

# 2014 APCBEES SYDNEY CONFERENCES SCHEDULE

2014 International Conference on Environmental Engineering and Development (ICEED 2014)  
2014 International Conference on Biomedical and Pharmaceutical Engineering (ICBPE 2014)  
2014 International Conference on Advances in Bioscience and Bioengineering (ICABB 2014)  
2014 2nd Journal Conference on Chemical Engineering and Applications (JCCEA 2014 2nd)

**Sydney, Australia**

**May 27-28, 2014**

**The Menzies Sydney Hotel**

**Sponsored and Published by**



# 2014 APCBEES Sydney Conferences

## Introduction

Welcome to CBEES 2014 conferences in Sydney. The objective of the Sydney conferences are to provide a platform for researchers, engineers, academicians as well as industrial professionals from all over the world to present their research results and development activities in Environmental Engineering and Development, Biomedical and Pharmaceutical Engineering, Advances in Bioscience and Bioengineering, Chemical Engineering and Applications.

### 2014 International Conference on Environmental Engineering and Development (ICEED 2014)



- ❄ **Paper publishing and index:** All registered papers of **ICEED 2014** will be published in the **Journal of Clean Energy Technologies (JOCET, ISSN: 1793-821X)**, and all papers will be included in Engineering & Technology Library, EBSCO, Ulrich's Periodicals Directory, BE Data and Google Scholar, Cross ref, ProQuest and sent to be reviewed by Ei Compendex and ISI Proceedings.

- ❄ **Conference website and email:** <http://www.iceed.net/>; [iceed@cbees.net](mailto:iceed@cbees.net)

### 2014 International Conference on Biomedical and Pharmaceutical Engineering (ICBPE 2014)



- ❄ **Paper publishing and index:** All registered papers of **ICBPE 2014** will be published in **the Journal of Medical and Bioengineering (JOMB, ISSN: 2301-3796)**, and will be included in the Engineering & Technology Digital Library, and indexed by Ulrich's Periodicals Directory, Google Scholar, EBSCO and Electronic Journals Digital Library and sent to be reviewed by EI Compendex and ISI Proceedings.

- ❄ **Conference website and email:** <http://www.icbpe.org/>; [icbpe@cbees.net](mailto:icbpe@cbees.net)

### 2014 International Conference on Advances in Bioscience and Bioengineering (ICABB 2014)



- ❄ **Paper publishing and index:** All registered papers of **ICABB 2014** will be published in **the International Journal of Bioscience, Biochemistry and Bioinformatics (IJBBB, ISSN: 2010-3638)**, and all papers will be included in the Engineering & Technology Digital Library, and indexed by EBSCO, WorldCat, Google Scholar, Cross ref, ProQuest, CABI and sent to be reviewed by EI Compendex and ISI Proceedings.

- ❄ **Conference website and email:** <http://www.icabb.org/>; [icabb@cbees.net](mailto:icabb@cbees.net)

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| <b>2014 2nd Journal Conference on Chemical Engineering and Applications (JCCEA 2014 2nd)</b> |
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- \* **Paper publishing and index:** All the registered papers of **JCCEA 2014 2nd** will be published into **International Journal of Chemical Engineering and Applications (IJCEA ISSN: 2010-0221 available at: <http://www.ijcea.org/list-6-1.html>)** by IACSIT Press, and distributed at the conference. The journal will be indexed by CAS, DOAJ, Ulrich's Periodicals Directory, CABI, Google Scholar, Engineering & Technology Digital Library, ProQuest, and Crossref.
- \* **Conference website and email:** <http://www.ijcea.org/jccea/2nd/>; [ijcea02@stpress.net](mailto:ijcea02@stpress.net)

### Excellent Paper Award

- \* One excellent paper will be selected from each oral presentation sessions, and the Certificate for Excellent Papers will be awarded at the end of each session on May 28, 2014.

## Instructions for Oral Presentations

### Devices Provided by the Conference Organizer:

Laptops (with MS-Office & Adobe Reader)  
 Projectors & Screen  
 Laser Sticks

### Materials Provided by the Presenters:

PowerPoint or PDF files (Files shall be copied to the Conference Computer at the beginning of each Session)

### Duration of each Presentation (Tentatively):

**Regular Oral Presentation: about 8 Minutes of Presentation and 2 Minutes of Q&A**  
**Keynote Speech: 30 Minutes of Presentation and 10 Minutes of Q&A**

# Brief Schedule for Conferences

## Day one: May 27, 2014

1. Arrival and Registration: 10:00am-12:30pm, 1:30pm-4:00pm
2. **Academic Visit** (University of Technology Sydney and Centre for Health Technologies ) :5:00pm-7:00pm  
(Please arrive at the reception at 5:00pm, we will leave for UTS on time)

## Day two: May 28, 2014

8:30am-5:30pm Registration and Conference Presentation

### Canberra Room

|                           |                 |
|---------------------------|-----------------|
| Opening Remarks           | 08:30am~08:40am |
| Keynote Speech I          | 08:40am~09:20am |
| Keynote Speech II         | 09:20am~10:00am |
| Coffee Break&Taking Photo | 10:00am~10:30am |
| Keynote Speech III        | 10:30am~11:10am |

**Lunch:** 11:30am~1:00pm

**Canberra Room**  
**Session 1 (ICEED 2014):**  
1:00pm-3:30pm

**Darwin Room**  
**Session 2 (ICEED 2014):**  
1:00pm-3:30pm

**Coffee Break:** 3:30pm-3:50pm

**Canberra Room**  
**Session 3 (ICABB 2014&JCCEA**  
**2014 2nd):** 3:50pm-5:30pm

**Darwin Room**  
**Session 4 (ICBPE 2014):**  
3:50pm-5:10pm

**Dinner:** 7:00pm

# Detailed Schedule for Conferences

May 27, 2014

|  |   |
|--|---|
| 10:00am-12:30pm<br>1:30pm-4:00pm   | Arrival and Registration  |
| 5:00pm-7:00pm<br>(Please arrive at the reception at 5:00pm, we will leave for UTS on time) | <b>Academic Visit</b> (University of Technology Sydney and Centre for Health Technologies ) |

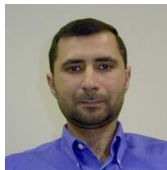

**Note: (1) You can also register at any time during the conference.**



**(2) The organizer doesn't provide accommodation, and we suggest you make an early reservation.**

**(3) One Excellent Paper will be selected from each oral session. The Certificate and the gift for Excellent Papers will be awarded at the end of each session on **May 28, 2014.****

**Morning, May 28, 2014**

**Venue: Canberra Room**

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| <b>8:30am-8:40am</b>  | <p>Opening Remarks<br/>Assoc. Prof. Ahmed Al-Ani<br/>Faculty of Engineering &amp; IT, University of Technology, Sydney</p>    |
| <b>8:40am-9:20am</b>  | <p><b>Keynote Speech I</b><br/>Assoc. Prof. Stefan Paula<br/>Department of Chemistry, Natural Science Center 445, Northern Kentucky University, USA</p>  <p>“Targeting P-type ATPases: Recent developments and future perspectives”</p> |
| <b>9:20am-10:00am</b> | <p><b>Keynote Speech II</b><br/>Prof. ROUEL S. ROQUE, M.D.<br/>Gross Anatomy Department of Basic Sciences, Touro University Nevada, 874 American Pacific Drive Henderson, NV 89014 U.S.A.</p>   |

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|                        |  <p>“Repairing the Damaged Heart: Paradigm Shifts and Stem Cell Therapy”</p>  |
| <b>10:00am-10:30am</b> | <b>Coffee Beak&amp;Taking Photo</b>   |
| <b>10:30am-11:10pm</b> | <p><b>Keynote Speech III</b><br/>                 Assoc. Prof. Ahmed Al-Ani<br/>                 Faculty of Engineering &amp; IT, University of Technology, Sydney</p>  <p>“Automatic sleep scoring and alertness classification”</p> |

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| <b>11:30am-1:00pm</b> | <b>Lunch</b> |
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**Afternoon, May 28, 2014**

**SESSION-1 (ICEED 2014)**

**Venue: Canberra Room**

Session Chair: Assoc. Prof. Stefan Paula

**Time: 1:00pm-3:30pm**

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| C0004 | <p>Thermodynamic performance assessment of ozone layer friendly natural refrigerants as potential substitutes to HCFC.'s<br/> <b>MOURAD BOUMAZA</b>, A. M IchemE, and A. M. IIF<br/>                 King Saud University- College of Engineering, Dept of Chemical Engineering</p> <p><i>Abstract</i>—Due to the environmental concerns related to ozone depletion potential (ODP) and global warming potential (GWP) of the existing refrigerants, industry and researchers in this field are investigating long-term solutions. With extensive work on alternatives to chlorofluorocarbons (CFCs) and hydro chlorofluorocarbons (HCFCs), initially hydro fluorocarbons were considered to be long-term solutions. The global warming of HFCs has become a hurdle to accept them as long-term solutions. Now, the focus is on the use of natural refrigerants like hydrocarbons (HCs) such as R290, R600, ammonia, carbon dioxide and water. These natural substances have very low GWP, and a zero ODP. This paper presents thermodynamic performance analysis of R22 and three of its alternatives natural refrigerants (R290, R600a and R717) for A/C and refrigeration purposes, through a simulation model. The investigation enables to confirm the possibility of using these natural refrigerants as a substitute to R22.</p> |
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| C0008 | <p>Effect of Fe(II) and Cu(II) on the transformation of schwertmannite to goethite under acidic condition</p> <p><b>Sengpasith HoungAloune</b>, Naoki Hiroyoshi, and Mayumi Ito<br/>Hokkaido University</p> <p><i>Abstract</i>—Schwertmannite (<math>\text{Fe}_8\text{O}_8(\text{OH})_6\text{SO}_4</math>) is a critically important Fe(III) mineral in acid–mine drainage environments because of its widespread occurrence and high reactivity towards toxic oxyanions, such as arsenate. The present study investigates the effect of Fe(II) and Cu(II) on the transformation of schwertmannite to goethite. The transformation experiments were conducted by suspending schwertmannite in the solution containing various concentrations of Fe(II) and Cu(II) under acidic pH (3-4) at 65°C. Results indicate that Fe(II) has significant effect on the stability of schwertmannite; transformation of schwertmannite to goethite occurred within 1 h in the presence of &gt;50 mM Fe(II). The transformation was retarded by the addition of Cu(II) concentration. When schwertmannite were suspended in solution containing 100 mM Fe(II) and &gt;50 mM Cu(II), there was no transformation occurred. This indicates that Cu(II) has the ability to retard or inhibit the Fe(II)-catalyzed transformation of schwertmannite to goethite under such conditions.</p> |
| C0015 | <p>Preliminary Investigation on coupling MCDA with GLUE to perform Uncertainty Analysis of a Hydrological Model</p> <p><b>P. Vallam</b>, X. S. Qin, J. J. Yu<br/>NANYANG TECHNOLOGICAL UNIVERSITY, SINGAPORE</p> <p><i>Abstract</i>—Hydrological models are being used for different applications. Quantifying the uncertainty of popular Hydrological models has been well documented, especially with Bayesian methods such as the Generalized Likelihood Uncertainty Estimation (GLUE). However, research studies have often either neglected the lesser known hydrological models or have performed a typical Bayesian analysis of uncertainty. In this paper, the SLURP model's uncertainty is examined using a novel approach of the GLUE method. Instead of considering the overall Nash Sutcliffe Efficiency (NSE), the NSE values of different magnitudes of flows are considered simultaneously to capture the predictive uncertainties of the SLURP model. By using a Multi-Criterion Decision Analysis (MCDA) method, the NSE values of different flow periods are simultaneously considered when computing the predictive intervals of the SLURP model. Also, the potential issues of using a MCDA based GLUE approach in lieu of the traditional GLUE approach are discussed.</p>  |
| C0018 | <p>Mechanical and Microstructural Characterization of Alkali-activated Materials Based on Fly Ash and Slag</p> <p><b>Maochieh Chi</b>, Yenchun Liu and Ran Huang<br/>WuFeng University</p> <p><i>Abstract</i>—This study investigates the mechanical and microstructural characterization of alkali-activated fly ash/slag (AAFS) mortars with various ratios of fly ash to slag. The liquid/binder ratios of 0.35, 0.5 and 0.65 are considered for the AAFS mortars. 4% Sodium oxide (<math>\text{Na}_2\text{O}</math>) concentration of cementitious material weight in mixture and liquid sodium silicate with modulus ratio (mass ratio of <math>\text{SiO}_2</math> to <math>\text{Na}_2\text{O}</math>) of 1 were used as alkaline activators to alkali-activate various fly ash/slag ratios. Compressive strength test, water absorption test,</p>  |

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|       | <p>drying shrinkage test, scanning electron microscopy (SEM) and X-ray diffraction (XRD) analysis were conducted. Test results reveal that both fly ash/slag ratio and the liquid/binder ratio are two significant factors influencing the mechanical and microstructural characterization of AAFS mortars. The hydration products of AAFS mortars are mainly amorphous alkaline aluminosilicate and low-crystalline calcium silicate hydrate gel.</p>   |
| C0019 | <p>Reaction Model Correlation of the 2,3,5-Trimethyl-1,4-benzoquinone Synthesis Using <math>\text{CuFe}_2\text{O}_4</math> Nano-powder as the Catalyst<br/> <b>Yenchun Liu</b>, Maochieh Chi and Chaoming Lin<br/> WuFeng University</p> <p><i>Abstract</i>—Copper ferrite nano-particles were successfully synthesized by microwave-induced combustion process using copper nitrate, iron nitrate and urea. The <math>\text{CuFe}_2\text{O}_4</math> powders were found to be efficient catalysts in oxidizing 2,3,6-trimethylphenol (TMP) to 2,3,5-trimethylhydrogen-quinone(TM HQ) and 2,3,5-trimethyl-1,4-benzoquinone(TMBQ) in acidic reaction conditions. Also, recovery of the catalyst was facily achieved by simple magnetic decantation. Based on the experimental evidence, a pseudo-steady-state hypothesis (PSSH) was applied to the reaction system. The kinetic behaviors and the characteristics of the reaction were sufficiently described by the pseudo-first-order rate law. This investigation covers the effects on the yield of the product and the apparent rate constants (<math>k_{app,2}</math>) that result due to the reaction conditions, including agitation speed, amount of <math>\text{CuFe}_2\text{O}_4</math> powder catalyst, amount of HCl, volume of water, amount of hydrogen peroxide, temperature, and organic solvents.</p> |
| C0022 | <p>Research of Rebuilt and Application of Dust Collector in Coal-fired Power Plants<br/> <b>Qi-zhen Liu</b>, Yan-jing Sun, Lei Jia, Yi-hua Zhang, and Zhi-gang Shen<br/> Shanghai Environmental Monitoring Center</p> <p><i>Abstract</i>—Power plant A and Power plant B launched the rebuilt pilot project of bag house and power source of electrostatic precipitator in order to further increase the dust removal efficiency in coal-fired power plants and then improve air quality in Shanghai. Results showed that dust reduction rate rose to 69.5% and the concentration of particulate matter dropped to <math>9.2 \text{ mg/m}^3</math> after the rebuilt of bag house. On the other hand, dust reduction rate was 48.8% and the concentration of particulate matter was <math>17.9 \text{ mg/m}^3</math> after the rebuilt of electrostatic precipitator.</p>  |
| C0023 | <p>High winds at Nyg årdsfjell<br/> <b>Muhammad Bilal</b>, Yngve Birkelund, and Matthew Homola<br/> The Arctic University of Norway (UiT)</p> <p><i>Abstract</i>—Wind energy in cold climate offers challenges that include among others, the icing on the turbine blades that affects the power output of the turbines. We investigate the presence of high winds at the Nyg årdsfjell wind farm that is situated in north of the Arctic Circle in Norway. The data is taken from three 2.3 MW Siemens wind turbines (SWT-2.3-93) that were installed at Nyg årdsfjell during the fall of 2005. There are total of 185 high winds events detected consisting of 1737 hours during the observation period May 2008 until April 2009. Out of these 1737 hours of high winds, 269 hours occurred during May 2008 until October 2008 and 1468 hours occurred during November 2008 until April 2009 that is 84.5% of total high winds hours. That shows the majority of high winds events</p>  |



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|       | <p>occurring during the colder periods. The ten leading high winds events showed the presence of wind speeds ranging from 16 m/s to 19 m/s with maximum up to 24 m/s. The analysis established the existence of high winds at Nyg årdsfjell during colder times.</p>  |
| C0024 | <p>An Assessment on Glare From Daylight Through Various Design of Shading Devices in Hot Humid Climate, Case Study in Kuala Lumpur, Malaysia.<br/> <b>Zuraini Denan</b> and Noor Hanita Abdul Majid<br/> International Islamic University Malaysia</p> <p><i>Abstract</i>—Glare is one of the main problems that cause daylight to be visually undesirable in a hot humid country such as Malaysia. However, the design of modern buildings in Malaysia applies large glass windows and some partially covered with various design of shading devices, which are merely for aesthetic reason. Having sun shading devices have not solved the glare problems instead create either dark interiors or force for interior blinds and use of electrical lighting. Thus, this paper aims to investigate the glare performance under daylight through most common types of shading devices used in Kuala Lumpur, Malaysia. The four most common shading devices are: vertical, horizontal, egg-crate and geometrical pattern. The experiment covers the luminance, illuminance level and subjective responses of the occupants. The result indicates that under the vertical shading devices has spotted the highest glare values, in contrast subjective response indicate that the vertical shading devices provide most comfortable environment.</p> |
| C0025 | <p>Developing a Sustainable City in a Tropical Area to Create a Balance between Vegetation and Water Bodies<br/> <b>Syedehzahra Mirrahimi</b>, Nik Lukman Nik Ibrahim and Mastor Surat<br/> Universiti Kebangsaan Malaysia (National University of Malaysia)</p> <p><i>Abstract</i>—This paper aims to investigate the effects of using natural resources that incorporates the basis of a sustainable city design in efforts to improve the urban thermal comfort in a hot and humid climate. Currently, one of the most crucial world environmental issues is urbanization in a hot and humid climate. In tropical areas, if the urban landscape is poorly designed, it will cause outdoor thermal discomfort. Natural plants and water bodies in the hot and humid landscape has a direct influence over the temperature of urban cities. Water bodies, for example, are able to lower the atmospheric temperature; whereas plants also can affect the surroundings passively. The effects of wet surfaces are increased if there is a presence of a shadow. Therefore, vegetation and water bodies are used in designing a sustainable city in order to increase the quality of outdoor thermal comfort in a hot and humid climate. This is hoped to provide a better and more comfortable human living environment.</p>                      |
| C0028 | <p>Cost Benefit Analysis of On-Board Desalinated Ballast Water from Oil and Natural Gas Trade as a Source of Water Supply for Abu Dhabi<br/> <b>Yanxiang Wang</b> and I-Tsung Tsai<br/> Masdar Institute of Science and Technology</p> <p><i>Abstract</i>—this study investigates the cost and benefits associated with supplying Abu Dhabi with desalinated ballast water brought in with oil tankers and liquefied natural gas (LNG) vessels under different domestic water demand scenarios. Traditionally, the ballast water is discharged directly into the sea which has severely negative impact on the marine</p>   |

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|       | <p>environment. The International Maritime Organization (IMO) is in the process of setting up a regulation requiring ballast water to be treated before it is discharged. To meet the requirement, desalinating the ballast water and supplying it to the local residents is one of the efficient ways. We analyze water trade of ballast water desalinated with waste heat generated from the propulsion of Oil Tanker and LNG vessels under different domestic water demand scenarios. Results show that in addition to the marine environmental benefit, ballast water trading will generate a cost saving in the range of \$771.5 million to \$602.0 million between 2012 and 2030 depending on the realized domestic demand for water in Abu Dhabi.</p>   |
| C0029 | <p>A Model-Based Approach to Measuring the Effect of Shading on Outdoor Thermal Comfort<br/> <b>Edgar Eugenio Samano Baca</b> and I-Tsung Tsai<br/> Masdar Institute of Science and Technology</p> <p><i>Abstract</i>—A “sustainable” city must maximize the health of its residents, provide for ample economic growth opportunities, and minimize its impact on the environment. This paper analyzes the effects of building shading on outdoor thermal comfort. The model is specialized to regions of extreme heat and humidity, drawing weather data from the city of Abu Dhabi in the United Arab Emirates. The paper focuses on building height and density as the two design parameters of urban built form and uses weather data and passive shading to derive a measure of the effect of walking outdoors. The methodological developments are then demonstrated on four urban design schemes: high-density, low-rise; low-density, high-rise; low-density, low-rise; and high-density, high-rise. The results show that the optimal urban system for hot and humid locations, in terms of improving outdoor thermal comfort, comes from increasing the height-to-width ratio of the built urban form.</p> |
| C0030 | <p>Gaining Competitive Advantage through Strategic Green Supply Chain Management: From a Literature Review towards a Conceptual Model<br/> <b>S. Maryam Masoumik</b>, Salwa Hanim Abdul-Rashid, Ezutah Udony Olugu<br/> University of Malaya</p> <p><i>Abstract</i>—The link between green supply chain practices (GSCPs) and competitive advantages (CAs) is a subject of growing interest amongst academics and practitioners. Despite the theoretical arguments that environmentally conscious practices would give competitive advantages for companies, there is no consensus in empirical research concerning the positive impact of GSCPs on CAs. Due to this lack of clarity in the literature, this study undertakes a comprehensive review to evaluate the circumstances necessary for GSCPs to achieve sustainable CAs. Subsequently, a conceptual model is proposed to elaborate on the causal relationship between GSCPs and CAs. Future research opportunities are recommended to expand on the proposed conceptual model and to address the shortcomings of the existing literature.</p>  |
| C1003 | <p>FACTORS AFFECTING CONSUMERS’ AWARENESS, INTEREST AND PURCHASE INTENTION OF ENVIRONMENTAL FRIENDLY VEHICLES --INSIGHTS FROM KUALA LUMPUR, MALAYSIA<br/> <b>Rafia Afroz</b><br/> International Islamic University, Malaysia</p> <p><i>Abstract</i>—The objective of this study was to investigate the factors that affect the awareness,</p>  |

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|       | <p>interest, purchase intention of the consumers towards environmental friendly vehicles (EFVs) and sustainability of EFVs. It was found that education and income had significant impact on these variables. Male respondents were more aware than the female respondents about EFVs. Aged people showed more interest towards EFVs and electric vehicles (EVs). It was also found that gender, age, education and income did not show any significant relationship with the sustainability of EFVs. It was an alarming issue for the Malaysian government. So, if the government's target was to increase the number of EFVs on Malaysian roads, they should increase the awareness of the young citizen of this country and increase the publicity of EFVs through media, conference and proceedings.</p>   |
| C1006 | <p>Soil Chemical Quality and Forest Dieback<br/> <b>Gunadasa HKSG</b> and Yapa PI<br/> Uva Wellassa University</p> <p><i>Abstract</i>—The study was aimed at investigating the effectiveness of recovering degraded soil chemical qualities to mitigate the mysterious forest dieback in a montane forest. Soil amendments with standard compost, montane mycorrhizae, standard compost with montane mycorrhizae, and a control were used as treatments. <i>Syzygium rotundifolium</i> saplings were used as the indicator plant. Soil pH, EC, Soluble soil Pb, Cd and soil organic matter was compared at 0.20m soil depth. Foliar samples from “treated” saplings were tested for Pb and Cd. Contamination of soil and leaves of the saplings with Pb (<math>p &lt; 0.001</math>) and Cd (<math>p &lt; 0.001</math>) was evident. Positive correlations between soil Pb and Cd and leaf Pb and Cd were observed (<math>p = 0.001</math>). Soil amendment with compost and montane mycorrhizae reduced the soluble Pb content (<math>p = &lt; 0.001</math>). Soil amendment with standard compost and montane mycorrhizae was effective in saving the saplings from Pb and Cd toxicity (<math>p &lt; 0.001</math>).</p> |
| C0002 | <p>Low cost modification kit for retrofitting on small diesel engines to run on straight vegetable oils<br/> <b>Sudhakar. Jindal</b><br/> Maharana Pratap University of Agriculture &amp; Technology</p> <p><i>Abstract</i>—Although many varieties of vegetable oils do have characteristics similar to that of diesel, but varieties of problems are encountered on prolonged use of vegetable oils in the existing design of engines. To address these problems, transesterification is found to be the best, but, it has its own problems and can not be adopted at rural sites. To run the engines directly with straight vegetable oils, suitable modification in the engine is required. A low cost modification kit is developed for retrofitting on small power agricultural diesel engines. Once the kit is fitted on the engine, it can easily substitute upto 60% of diesel with vegetable oils of local origin. The engine delivers comparable power, efficiency and lower emissions of unburnt hydrocarbons, carbon monoxide and smoke and runs smoothly without effect on life.</p>   |

**SESSION-2 (ICEED 2014)****Venue: Darwin Room**

Session Chair: Prof. MOURAD BOUMAZA

**Time: 1:00pm-3:30pm**

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| C1013 | Improve Electricity Efficiency by Applying TRIZ |
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|       | <p><b>Nikalus Shu Luing Swee</b>, Mum Wai Yip, Chee Sheng Keong, See Chew Tai, and Guat Guan Toh<br/>Tunku Abdul Rahman University College</p> <p><i>Abstract</i>—This paper aims to provide a systematic analysis by applying TRIZ to reduce the consumption of household electricity, and nonetheless it does not demote the quality of living. TRIZ tools such as defining engineering system, function analysis, cause and effect chain analysis and contraction matrix are applied in order to discover some feasible and elegant solutions to alleviate the problem. Findings revealed that the problems of high household electricity consumption are owing to the wastage of electricity due to the ignorance behavior, poor layout design of the house, stand-by mode “leak” of electrical appliances and high electricity consumption from old electronic products. The root causes and contradictions are solved by applying contradiction matrix, and inventive principles are recommended, i.e., segmentation, copying, preliminary action, dynamization, intermediary, and parameter changes. Therefore, it can be concluded that TRIZ is a systematic and innovative tool in problem solving.</p> |
| C2003 | <p>Is a 30% Reduction in Emissions by Changing Transport Patterns in Ankara Feasible?<br/><b>Can Bıyık</b><br/>University of Birmingham</p> <p><i>Abstract</i>—The purpose of this paper is to examine potential air pollution reductions by shifting people’s transport pattern into public buses from passenger cars. A quantitative survey approach is used to estimate car driver’s transport characteristics and some data are collected from local council website for public bus journeys. DMRB (Design Manual for Roads and Bridges) excel spread sheet is used to calculate local and regional air pollution emissions from passenger vehicles and public buses. In this research, I have found that there is a high potential of people prefer public buses in future but this potential does not provide to decrease all emissions of 30% of reductions because NOx emissions decrease less than other pollutants. Another important finding is that new local benzene and 1.3-butadiene air quality values could meet the national air pollution standards, if the 42% of car drivers are encouraged to travel by public buses in Ankara.</p>  |
| C2007 | <p>Historical, Physical, and Social Development of Odunpazarı<br/>Fatma Kolsal, <b>Güler Koca</b><br/>Anadolu University</p> <p><i>Abstract</i>—Odunpazarı is one of the central districts of Eskisehir which is identified with the city. The popularity that the area has is not only owing to the tourism flourished by the concept of “Odunpazarı Houses” which became a trademark by the renovation and restoration projects realized within the district, but also the significant place it always has through the historical development of Eskisehir and the continuity of the historical pattern that accomplished to survive.</p> <p>The purpose of this study is to scrutinize how Odunpazarı has physically and socially been affected during the change of Eskisehir in time, in which way the patterns have developed by the effects of this change and the results of the urban planning regarding the district.</p>  |
| C2009 | RATIO DETERMINATION OF SOLIDS AND VOIDS FOR TRADITIONAL MALAY  |

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|       | <p><b>CARVINGS: A PREPARATION FOR ENVIRONMENTAL PERFORMANCE</b><br/> <b>NOOR HANITA ABDUL MAJID</b>, Abdul Majid and Zuraini, Denan<br/> <b>KULLIYAH OF ARCHITECTURE AND ENVIRONMENTAL DESIGN</b></p> <p><i>Abstract</i>—Carvings in forms of openings, roof ends and walls have been incorporated as aesthetic and climatic element in the Malay traditional buildings. Determining the ratio of solids and voids on carvings elements is seen as an essential step to gain insight on the performance of carvings as a shading devices to control sunlight and air flow. The research objectives are to inventory and digitize the carvings to determine the ratio of solid and voids, and predict their performances. The carvings sampled from all states in Peninsular Malaysia are digitized using AutoCAD to determine the area of solid and void. The ratio of solid and voids ranges from 1:1 to 99:1 and the most common ratio are 3:2. The ratio study is a preliminary findings towards a detail study on the daylight and ventilation control in the traditional houses.</p>   |
| C2010 | <p>Pyrolysis biochar from cellulosic municipal solid waste as adsorbent for azo dye removal: Equilibrium isotherms and kinetics analysis<br/> <b>Manu Agarwal</b>, James Tardio and S.Venkata Mohan<br/> RMIT University</p> <p><i>Abstract</i>—Municipal solid waste (MSW) can have a negative impact on the environment and / or human health, if not properly managed. Though landfill is the most common method used to manage MSW, treating MSW using waste-to-energy (WtE) technologies is an option that is receiving increasing interest. Pyrolysis is a WtE technology that is capable of converting waste into products such as bio-gas, bio-oil and bio-char. Bio-char, which varies in composition based on the raw material pyrolysed, has the potential to be used as a fuel and as an applied material for catalysis or adsorption. In this work the removal of azo dye was investigated using bio-char from pyrolysis of a cellulosic municipal solid waste. The bio-char was characterised using Scanning Electron Microscopy and Surface Area Analysis. The influence of pH on the dye removal was investigated over the range 4–7. The experimental data was analysed using four non-linear kinetic models (Pseudo first-order, pseudo second-order, Weber intra-particle diffusion and Elovich equation) and four non-linear isotherm models (Langmuir, Freundlich, Temkin and Sips), and ranked based on the statistical analysis tools in origin software. The dye removal kinetics most closely followed pseudo-first order kinetics whilst the adsorption isotherms were most closely fitted by the Temkin model over the pH range studied.</p> |
| C2012 | <p>Study of wind turbine aerodynamic performance using numerical methods<br/> <b>Shahram Derakhshan-Houreh</b> and Tavaziani Ali<br/> Iran University of Science &amp; Technology</p> <p><i>Abstract</i>—Design of wind turbine blades strictly depends on high precision, reliable and robust numerical predictions of its performance in all of operation conditions. This paper aims to simulate the flow around horizontal wind turbine blade with Computational Flow Dynamics (CFD) using a validated 3D Navier–Stokes flow solver. The main objectives of this study are investigating of different turbulence models and aerodynamic performance of wind turbine blades. The NREL Phase VI rotor used for CFD simulations and testing. Three different</p>   |

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|       | <p>turbulence models included of Spalart- Allmaras, k-epsilon (Lauder Sharma) and k-<math>\omega</math> SST tested and the best model for prediction of wind turbine performance is provided. Since Mach number is less than 0.3, the flow around wind turbine blade is incompressible and preconditioning used. For all cases the structure grid used for Fluid reticulation grid. For results more accuracy, use of preconditioning is necessary. Outputs of flow solver are t power and pressure coefficients for each section. At the final the k-epsilon with preconditioning code is selected the best model for simulation of flow around wind turbine blades.</p>   |
| C2013 | <p>Processing Carbon Rod from Waste of Zing-Carbon Battery for Biogas Desulfurizer<br/> <b>Tjokorda Gde Tirta Nindhia</b>, I Wayan Surata, I Ketut Adi Atmika, Dewa Ngakan Ketut Putra Negara and I Putu Gede Artana<br/> Udayana University</p> <p><i>Abstract</i>—The carbon rod of used zinc-carbon battery was investigated in this research to be recycled as biogas desulfurizer. The carbon rod was taken out from the used battery and crushed to become a pellet with about 1 cm long. To increase its performance, the carbon rod was put in solution of <math>KMnO_4</math> and water then tested its performance as desulfurizer. It is found that the performance of desulfurizer increase by putting about 200 gram of carbon rod in the solution of <math>KMnO_4</math> with minimum concentration of 20 gram <math>KMnO_4</math> /liter water. It is suggested during application to use low flow rate of biogas (around 1-3 liters/minute) to achieve maximum performance.</p>   |
| C2015 | <p>The University of Eastern Philippines: Green Audit<br/> <b>Myrna N. Ogoc</b><br/> University of Eastern Philippines (UEP)</p> <p><i>Abstract</i>—Green audit is a holistic perspective of looking into the totality of the actions towards greening the university and is foremost reflected in its policies alongside the organization's profile, the curriculum being the core of the educative process as well as its environment-related programs and projects. These interacting dimensions are geared towards forwarding recommendations for future directions which includes regular assessment and evaluation of the efforts done along environmental preservation and protection. It takes environmentalism as its overriding framework. With it is the underlying concept of advocating for the preservation, restoration and/ or improvement of the natural environment. It embraces risk communication to create consciousness and establish balance relations between humans and the various natural systems on which they depend in such a way that all the components are accorded a proper degree of sustainability which is deeply rooted in the consciousness of its stakeholders.</p> <p>The descriptive-correlational research design was used in this study to determine the relationship of variables. Documentary analysis was also adopted in trying to measure the extent of integration of environmental themes/ subjects into the curriculum using Rubrics. This research takes into account the examination of UEP system as an organization of its activity to check what it is doing to protect the natural environment and bring about environmental consciousness, which is creating general awareness of environmental issues, their causes and solutions by bringing about changes in the perception to its personnel which will ultimately radiate to a wider spectrum, that is the broader community UEP is a part of.</p> |
| C2018 | <p>Trend on the Absence of Private Open Space in Several Contiguous Housing in Sidoarjo,</p>  |

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|       | <p>Indonesia<br/> <b>Christina Eviutami Mediastika</b><br/>         Petra Christian University</p> <p><i>Abstract</i>—Limited proportion of open space compared to building area on house-lots in housing district is suspected a trend in Indonesian housing. Several contiguous housing in Sidoarjo Regency, Indonesia, comprises of low-to-medium and medium-to-high class housing was studied to learn on the trend. It concluded that 100% respondents were significantly proven to have insufficient private open space toward 0%. The study proved that respondents possess sufficient awareness but limited knowledge on the necessity of private open space.</p>  |
| C3003 | <p>THE IMPACT OF ENVIRONMENTAL IMPROVEMENTS ON THE FINANCIAL PERFORMANCE OF LEADING COMPANIES LISTED IN BURSA MALAYSIA<br/> <b>Tze San Ong</b>, Boon Heng Teh and Yee Woon Ang<br/>         Universiti Putra Malaysia</p> <p><i>Abstract</i>—This paper analyses the relationship between environmental improvement and the financial performance of firms on a sample of 78 leading companies listed in Bursa Malaysia. This study uses content analysis to verify the extent of information disclosed and reported by companies. The results indicate that efforts to embrace environmental improvement and activities may help firms gain financially.</p>  |
| C3007 | <p>The Hybrid Swarm Intelligence for S-system Model-based Genetic Networks<br/> <b>Wei-Chang Yeh</b><br/>         National Tsing Hua University</p> <p><i>Abstract</i>—As one of the largest topics within bioinformatics, the inferences drawn from underlying genetic networks of the observed time-series data of gene expression patterns is important. Due to its capability in capturing various dynamics and its availability to analyzation, the S-system model is a good choice for inferring such genetic networks. On the other hand, the S-system does in fact have drawbacks, as the square of the number of genes is proportioned by the number of S-system parameters. This information explains why the S-system is only used within scale networks that are of smaller scale. This paper uses hybrid soft computing to optimize the parameters. The high dimensionality of problems from the genetic network inference is also solved through the idea of problem decomposition strategy. The first step requires the original optimization problem to be split into many smaller problems. The SSO is then used to solve each small problem. Then, all results acquired from the SSO are then merged and along with ABC, are utilized to solve the originally presented optimization problem. The result depicts that the SSO is actually effective in solving these sub-problems, and also that the proffered hybrid soft computing successfully infers S-system models of a larger magnitude .</p> |
| C3008 | <p>Impact Assessment of Increasing Population in Suburban Areas on Water Quality - A Case Study in Kitwe Township – Zambia<br/> <b>Sydney Sichilima</b>, Cuthbert Makondo and Cosmas Lungu<br/>         The Copperbelt University</p> <p><i>Abstract</i>—Zambia’s urban population is growing dramatically, driven by perceptions of better</p>  |

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|       | <p>economic opportunities, infrastructure and services in urban areas. Water supply services, sanitation and other social amenities provision in urban areas like Lusaka, Kitwe, Livingstone and Ndola are getting overwhelmed and growth gauging from poorly planned residential settlements, growing energy demand, housing, poor road infrastructure accompanied by traffic jams have compounded the failure by local authorities and utility firms to cope with the demands of the rapidly increasing population. Due to high public demand for water, the water supply commercial utility companies fail to meet the consumption demand. It is from this view point that this research was conducted. The main objective was to assess the impact of increasing population on water quality in Kitwe - Zambia. It has been concluded that both surface and groundwater is being polluted due to anthropogenic activities in the concerned town. The findings also point to that fact that water quality can be affected by increasing population.</p>  |
| C3010 | <p>BUASCSDSEC - Uncertainty Assessment of Coupled Classification and Statistical Downscaling Using Gaussian Process Error Coupling<br/> <b>Queen Suraajini Rajendran</b> and Sai Hung Cheung<br/> Nanyang Technological University</p> <p><i>Abstract</i>—The statistical downscaling models which are used as a bridging model to connect the global climate model output and the local weather variables have uncertainty associated with it. The uncertainty present in the model as well as in the results should be quantified for reliable climate change impact studies. The sources of uncertainty include natural variability, uncertainty in the climate model(s), downscaling model, model inadequacy and in the predicted results. Uncertainty analysis and quantification in the models is a promising approach for climate change impact studies. In this paper, a new approach called BUASCSDSEC (Bayesian uncertainty analysis for stochastic classification and statistical downscaling with stochastic dependent error coupling) is proposed. It is a robust Bayesian uncertainty analysis methodology and tools for combined classification (to predict the occurrence of rainfall) and statistical downscaling. It is based on coupling dependent modelling error which is viewed as a function modelled as a stochastic process with classification and statistical downscaling models in a way that the dependency among modelling errors will impact the result of the classification and statistical downscaling model calibration and uncertainty analysis for future prediction. Gaussian Process is considered in the error modelling. Singapore data are used and the uncertainty and prediction results are obtained for the validation period (1995-2000). It is observed that the CDFs of the daily predicted samples are consistent with the observed CDF of precipitation. The uncertainty is smaller for the extreme rainfall and the uncertainty for smaller amount of rainfall is more compared to that for the extreme rainfall. From the results obtained, ongoing research for improvement is briefly presented.</p> |
| C3011 | <p>Drinking Water Quality Assessment in Selected Barangays in Laoang, Northern Samar, Philippines<br/> <b>Merle N. Tonog</b> and Marieta M. Poblete<br/> University of Eastern Philippines, Catarman N. Samar</p> <p><i>Abstract</i>—This study aimed to assess drinking water quality of the different water sources in Barangays Vigo, Yapas and Tinoblan in Laoang Northern Samar. Water sources were: deep</p>  |



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|       | <p>well, pump well and communal faucets. Water quality is based on the physical, chemical and bacteriological properties for each of the eight sampling stations. Three sampling periods were made at an interval of at least 15 days from January-February, 2012. Findings revealed that most water sources were within the permissible limits in terms of color, odor, pH, total dissolved solids (TDS), salinity, dissolved oxygen (DO) and nitrite. However, hardness and alkalinity were beyond the allowable limits. All water samples were positive for fecal coliforms. Thus, this study concludes that all water sources tested are not safe and not potable.</p>   |
| C0014 | <p>Gender Role in Conservation of Plant Diversity through Species Preferences in Three Tribal Communities of Chittagong Hill Tracts, Bangladesh<br/> <b>Sharmila Das</b> and Md. Mohiuddin<br/> Bangladesh Forest Research Institute, Chittagong</p> <p><i>Abstract</i>—The natural resources of the environment provide the basis for both women’s and men’s livelihood in Bandarban hill district of Bangladesh. But women have traditionally used a variety of indigenous plant species and so have a direct stake in their preservation. The conservation of plant resources in the context of global food security as well as natural resources management require greater importance with specific reference to women. This study focuses on understanding gender roles in biodiversity conservation in relation to species preferences as per their traditional responsibilities in utilization pattern in tribal communities. The variation of gender perspective in species choice has been observed among and within tribal communities. However, the information of the study has significant implication in policy formulating towards the appropriate agencies.</p> |

3:30pm-3:50pm

Coffee Break



### SESSION-3 (ICABB 2014&JCCEA 2014 2nd)

#### Venue: Canberra Room

Session Chair: Assoc. Prof. Ahmed Al-Ani

**Time: 3:50pm-5:30pm**

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| B0001 | <p>Phylogenetic relationship of the H5N1 viruses isolated in Vietnam, 2012 based on sequencing analyses of HA and NA gene segments<br/> <b>Tran Hoan Xuan</b>, Vu Cuong Chi, Luu Minh Quang and Tran Toan Xuan<br/> National Institute of Animal Sciences</p> <p><i>Abstract</i>—Vietnam is one of the countries most severely affected by H5N1 highly pathogenic avian influenza (HPAI) virus in terms of poultry and human health. However, there is little information on the diversity of H5N1 viruses circulating all over country. In this study, 24 H5N1 virus infections occurring in provinces along Vietnam, 2012 were investigated and the</p> |
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|       | <p>phylogenetic relationships of these viruses, based on HA and NA gene sequencing were analyzed. The results indicated the high variation of nucleotides in HA and NA gene segments of 24 H5N1 viruses isolated. All H5N1 viruses isolated from the North and the Middle of Vietnam was clustered into sub-clade 2.3.2.1 A Hubei-like viruses and was identified similarity with A/Duck/Vietnam/LMB139/2012 strain (Genbank accession: AB742289.1), based on HA and NA phylogenetic tree analyses, respectively. Especially, virus collected in Bac Ninh province (Northern side) was recognized as sub-clade 2.3.2.1 B Barn Swallow-like viruses while all viruses collected from the South were belonged to clade 1.1, based on HA phylogenetic analysis. In addition, NA amino acid and nucleotide sequence analyses demonstrated that viruses isolated from the South were found to be similar with two published strains including A/Duck/Vietnam/OIE -3313/211 (Genbank accession: AB716339.1) and A/Muscovy Duck/Vietnam/OIE-3313/2011 (H5N1).</p>   |
| B0003 | <p>A Modified HMM Forward Algorithm for an Embedded Motion Type Classification<br/> <b>Wattanapong Kurdthongmee</b><br/> Walailak University</p> <p><i>Abstract</i>—Hidden Markov model is well-known for its application in temporal pattern recognition. Its disadvantages are its computational expensive and very prone to numerically underflow. The focus of this paper is on the forward algorithm which computes the probability of a particular output sequence with respect to the HMM parameters. To make it feasible to implement on an embedded system, we propose a modified forward algorithm that makes use of integer only representation and operations. The outcome of these modifications is integrated into a motion type classification system used for elderly monitoring; 7 motion types with 2 x 2 transition and 8 emission probabilities, on a low cost embedded system based on a 32-bit ARM Cortex-M0+. The system is capable to perform with comparable classification correctness to the ordinary and the scaling coefficients algorithms. It outperforms the ordinary ones by taking 10 percent of time, 91 percent of code size and 54 percent of memory. It is capable of forcing the processor to sleep the longest with only 3.1 ms execution time per second (8.7 and 3.1 percent of the ordinary and the scaling coefficients algorithms). This makes it more suitable for implementation on an embedded system.</p> |
| B0010 | <p>Gamma-Oryzanol Extraction from Upland Rice Bran<br/> <b>Duangkamol RUEN-NGAM</b><br/> King Mongkul's Institute Technology Ladkrabang (KMITL), Faculty of Science</p> <p><i>Abstract</i>—Gamma-Oryzanol is one type of antioxidant and has good effect for health. Gamma-Oryzanol can find in rice bran which is the waste from rice milling process. Upland rice is one type of rice which can be grown in the upland area especially in the southern part of Thailand. The upland rice with species of Dawk Pa-yawm has been used in this research. There are many ways to extract gamma-oryzanol from rice bran. Maceration is conventional and useable extraction method in gamma-oryzanol extraction. Solvent is one crucial parameter in extraction. Many types of organic solvent such as hexane ethyl acetate acetone isopropanol and ethanol are investigated here. The extraction condition such as effect of soaking time, rice and solvent ratio also have examined. The highest amount of rice bran oil obtains from acetone as solvent with the ration of rice bran and solvent is 1:4. Moreover the extracted product also quality checked by HPLC method. The chromatogram showed clearly</p>  |

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|       | the peak of gamma-oryzanol.  |
| B0011 | <p>A New Segmentation Techniques for Determination Intravascular Vessel Boundaries<br/> Mazhar B. Tayel, M. A. Massoud, and <b>Y. F. Shehata</b><br/> El- Minia University, Faculty of Engineering</p> <p><i>Abstract</i>—Coronary heart disease ranks as the top disease which causes the death in the Egypt. Intravascular (IV) ultrasound imaging is used along with X-ray coronary angiography to detect vessel pathologies. This paper introduces three automated approaches for detection of lumen and media-adventitia borders in IV images. In the first method, a 2D median filter is used to initialize the lumen and media-adventitia contours. The second method uses the Lucy-Richardson method and the 2D median filter to determine the lumen border. Method three is a combination of two methods to combine their advantages. The catheter boundaries were automatically determined. This method shows a higher accuracy and ability to work under artifacts and noisy conditions.</p>  |
| B0015 | <p>Computational model for mechanics of total knee replacement: effect of tibial rotation during deep flexion in relation to post-cam design<br/> <b>Mohd Afzan Mohd Anuar</b><br/> Kyushu University, Japan</p> <p><i>Abstract</i>—The requirement of deep kneeling is common among Asians e.g. <i>Seiza</i> and kneeling during prayer. In this study, the sensitivity of stress in total knee replacement (TKR) post to tibial rotation during deep flexion was analysed and its relation to design of post-cam articulation was investigated. Three dimensional (3D) finite element models of two designs of clinically used posterior stabilized (PS) type total knee arthroplasty were constructed using their computational aided drawing (CAD) data. Loaded deep flexional motion from 0 to 135 degree in neutral, 10 ° and 15 ° of tibial rotation was adapted using finite element model to characterize the effects of knee kinematics on the stress states of ultra high molecular weight polyethylene (UHMWPE) tibial inserts and relation to post-cam design. Peak equivalent stresses in post at neutral, 10 ° and 15 ° tibial rotation were 65.22 MPa, 108.97 MPa and 134.50 MPa respectively, for Superflex, and 47.16 MPa, 45.69 MPa and 47.67 MPa respectively, for NRG. The result shows that the variation of maximum equivalent stress at different flexion angle and tibial rotation were caused by the post-cam contact geometry in sagittal plane and axial plane, respectively. Stress state of Superflex tibial post was found to be more sensitive to tibial rotation as compared to NRG. Modification on the post design based on post-cam radius of curvature ratio in both axial and sagittal has eliminated the sharp edge and provided larger contact area, hence reduce edge loading and high stress concentration area in Scorpio NRG. Stress in Scorpio NRG tibial post was found to be less sensitive to tibial rotation.</p> |
| B1001 | <p>Coumarins with xanthine oxidase inhibiting and radical scavenging properties: Tools to combat oxidative stress in cells<br/> Emily Hofmann, Jonathan Webster, Taylor Kidd, Reid Kline, Manori Jayasinghe, and <b>Stefan Paula</b><br/> Northern Kentucky University</p> <p><i>Abstract</i>—Certain representatives from the large natural compound class known as coumarins</p>   |

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|       | <p>are known to inhibit the enzyme xanthine oxidase (XO) and are capable of absorbing reactive oxygen species (ROS) produced by XO and other enzymes. These dual properties make coumarins a promising scaffold for the development of agents against reperfusion injuries, which are caused to a large extent by ROS and occur once blood circulation has been restored after ischemic events. A selection of eighteen coumarins was tested for XO inhibition and radical scavenging activities in cell-free assays. The most effective XO inhibitors carried a hydroxyl group in the C7 position of the coumarin scaffold whereas the best radical scavengers were coumarins with two hydroxyl groups in neighboring positions at the phenyl ring. Molecular docking confirmed the essential role of hydroxyl groups for effective enzyme/inhibitor interactions. The coumarins were further investigated in cell-based assays that determined their ability to reduce oxidative stress. As anticipated, the <i>in vivo</i> test results showed that the most effective compounds were those that were both potent XO inhibitors and good radical scavengers, thereby illustrating the potential of coumarins with dual activities for future development.</p> |
| B3002 | <p>Study on the Molecular Recognition of Adrenaline by Supramolecular Complexation with Formamide<br/> <b>Tao Liu, Xiao-Wen Zheng</b><br/> Shandong University</p> <p><i>Abstract</i>—Using cyclic voltammetry, we have investigated the electron transfer properties of supramolecular complexes of formamide (FA) with adrenaline (Ad) at graphite electrode and graphite electrode soaked in paraffine wax, respectively. The experimental results show that FA will affect the electron transfer properties of Ad. The formed supramolecular complexes by hydrogen bond (H-bond) interaction between FA and Ad will slow down the diffusion ability of adrenaline and make it hard to donate electron and be oxidized.</p>   |
| B3006 | <p>Toxicity study of SWCNT synthesis from fermented tapioca<br/> <b>Nurulhuda Ismail, Rozaida Poh, Mazatulikhma Mat Zain, Mohamad Rusop</b><br/> Universiti Teknologi MARA (UiTM)</p> <p><i>Abstract</i>—In the present study, single-walled carbon nanotubes (SWCNT) were synthesized from fermented tapioca. The SWCNT were tested for cytotoxicity at various concentrations in neuroblastoma cells. These SWCNTs caused cytotoxic effect when administrated at higher concentrations (500 mg/ml) rather than at lower concentrations as shown by a reduced cell viability. The findings revealed that CNT synthesized from fermented tapioca affect the normal growth of cells, in agreement with previous studies of CNT interaction with cells.</p>  |
| CA212 | <p>Effect of OPEFB-NCC Axial Ratio on Optical Properties of NCC Film<br/> <b>Rohaizu Rohaizu and W. D. Wanrosli</b><br/> School Of Industrial Technology, Universiti Sains Malaysia</p> <p><i>Abstract</i>—In this study, we report the effect of axial ratio on the properties of films from OPEFB-NCC. OPEFB-NCC is prepared via the TEMPO oxidation process whilst NCC's with different axial ratio (designated as LAR-NCC, MAR-NCC and HAR-NCC for short, medium and long fibrils respectively) are produced using the centrifugation and filtration technique. OPEFB-NCC films are prepared using the standard film casting method. SEM micrographs show that the surface morphology of all types of films appear to be smooth and homogenous</p>   |

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|       | <p>with multilayered deposition of particles, whereas the cross section morphology shows the presence of voids in the HAR-NCC film but almost none were visible in the MAR-NCC and LAR-NCC films. MAR-NCC and LAR-NCC films are visually transparent whilst the HAR-NCC films are opaque in nature which is in agreement with the light transmittance measurement where higher transmittances were observed in the LAR-NCC film as compared to MAR-NCC and HAR-NCC film in the visible wavelength section. Thermal analyses show that there are no significant differences in thermal stability even though the axial ratios of samples are different.</p>   |
| CA216 | <p>Activated <i>Paphia undulata</i> Shells Waste (APSW): A Cost-Effective Catalyst for Biodiesel Synthesis from <i>Rubber</i> and <i>Jatropha curcas</i> Seeds Oil (RSOME &amp; JSOME)<br/> <b>Said Nurdin</b>, Fatimah A. Misebah, Siti F. Haron, Nur S. Ghazali, Rosli M. Yunus, and Jolius Gimibun<br/>         Chemical Engineering Dept., Faculty of and Natural Resources Engineering, University of Malaysia Pahang(UMP)</p> <p><i>Abstract</i>—The <i>Paphia undulata</i> shell, which is available in abundance, has no any further processing for value-added materials and is commonly discarded as solid waste, was used as solid catalyst in a transesterification reaction to synthesize biodiesel from <i>Rubber</i> and <i>Jatropha curcas</i> seeds oil (RSOME and JSOME). The biodiesel non-vegetable oil feedstock and catalyst were prepared, characterized, activated and analyzed using GC, FESEM, BET, DTA-TGA, XRF and FTIR analysis. The activated <i>Paphia undulata</i> shells waste (APSW) had a maximum surface area of 2.1290 m<sup>2</sup>/g, diameters of 17- 3000 Å, pores adsorption and desorption cumulative volume were 0.006841cm<sup>3</sup>/g and 0.006928cm<sup>3</sup>/g with the pores size of 312.527 Å, and it reflected the composition of 83.99 – 86.25 % calcium oxide, etc. The resulted <i>Rubber</i> and <i>Jatropha</i> seeds oil biodiesel yields of 75.93% and 93.33% were found by the methanol/oil ratio of 6:1, catalyst amount of 4 wt.%, temperature of 60 °C and reaction time of 3 hours. The synthesized biodiesels were approved by GC-MS, and its properties fulfills the limitation of specification described by ASTM D6751.</p> |

#### SESSION-4 (ICBPE 2014)

#### Venue: Darwin Room

Session Chair: Prof. ROUEL S. ROQUE, M.D.

Time: 3:50pm-5:30pm

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| P0001 | <p>Balance Assessment in Older People Using Inertial Sensors<br/> <b>Maryam Ghahramani</b>, Fazel Naghdy, David Stirling, Golshah Naghdy, and Jan Potter<br/>         University of Wollongong</p> <p><i>Abstract</i>—People at the age of 65 and above are drastically at the risk of falling. Falls among elderly may occur because of many physical factors such as natural deterioration of motor function or other disease related problems such as stroke, Parkinson's or Alzheimer's disease. The methods reported in the literature to assess the risk of falling in older people are often subjective, qualitative, retrospective and inaccurate. An objective, quantifiable approach to assess the risk of falling in elderly by analysing body movement using inertial sensors is conducted. Initial results of the experimental work and analysis carried out on three subjects,</p> |
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|       | <p>one older person with impaired balance and two younger people with normal balance are reported. The sensors are mounted on the subjects' chests and they are asked to conduct balance tests. The results of the data analysis indicate that the elderly subject has disturbed and involuntary chest movements. This demonstrates the potential of the method to assess balance and the risk of fall in older people.</p>  |
| P0003 | <p>Stress Evaluation of Lower Limbs with Hip Osteoarthritis and Hip Arthroplasty<br/> <b>Abdul Halim bin Abdullah</b> and Mitsugu Todo<br/> Kyushu University</p> <p><i>Abstract</i>—Stress shielding and bone remodeling effects are critical issues in promoting long term stability of total hip arthroplasty (THA). Stress shielding occurs when the femur experiences less stress after the presence of the prosthesis stem. In this study, biomechanical evaluations of lower limbs are established using the finite element method in corresponding to stress distributions. Lower limbs CT images of 64 years old female with hip osteoarthritis (OA) are used in developing three dimensional inhomogenous models. To represent THA limb, the left femur with hip OA problem was cut off and a prosthesis stem was implanted. The results show different stress distribution of lower limbs with OA and THA. Stress is defined to be concentrated at stiffer prosthesis stem while femur experienced less stress. The proximal region of femur is leading to stress shielding effects. Furthermore, gait instability is projected to occur based on the stress variation adaptation between operated and non-operated femur.</p>  |
| P0004 | <p>Inter-Penetrating Polymer Network Hydrogel Tissue Expanders with Controlled Expansion and Anisotropic Properties<br/> <b>Yun Zhu</b> and Jan T. Czernuszka<br/> University of Oxford</p> <p><i>Abstract</i>—Self-inflating hydrogel tissue expanders with controlled and anisotropic properties are highly pursued in today's plastic and reconstructive surgeries. This study designs an interpenetrating polymer network (IPN) self-inflating hydrogel tissue expander by crosslinking poly (DL-lactic-co-glycolic acid) (PLGA) in the presence of a poly (N-vinyl-2-pyrrolidone-co-methyl methacrylate) (VP/MMA) gel base. PLGA was functionalized with acrylate end-capping before the crosslinking. The swelling behavior and the mechanical properties of the IPN hydrogels with different PLGA contents were studied and compared to plain VP/MMA hydrogels. The initial and overall expansion rate was decreased with increasing PLGA content, while the equilibrium swelling ratio decreased with an increase in PLGA crosslinking density. The delayed expansion of IPN hydrogels is attributed to the increased hydrophobicity of the networks, which is verified by the increasing values of the Flory-Huggins interaction parameter (<math>\chi</math>). Anisotropic IPN expanders were prepared by hot pressing IPN xerogels at 161 °C. Their controlled and anisotropic properties give the IPN hydrogels a great potential in the plastic and reconstructive surgeries.</p> |
| P0005 | <p>Integrated Microfluidic Device for Cell Lysis in a Continuous Flow Mode<br/> <b>Nhut Tran-Minh</b>, Birgitte Kasin Hønsvall, and Frank Karlsen<br/> Buskerud and Vestfold University College</p> <p><i>Abstract</i>—When working with cells, the first step is often to lyse them in order to get the</p>   |

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|       | <p>cellular content before analysis. Some bacteria, especially gram-positive, may be difficult to lyse with conventional lysis buffer. If the cells are not properly lysed, the quality of the analysis results might suffer. In this paper, a planar micromixer design based on a splitting and recombination (SAR) concept with ellipse-like micropillars is proposed for cell lysis. With a splitting and recombination concept, the diffusion distance of the fluids in a micromixer is decreased. Thus, space usage for micromixer of an automatic sample collection system is also minimized. The efficiency of the proposed micromixer is comparable to other conventional lysis methods.</p>   |
| P0007 | <p>Detection of Pre-Stage of Epileptic Seizure by Exploiting Temporal Correlation of EMD Decomposed EEG Signals<br/>         Mohammad Zavid Parvez, <b>Manoranjan Paul</b>, and Michael Antolovich<br/>         Charles Sturt University</p> <p><i>Abstract</i>—Epilepsy is one of the common neurological disorders characterized by a sudden and recurrent malfunction of the brain that is termed “seizure”, affecting over 50 million individuals worldwide. The <i>Electroencephalogram</i> (EEG) is the most influential technique in detection of epileptic seizures. In recent years, many research works have been devoted to the detection of epileptic seizures based on analysis of EEG signals. Despite remarkable work on seizure detection, there is no generic seizure detection scheme which performs reasonably well for different patients and different brain locations. In this paper we present a generic approach for feature extraction of preictal (pre-stage of seizure onset) and interictal (period between seizures) EEG signals using <i>empirical mode decomposition</i> (EMD) along with <i>discrete cosine transformation</i> (DCT) by exploit temporal correlation for detection of preictal phase of epileptic seizure. Then least square support vector machine is applied on the features for classifications. Results demonstrate that our proposed method outperforms the state-of-the-art methods in terms of sensitivity, specificity and accuracy to classify preictal and interictal EEG signals to the benchmark dataset extracted from different brain locations of different patients.</p> |
| P0008 | <p>A 0.8 V CMOS OTA and its Application in Realizing a Neural Recording Amplifier<br/>         Shashank Dwivedi and <b>A. K. Gogoi</b><br/>         Indian Institute of Technology Guwahati</p> <p><i>Abstract</i>—This work presents a low-voltage, low power CMOS symmetrical operational transconductance amplifier (OTA) and its application for realization of a biopotential amplifier in neural recording application. The linear range of OTA is increased by employing multi-tanh differential configuration and source degeneration while the common-mode range is enhanced using DC-shifting scheme. The proposed symmetrical OTA is operated with a single power supply of 0.8 V and shows an open loop gain of 31.6 dB with unit gain bandwidth of 202.3 KHz and using a 7 pF of load capacitor. A neural preamplifier was implemented in moderate inversion region using the proposed OTA. The preamplifier achieves 34.5 dB of gain consuming 77.1 <math>\mu</math>W of power and has an input referred noise of 24.18 <math>\mu</math>V<sub>rms</sub> over 8.9 KHz of bandwidth.</p>   |
| P1003 | <p>The Effectiveness of TBAF/DMSO in Dissolving Oil Palm Empty Fruit Bunch-Cellulose Phosphate<br/> <b>Eliza M. Yusup</b>, Shahrudin Mahzan, Noormazia Jafferi, and Chung Wee Been</p>   |



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|       | <p>Universiti Tun Hussein Onn Malaysia (UTHM) Johor</p> <p><i>Abstract</i>—Oil Palm Empty Fruit Bunch (OPEFB), a waste from Oil Palm tree is the most waste products which can be found abundantly on earth that leads to contamination. Cellulose Phosphate (OPEFB-CP) which is derived from the process known as phosphorylation possesses good attribute to be diversified in bone graft functioning as natural polymer. Sol-gel process is chosen to produce porous bone scaffold where it is essential to the OPEFB-CP to get dissolved before reacting with coupling agent. The main problem for the natural polymer is, it cannot be melted or easily dissolved in any common or cheap solvents to be applied in various potential application. This paper will discuss specifically in dissolving the natural polymer by using Tetrabutyl Ammonium Flouride (TBAF) in Dimethyl Sulfoxide (DMSO) and analyzing results from FTIR. TBAF will be added into DMSO and heated and evenly stirred beginning at the lowest temperature, 60<sup>0</sup>C and OPEFB-CP was added to the mixture solution until clear solution is produced. The characterization of cellulose solution from FTIR showed obvious different pattern with solid OPEFB-CP that proved cellulose was completely dissolved in mixture of TBAF/DMSO solution. FTIR results show no peak at wavenumbers 2385cm<sup>-1</sup> but still remain two other peaks at wavenumbers 1377cm<sup>-1</sup> and 1021cm<sup>-1</sup>. The observation obtained from the experimental works also concluded that the dissolution rate of cellulose is linear with the temperature increase starting from 60<sup>0</sup>C with changes in the solution color.</p> |
| P3002 | <p>Sustainable Formulation of Curcumin Nanoparticle: Stirred Tanks and Confined Impinging Jet Reactor</p> <p><b>Yue Yang</b> and Kunn Hadinoto Ong<br/>Nanyang Technological University</p> <p><i>Abstract</i>—As natural extract from tumeric, curcumin has driven many people interests. However, the wide application for curcumin is limited by its poorly water solubility. This study explored the possibility to prepare curcumin nanoparticles with a sustainable precipitation by applying pH-shift and avoiding organic solvents. With Pluronic F68 as the surfacatant, this study used two modes of operation, stirred tanks and confined impinging jet reactors, for precipitating curcumin. The effects of energy dissipation, and drug-surfactant mass ratio on particle size discussed. As a result, curcumin nanoparticles with size ranging from 180 to 350 nm and drug loading as high as 87.5% were obtained. We noticed that nanoparticle size decreases with stirring speeds for stirred tanks, but plays a less important role in confined impinging jet reactor. The influence of drug/surfactant mass ratio was more significant in controlling particle size.</p>  |

7:00pm

Dinner





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| August 26-27, 2014, Taipei, Taiwan | <b>CCEA 2014</b>  | 2014 5th International Conference on Chemical Engineering and Applications (CCEA 2014)<br><a href="http://www.cbees.org/ccea/">http://www.cbees.org/ccea/</a>     | Volume of Journal (IPCBEE, ISSN: 2010-4618)   |
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