils</b> Nur Anny Suryaningsih Taufieq, Sahibin Abdul Rahim, and Habibah Jamil	647

#### **APPLIED CHEMISTRY AND FOOD TECHNOLOGY**

<b>Molecular typing among beef isolates of <i>Escherichia coli</i> using consensus repetitive intergenic enterobacteria-polymerase chain reaction (ERIC-PCR)</b> Nurliyana Wan Zookifli and Sahilah Abd Mutalib	654
<b>Nutritional status and random blood glucose, cholesterol and triglyceride test among Malaysian Army (MA) personnel in Kuala Lumpur</b> I. Nadiy, S. Razalee, M. K. Zalifah, and M. J. Zulkeffeli	660
<b>Comparison between Mt-DNA D-Loop and Cyt B primers for porcine DNA detection in meat products</b> Azhana Hamzah, Sahilah Abd. Mutalib, and Abdul Salam Babji	669
<b>Cellulose nanocrystal from pomelo (<i>C. Grandis osbeck</i>) albedo: Chemical, morphology and crystallinity evaluation</b> Nor Fazelin Mat Zain, Salma Mohamad Yusop, and Ishak Ahmad	674
<b>Identifying of meat species using polymerase chain reaction (PCR)</b> Chow Ming Foong and Norrakiah Abdullah Sani	680
<b>Antioxidant activities of red tilapia (<i>Oreochromis niloticus</i>) protein hydrolysates as influenced by thermolysin and alcalase</b> Nur 'Aliah Daud, Abdul Salam Babji, and Salma Mohamad Yusop	687

<b>Extraction and characterization of elastin from poultry skin</b>	
Mehdi Nadalian, Salma Mohamad Yusop, Wan Aida Wan Mustapha, Mohd Azri Azman, and Abdul Salam Babji	692
<b>Influence of ripening stages on antioxidant properties of papaya fruit (<i>Carica papaya</i> L.)</b>	
Zuhair Radhi Addai, Aminah Abdullah, and Sahilah Abd. Mutalib	696
<b>Determination of macrolide antibiotics in chicken tissues by liquid chromatography-electrospray mass spectrometry</b>	
Jamilah Salikin and Aminah Abdullah	702
<b>Effect of drying methods on total antioxidant capacity of bitter gourd (<i>momordica charantia</i>) fruit</b>	
Ee Shian Tan, Aminah Abdullah, and Mohammad Yusof Maskat	710
<b>Complexation between carrageenan and methylene blue for sensor design</b>	
Yew Pei Ling and Lee Yook Heng	717
<b>Copper(II) and aluminium(III) ion sensors based on gold nanoparticles modified screen-printed carbon electrodes</b>	
Wong Pooi See, Sheila Nathan, and Lee Yook Heng	725
<b>Physical properties of agave cellulose graft polymethyl methacrylate</b>	
Noor Afizah Rosli, Ishak Ahmad, Ibrahim Abdullah, and Farah Hannan Anuar	732
<b>Preparation of hybrid nano biocomposite κ-carrageenan/cellulose nanocrystal/nanoclay</b>	
Siti Zarina Zakuwan, Ishak Ahmad, and Nazaruddin Ramli	738
<b>Effect of spent bleaching earth based bio organic fertilizer on growth, yield and quality of eggplants under field condition</b>	
K. Y. Cheong, S. K. Loh, and J. Salimon	744
<b>Production and physico-chemical characterization of biochar from palm kernel shell</b>	
S. H. Kong, S. K. Loh, Robert T. Bachmann, Y. M. Choo, J. Salimon, and S. Abdul Rahim	749
<b>Production of succinic acid from oil palm empty fruit bunch cellulose using <i>Actinobacillus succinogenes</i></b>	
Satriani Aga Pasma, Rusli Daik, and Mohamad Yusof Maskat	753
<b>Determination of human pharmaceuticals in pre- and post-sewage treatment</b>	
Nurfaizah Abu Tahrim, Md. Pauzi Abdullah, and Yang Farina Abdul Aziz	760

<b>Pregnenolone from the roots of <i>Holarrhena curtisii</i></b> Noor Fazila Zahari and Ikram M. Said	765
<b>Characterization of <math>\text{I}</math>-carrageenan and its derivative based green polymer electrolytes</b> Fatihah Najirah Jumaah, Nadhratun Naiim Mobaraka, Azizan Ahmad, and Nazaruddin Ramli	768
<b>Preparation and characterization of plasticized palm-based polyurethane solid polymer electrolyte</b> Farah Nadia Daud, Azizan Ahmad, and Khairiah Haji Badri	775
<b>Doping optimization of polypyrrole with toluenesulfonic acid using Box-Behnken design</b> Sarifah Fauziah Syed Draman, Rusli Daik, Said M. El-Sheikh, and Famiza Abdul Latif	782
<b>Synthesis and structural characterization of new dithiocarbamate complexes from Sb(III) and Bi(III)</b> Nur Amirah Jamaluddin and Ibrahim Baba	789
<b>An electrochemical procedure coupled with a Schiff base method; application to electroorganic synthesis of new nitrogen-containing heterocycles</b> Bahram Dowlati and Mohamed Rozali Othman	795
<b>The antioxidant effect of derivatives pyroglutamic lactam</b> Atisyah Rohadi, Azwani Mat Lazim, and Siti Aishah Hasbullah	801
<b>Multi-residue analysis method for analysis of pharmaceuticals using liquid chromatography-time of flight/mass spectrometry (LC-TOF/MS) in water sample</b> Fouad Fadhil Al-Qaim, Md Pauzi Abdullah, and Mohamed Rozali Othman	806
<b>Synthesis of zirconium oxide nanoparticle by sol-gel technique</b> H. S. Lim, A. Ahmad, and H. Hamzah	812
<b>Spectral and photochromic study of spiropyran</b> Rumaisa Nordin, Azwani Mat Lazim, and Siti Aishah Hasbullah	817
<b>Composite polymer electrolytes based on MG49 and carboxymethyl cellulose from kenaf</b> Serawati Jafirin, Ishak Ahmad, and Azizan Ahmad	822
<b>Electrocoagulation and decolorization of landfill leachate</b> Zainab Haider Musa, Mohamed Rozali Othman, and Md Pauzi Abdullah	829
<b>Morphological studies of vertical arrays <math>\text{TiO}_2</math> nanotubes by electrochemical anodization technique for dye sensitized solar cell application</b> M. S. Su'ait, F. Alamgir, P. Scardi, and A. Ahmad	835

<b>Spectroscopic studies of carboxymethyl chitosan-ammonium triflate (<math>\text{NH}_4\text{CF}_3\text{SO}_3</math>) based solid polymer electrolytes</b>	Nadhratun Naiim Mobarak, Nazaruddin Ramli, Md Pauzi Abdullah, and Azizan Ahmad	843
<b>Evaluation of HLB values of mixed non-ionic surfactants on the stability of oil-in-water emulsion system</b>	I. Nursakinah, A. R. Ismail, M. Y. Rahimi, and A. B. Idris	850
<b>Synthesis and characterization of two dimensional metal organic framework of cerium with tetraaza macrocyclic</b>	Nurul Atikah Bt Safiin, Ambar Yarmo, and Bohari M. Yamin	857
<b>Bacterial cellulose based hydrogel (BC-g-AA) and preliminary result of swelling behavior</b>	Adil Hakam, Azwan Mat Lazim, and I. Irmam Abdul Rahman	866
<b>Formation of protein complex with the aid of polyethylene glycol for deproteinized natural rubber latex</b>	Lim Keuw Wei, Wong Kwee Ing, Khairiah Haji Badri, and Wong Chong Ban	871
<b>Effects of aqueous ammonia treatment on fiber's surface morphology and enzymatic digestibility of empty fruit bunch fiber (EFBF)</b>	Tang Pei Ling and Osman Hassan	877
<b>Magnesium oxide nanoparticles on green activated carbon as efficient <math>\text{CO}_2</math> adsorbent</b>	Wan Nor Roslam Wan Isahak, Zatil Amali Che Ramli, Mohamed Wahab Mohamed Hisham, and Mohd Ambar Yarmo	882
<b>Physicochemical properties of phosphate ester from palm kernel oil</b>	Nor Rabbi'atul 'Adawiyah Norzali, Khairiah Haji Badri, and Ishak Ahmad	890
<b>Celluloses filled ENR/PVC membranes for palm oil mill effluent (POME) treatment</b>	Mohd Razali Shamsuddin, Ibrahim Abdullah, and Rizafizah Othaman	897
<b>Extraction and dissolution of cellulose from nypa fruit husk for nanofibers fabrication</b>	Siti Norfatihah Fauzee and Rizafizah Othaman	904
<b>Gas permeability of ENR/PVC membrane with the addition of inorganic fillers</b>	Farhan Mohd Nor, Ibrahim Abdullah, and Rizafizah Othaman	911
<b>Complexation of 5,5,7,12,12,14-hexamethyl-1,4,8,11-tetraazacyclotetradeca-7,14-diene dithiocyanate with nickel (II) acetate</b>	Nur Iliyani Mohd Ishak and Bohari M. Yamin	918

<b>Electrospinning of PVC with natural rubber</b>	Muhammad Hariz Othman, Mahathir Mohamed, and Ibrahim Abdullah	926
<b>Synthesis and characterisation of manganese oxides from potassium permanganate and citric acid mixtures</b>	Syazwani Burhanuddin, Ambar Yarmo, and Bohari M. Yamin	932
<b>Synthesis of tetraaza bromide macrocyclic and studies of its effect on poly(methyl methacrylate) grafted natural rubber (MG49) - lithium tetrafluoroborate (<math>\text{LiBF}_4</math>) films</b>	Siti Nor Mariam, Bohari M. Yamin, and Azizan Ahmad	938
<b>MATHEMATICAL SCIENCES</b>		
<b>Generalized <math>\psi\phi</math>-operations on double fuzzy topological spaces</b>	Fatimah. M. Mohammed, M. S. M. Noorani, and A. Ghareeb	943
<b>Stagnation-point flow over a stretching/shrinking sheet in a porous medium</b>	Haliza Rosali and Anuar Ishak	949
<b>Fekete-Szegö inequalities for Sakaguchi type functions and fractional derivative operator</b>	Khadeejah Rasheed Alhindi and Maslina Darus	956
<b>Flow and heat transfer over a shrinking sheet in a nanofluid with suction at the boundary</b>	Khairy Zaimi and Anuar Ishak	963
<b>Generalized vague soft expert set theory</b>	Khaled Alhazaymeh and Nasruddin Hassan	970
<b>Semisimple (simple) module and length property</b>	Majid Mohammed Abed and Abd Ghafur Ahmad	975
<b>Explicit solutions for couple higher order nonlinear Schrödinger equation by (G'/G)-expansion method</b>	Wafaa M. Taha and M. S. M. Noorani	980
<b>Some operations on complex Atanassov's intuitionistic fuzzy sets</b>	Abd Ulazeez M. Alkouri and Abdul Razak Salleh	987
<b>A new highly secure directed signature scheme</b>	N. N. Ramlee and E. S. Ismail	994

<b>A new proxy signature with revocation based on security advancement</b> M. Mat-Isa and E. S. Ismail	999
<b>A fuzzy MCDM approach for evaluating school performance based on linguistic information</b> Suhaina Musani and Abdul Aziz Jemain	1006
<b>Application of optimal homotopy asymptotic method for solving linear delay differential equations</b> N. Ratib Anakira, A. K. Alomari, and I. Hashim	1013
<b>Threshold cryptosystem based on factoring and discrete logarithm problems</b> Mohd Saiful Adli Mohamad and Eddie Shahril Ismail	1020
<b>The Beesack-Darst-Poolard inequality for Riemann-Stieltjes double integral</b> Y. M. Jawarneh and M. S. M. Noorani	1024
<b>Fixed point theorems of <math>T</math>-contraction mappings under <math>c</math>-distance in cone metric spaces</b> Zaid Mohammed Fadail and Abd Ghafur Bin Ahmad	1030
<b>Some fixed point results in cone metric spaces</b> Fawzia Shaddad, Mohd Salmi Md Noorani, and Saud M. Alsulami	1035
<b>General properties of concave univalent functions in the unit disk</b> Ibtisam Aldawish and Maslina Darus	1042
<b>Eliminating the influence of serial correlation on statistical process control charts using trend free pre-whitening (TFPW) method</b> Nor Hasliza Mat Desa and Abdul Aziz Jemain	1049
<b>More results on weakly <math>\omega\beta</math> – continuous functions</b> Heyam Hussein Aljarrah and Mohd. Salmi. Md. Noorani	1055
<b>Structural modeling of age specific fertility curves in Peninsular Malaysia: An approach of Lee Carter method</b> Hazlenah Hanafiah and Abdul Aziz Jemain	1062
<b>Certain subclass of meromorphically univalent functions defined by q-analogue of Liu-Srivastava operator</b> Huda Aldweby and Maslina Darus	1069
<b>New common fixed point results in cone metric spaces</b> Sahar Mohammad Abusalim and Mohd Salmi Md Noorani	1077

**Empirical Bayes estimation for Markov chain models of drought events in Peninsular Malaysia**

Wahidah Sanusi, Abdul Aziz Jemain, and Wan Zawiah Wan Zin

1082

**Author Index**

1091