

2014 APCBEES JINJU CONFERENCES SCHEDULE

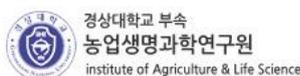
2014 5th International Conference on Agriculture and Animal Science (ICAAS 2014)
2014 4th International Conference on Environment and BioScience (ICEBS 2014)
2014 International Conference on Advances in Food Sciences (ICAFS 2014)

Jinju, South Korea

October 08-09, 2014

**Gyeongsang National University, College of Agriculture and Life
Science**

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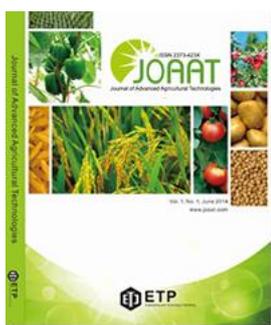
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2014 APCBEES Jinju Conferences

Introduction

Welcome to CBEES 2014 conferences in Jinju, South Korea. The objective of the Jinju, South Korea conferences is 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 Agriculture and Animal Science, Environment and BioScience, and Advances in Food Sciences.

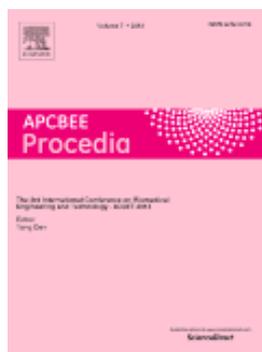
2014 5th International Conference on Agriculture and Animal Science (ICAAS 2014)



❄ **Paper publishing and index:** **ICAAS 2014** papers will be published in the **Journal of Advanced Agricultural Technologies (JOAAT, ISSN:2301-3737)**, and all papers will be included in the Ulrich's Periodicals Directory, Google Scholar, EBSCO, Engineering & Technology Digital Library, Crossref and Electronic Journals Digital Library and sent to be reviewed by Ei Compendex and ISI Proceedings.

❄ **Conference website and email:** <http://www.icaas.net/>; caas@cbees.org.

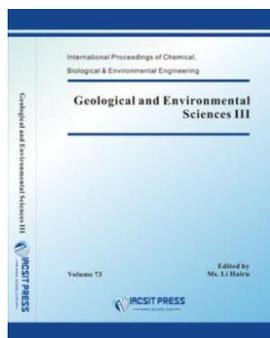
2014 4th International Conference on Environment and BioScience (ICEBS 2014)



❄ **Paper publishing and index:** **ICEBS 2014** papers will be published **APCBEE Procedia (Journal under Elsevier, ISSN: 2212-6708)**, and will be included in ScienceDirect and sent to be reviewed by Scopus, Ei Compendex and ISI Proceedings.

❄ **Conference website and email:** <http://www.icebs.org/>; icebs@cbees.org.

2014 International Conference on Advances in Food Sciences (ICAFS 2014)



❄ **Paper publishing and index:** **ICAFS 2014** papers will be published in the **Volume of Journal (IPCBE, ISSN: 2010-4618)**, and all papers will be included in the Engineering & Technology Digital Library, and indexed by Ei Geobase (Elsevier), Ulrich's Periodicals Directory, EBSCO, CNKI(中国知网), WorldCat, Google Scholar, Cross ref and sent to be reviewed by Compendex and ISI Proceedings.

❄ **Conference website and email:** <http://www.icaafs.org/>; icaafs@cbees.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 October 09, 2014.

Instructions for Oral Presentations

Devices Provided by the Conference Organizer:

Laptop Computer (MS Windows Operating System with MS PowerPoint & Adobe Acrobat Reader)

Digital 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 15 Minutes of Q&A

Instructions for Poster Presentation

Materials Provided by the Conference Organizer:

The wall to put poster

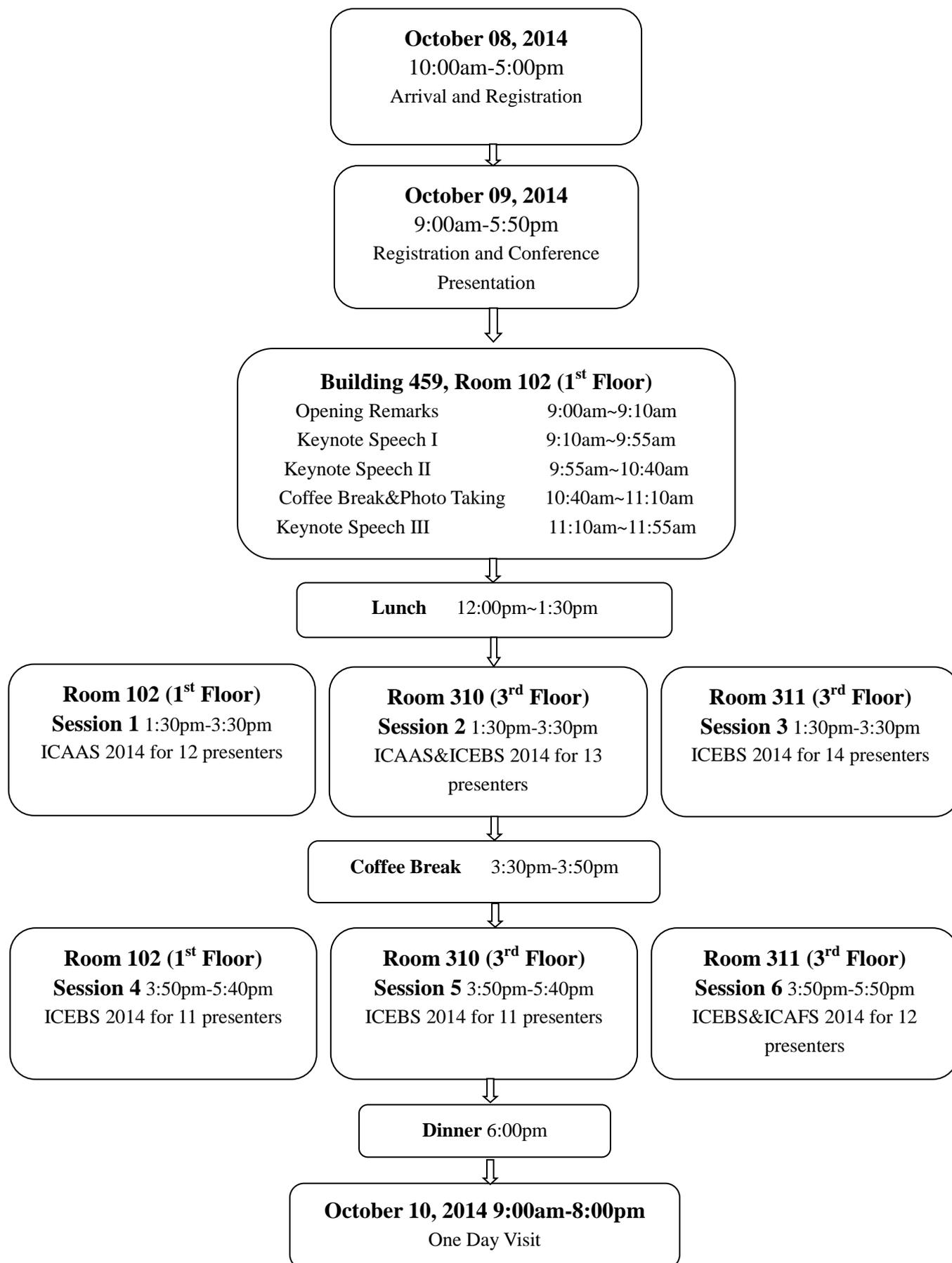
Materials Provided by the Presenters:

Home-made Posters

Maximum poster size is A1.

Load Capacity: Holds up to 0.5 kg.

Brief Schedule for Conferences



Detailed Schedule for Conferences

October 08, 2014 (Wednesday)

Venue: Building 459 @ Lobby

10:00am-5:00pm	Arrival and Registration
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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 presentation sessions, and the Certificate for Excellent Papers will be awarded at the end of each session on October 09, 2014.

Morning, October 09, 2014 (Thursday)

Venue: Building 459, Room 102 (1st Floor)

9:00am-9:10am	<p>Opening Remarks Prof. Byoung Ryong Jeong Gyeongsang National University, Republic of Korea</p>
9:10am-9:55am	<p>Keynote Speech I Prof. Chan Jin Park Incheon National University, Republic of Korea</p>  <p>Speech Title: "On the Control of Odor Pollution from Livestock Waste Sources"</p>
9:55am-10:40am	<p>Keynote Speech II Prof. Byoung Ryong Jeong Gyeongsang National University, Republic of Korea</p>  <p>Speech Title: "The Value of Horticultural Plants in our Living"</p>
10:40am-11:10am	Coffee Break&Taking Photo

11:10am-11:55am	<p>Keynote Speech III Prof. Fangyun Cheng Beijing Forestry University and National Flower Engineering Research Center, China</p>  <p>Speech Title: “Peony Industry in China and Researches on the Key Techniques”</p>
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12:00pm-1:30pm	Lunch
To be added	

Afternoon, October 09, 2014 (Thursday)

SESSION-1 (ICAAS 2014)

Venue: Building 459, Room 102 (1st Floor)

Session Chair: Associate Prof. Suparman

Time: 1:30pm-3:30pm

A0014	<p>Responses of Source and Sink Manipulations on Yield of Selected Rice (<i>Oryza sativa</i> L.) Varieties Shafeeqa Shahrudin, Adam Puteh and Abdul Shukor Juraimi Sultan Idris Education University, Malaysia</p> <p><i>Abstract</i>—Five Malaysian rice varieties (MR263, MR219, MR167, MR84, and Pulut Siding), were grown in polybag culture under glasshouse condition and were subjected to source and sink manipulations (50% flag leaf cutting, 25 and 50% spikelet removal, and control) for the grain yield and yield components response. Manipulation on grains number has caused the lower grain yield of all rice varieties. In response to the spikelet removal, the grain size of two varieties (MR167 and Pulut Siding), and the filled grain in the basal spikelets of three varieties (MR263, MR167, and MR84) increased about 2 - 6% and 7 - 13%, respectively. In response to the flag leaf cutting, the grain size of three varieties (MR263, MR84, and Pulut Siding), and the filled grain in the apical spikelets of four varieties (MR263, MR219, MR84, and Pulut Siding) reduced about 2 - 6% and 2 - 8%, respectively. Less than 80% of filled grain suggested that the grain yield of MR263, MR219, MR167, and MR84 were limited by the source activity, more than sink capacity. The significant increment of grain size and more than 80% of filled grain suggested that the grain yield of Pulut Siding was limited by both the source activity and sink capacity.</p>
A0015	Agro-Economic Factors Determining on Adoption of Rice-Fish Farming: An Application for

	<p>Artificial Neural Networks Mohammad Sadegh Allahyari, Seyyed Ali Noorhosseini Islamic Azad University, Rasht Branch, Iran</p> <p><i>Abstract</i>—This study was carried out to identify agro-economic factors on adoption integrated rice-fish farming by farmers. A survey was conducted using a stratified random sampling to collect data from farmers of selected villages in Guilan province, north of Iran. The questionnaire validity and reliability were also determined to enhance the dependability of the result. Data were collected from 184 respondents (61 adopters and 123 non-adopters) randomly sampled from selected villages and was analyzed using the Artificial Neural Networks. Results for agronomic independent variables showed correctly that 78.2% were classified from training samples and 71.7% from testing samples. In addition, results for economic independent variables showed correctly that 72.7% were classified from training samples and 71.2% from testing samples. On this basis, agro-economic factors influencing the adoption of integrated rice-fish farming were application of chemical fertilizers, application of herbicides, especially quantity using Diazinon, yearly income from agricultural activities, number animals and accessibility to agricultural organs.</p>
A0020	<p>Monoterpenoid Allelochemicals in Resistance Rice Varieties Against Brown Planthoppers, <i>Nilaparvata lugens</i> (Stål) Kitsada Pitija, Wintai Kamolsukyumyong, Aphichat Vanavichit, Phumon Sookwong, and Sugunya Mahatheeranont Chiang Mai University, Thailand</p> <p><i>Abstract</i>—Terpenoid compounds in resistant rice varieties that acted as allelochemicals affecting feeding behavior of the brown planthoppers (BPHs) were extracted by solid phase microextraction (SPME) and analyzed by using gas chromatography-mass spectrometry (GC-MS). Comparative study of terpenoid profiles of susceptible Khao Dawk Mali 105 (KDML105), resistant Rathu Heenati (RH), and their isogenic lines (IL) IL162, IL302, and IL283, was performed. Six monoterpenoids which were (E)-citral, citronellal, (E)-geraniol, β-citronellol, citronellyl acetate and geranelyl acetate, were detected only in leaves of the resistant and their 3 isogenic line rices. Antibiosis, antixenosis and tolerance experiments suggested that the RH and its 3 isogenic line rices had higher level of antibiosis, antixenosis and tolerance against BPHs than KDML105. Moreover, spraying 6 standard monoterpenoids on susceptible Taichung Native 1 (TN1) rice could decrease feeding activity of BPHs.</p>
A0021	<p>Serial Dilution of Nettle Caterpillar Viruses Applied as Bioinsecticide against <i>Setothosea asigna</i> Van Eecke (Lepidoptera:Limacodidae) the Important Pest of Oil Palm Suparman, Y. Pujiastuti, Hisanori Bando and Shin-ichiro Asano Sriwijaya University, Inderalaya, Indonesia</p> <p><i>Abstract</i>—<i>Setothosea asigna</i> van Eecke also called as nettle caterpillars is an important defoliator of oil palm which under severe infestations, its might cause significant decrease of fruit production. The serious damage caused by the caterpillar has become a reasonable reason for oil palm grower to use insecticides to control the pest, which inevitably cause serious damages to the environment. Microbial insecticide, especially the one developed from indigenous entomopathogen, should be considered as better alternative to control the</p>

	<p>insect. In this research, viruses infecting <i>Setora nitens</i> and <i>Setothosea asigna</i>, was transmitted through their body sap to second instar of <i>S. asigna</i>. The virus was serially diluted from 10^{-1} to 10^{-8} and sprayed to oil palm leaves used to feed 30 larvae of <i>S. asigna</i>. The results showed that <i>S. nitens</i> and <i>S. asigna</i> viruses could infect larvae of <i>S. asigna</i> and developed viral infection in the larvae. Serial dilution resulted different end point dilution for both viruses, 10^{-6} for <i>S. nitens</i> and 10^{-8} for <i>S. asigna</i>. This finding suggested that infected larvae of <i>S. nitens</i> and <i>S. asigna</i> are very practical to be used as bioinsecticide to control nettle caterpillars.</p>
A0027	<p>Potential of <i>Pseudomonas aeruginosa</i> to Control <i>Sclerotium rolfsii</i> Causing Stem Rot and Collar Rot Disease of Tomato Natedara Chanutsa, Nuchanat Phonkerd, and Wandee Bunyatratthata Khon Kaen University, Thailand</p> <p><i>Abstract</i>—The aim of this study was to isolate and select the highest potential activities of bacteria from 7 provinces in northeastern region of Thailand against <i>Sclerotium rolfsii</i>. Thirteen of 329 isolates were screened as antagonistic bacteria to inhibit <i>S. rolfsii</i> by dual culture assay. High percentages of inhibition were found in three isolates of UD1EBa-2, KK1EBa-3 and KK11EBa-3 with 51.25%, 56.25% and 60.00%, respectively. The culture filtrate of each bacterium was prepared to test the mycelial growth inhibition of <i>S. rolfsii</i>. The results showed that the culture filtrate could inhibit mycelial growth with 100%. The most effective isolate KK11EBa-3 was characterized to be rod shape, gram negative and non spore forming. The colony on Nutrient agar was circular, smooth, translucent, flat elevation. Based on molecular sequencing data, it was identified as <i>Pseudomonas aeruginosa</i>.</p>
A3008	<p>Silicon Improves Photosynthesis and Antioxidant Enzyme Activities during Salinity Stress in <i>Capsicum annum</i> 'Bugang' Abinaya Manivannan, Prabhakaran Soundararajan, Hao Wei, Yuze Chen, Sobiya Muneer, and Byoung Ryong Jeong Gyeongsang National University, Republic of Korea</p> <p><i>Abstract</i>—Salinity is considered as a major factor in limiting the crop growth and its yield. Supplementation of silicon (Si) could be a potential strategy for overcoming the negative effects of salinity. In general, Si has been proven to be beneficial for the plant and to ameliorate the adverse effects of salinity on the plant. In the present study the effect of Si supplied in a hydroponic culture in the form of potassium silicate on <i>Capsicum annum</i> 'Bugang' under salt stress has been investigated. Totally, six treatments [the control (basal nutrients with neither NaCl nor Si added), 1.8 mM Si, 3.6 mM Si, 50 mM NaCl, 50 mM NaCl with 1.8 mM Si, and 50 mM NaCl with 3.6 mM Si] was used. After 15 days, leaf samples were harvested and assayed for electrolytic leakage percentage (ELP), contents of hydrogen peroxide (H_2O_2), free proline and thiobarbituric acid reactive substances (TBARS), and the activities of the antioxidant enzymes such as superoxide dismutase (SOD), guaiacol peroxidase (GPX), ascorbate peroxidase (APX), and catalase (CAT). The results showed that the salinity stress has notably decreased the growth of the plant. On the other hand Si significantly improved the growth in all treatments, especially when supplemented along with the NaCl. Interestingly, the maximum quantum efficiency of PS II photosystem (F_v/F_m) decreased by the NaCl stress was recovered upon Si addition. Furthermore, Si has significantly decreased the stress markers such as ELP, and contents of H_2O_2, free proline and</p>

	<p>TBARS. In addition, Si at both concentrations significantly enhanced the activities of SOD, GPX, and APX in the leaf of the salt-stressed plant. However, there was no significant difference in CAT activity between the ‘NaCl’ and ‘Si+ NaCl’ treatments. Overall, the results suggest that exogenously supplied Si could improve the plant growth and alleviate salinity stress by enhancing antioxidant defense system in <i>C. annuum</i>.</p>
A3009	<p>Computational Analysis of Tomato Spotted Wilt Virus Glycoprotein Trafficking Mechanism and its Inhibition by Antiviral Agents Prabhakaran Soundararajan, Abinaya Manivannan, Chung Ho Ko, and Byoung Ryong Jeong Gyeongsang National University, Republic of Korea</p> <p><i>Abstract</i>—Tomato Spotted Wilt Virus (TSWV), belongs to the Tospovirus, is the only genus infects plant in the Bunyaviridae family. Approximately 1,080 plant species are affected by TSWV. Envelope glycoprotein (GP) of TSWV plays an important role in host cell infection. Translocation of GN and GC (where N- and C- refers to the amino- and carboxyl- terminal, respectively) from the endoplasmic reticulum (ER) to the Golgi complex is vital for virus particle assembly and maturation. Interestingly, GN was able to transport itself to the Golgi complex, while co-expression with GN is vital for translocation of GC. In order to elevate the broad spectrum of viral protein-protein interaction and protein-antiviral compounds interaction, molecular modeling and docking simulation were carried out to study the interaction between GN-GC and GN-antiviral compounds. The antiviral compounds, such as tiazofurin, distamycin-A, a pyrazino-pyrazine derivatives, actigard, admire, and ribavirin, have been used for protein-ligand interaction. Results of protein-protein interaction revealed that the carboxy-terminal of GN is vital for the formation of heterodimers with GC and its localization from ER to Golgi complex. From the protein-antiviral compounds interaction, tunicamycin and distamycin-A were found to be the most efficient antiviral compounds. From this study the mechanism of Golgi trafficking and retention of GC have been revealed. Additionally, efficient antiviral compounds to inhibit particle assembly and maturation of virus have also been explored.</p>
A3010	<p>Efficiency Analysis of Cooling Material and Equipment in Lowering Temperature in Plug Seedling Production Greenhouse in Summer Hye Min Kim, Young Jin Kim, and Seung Jae Hwang Gyeongsang National University, Republic of Korea</p> <p><i>Abstract</i>—A study was conducted to examine the efficiency of cooling material and equipment in lowering temperature in commercial plug seedling production greenhouses in summer. Each of four same size single-span greenhouses was set with different cooling materials or equipment: the control (no treatment), fan, shading screen or a combination of fan and shading screen. A triple-span greenhouse was set with a fogging system. In single-span greenhouses, the cooling material or equipment for experimental treatments were operated for three hours from 11:00 to 14:00 O'clock on July 10, 2014. In the triple-span greenhouse, a fogging system was operated for total of 15 minutes with a 30 seconds on and 60 seconds off cycle. In all treatments, temperatures inside and outside of the greenhouse, and relative humidity (RH) were recorded at the same time, and the temperature distribution in the greenhouse was taken with a thermal imaging camera. Light intensity and plant temperature were measured in single-span greenhouses only. In single-span greenhouses, the</p>

	<p>combined fan and shading screen treatment shows the lowest air temperature (33.8°C) among the treatments which was even lower than outside air temperature at 11:30-12:00 and 12:30-12:40. The control showed the highest temperature (49.5°C). The RH inside greenhouse was lower than that of outside. The RH was the highest in the combined fan and shading screen treatment and the lowest in the control. The thermal images also indicated that the combined fan and shading screen treatment had the lowest temperature. Light intensity (1,364.6 $\mu\text{mol m}^{-2} \text{s}^{-1}$) and plant temperature (36.2 °C) were the highest in the control and the lowest (710.9 $\mu\text{mol m}^{-2} \text{s}^{-1}$ and 26.6 °C, respectively) in the combined fan and shading screen treatment. In the triple-span greenhouse, the fogging system was operated from 13:55 to 14:10. Inside greenhouse temperature fell down from 41.9 to 36.9 °C during the operation of the fogging system. After eight minutes, inside temperature was lower than outside temperature. The RH inside greenhouse was higher than outside after four minutes of operation, increasing from 30 to 52.3%. The results indicate that effectiveness in lowering temperature in greenhouse in a high temperature season was best achieved by the combined fan and shading screen system and also by the fogging system.</p>
A3012	<p>Effect of Silicon on the Root Proteome of Tomato Plants (<i>Lycopersicon esculentum L.</i>) under Salinity Stress Sowbiya Muneer, Yoo Gyeong Park, Chung Ho Ko, and Byoung Ryong Jeong Gyeongsang National University, Republic of Korea</p> <p><i>Abstract</i>—In addition to drought and metal toxicities, salt stress is a rising threat to crop productivity. Among several horticultural crops tomato is a notably consumed crop all over the world and is often under threat due to salt stress. On the other hand Si is best known to alleviate abiotic stress in plants. Our initial study showed that salt stress induced negative influence on chloroplast proteome was mediated by the Si supplementation. In this study, the changes in the root proteome of tomato in order to identify molecular mechanisms involved Si-induced salt stress tolerance were investigated. The results indicated that 40 proteins were differentially regulated due to Si and/or salt stress treatments. Twenty four of them were regulated by Si, mostly associated with silicon transport (<i>Lsi</i>-proteins), salt stress responsive proteins (<i>DREB</i>-proteins), and antioxidant metabolic pathways (APX, SOD, and CAT). The rest of them were related to signal transduction, protein biosynthesis, and secondary metabolism. Moreover, 17 proteins, which were highly regulated in the Si treatments, were absent in the highly salt-stressed treatments. The important proteins associated with Si transport, salt stress responses, and antioxidant were further confirmed by the semi-quantitative RT-PCR. Taken together, the results shed a light on the molecular mechanism involved in Si-induced salt stress tolerance in the root of tomato plant and suggest a more active involvement of Si in alleviation of salt stress and plant physiological processes than previously proposed.</p>
A3014	<p>Growth and Anthocyanin Content of Lettuce Grown under Controlled Environment Are Affected by Light Source and CO₂ Concentration Yoo Gyeong Park, Ji Eun Park, Seung Jae Hwang, and Byoung Ryong Jeong Gyeongsang National University, Republic of Korea</p> <p><i>Abstract</i>—The effect of light source and CO₂ concentration on the growth and anthocyanin content of lettuce (<i>Lactuca sativa L.</i> ‘Seonhong Jeokchukmyeon’) grown in growth chambers</p>

	<p>was examined. The plant was grown under $140 \mu\text{mol}\cdot\text{m}^{-2}\cdot\text{s}^{-1}$ PPF provided by either cool white fluorescent lamps (F, the control), white (W) light emitting diodes (LEDs), or a 8:1:1 mixture of red, blue and white (RBW) LEDs. Carbon dioxide concentration of the atmosphere was maintained at either 350, 700, or 1,000 $\mu\text{mol}\cdot\text{mol}^{-1}$. The RBW treatment promoted vegetative growth of the shoot and root. Chlorophyll fluorescence (Fv/Fm) was not significantly affected by the light source and CO₂ concentration. Total anthocyanin content of the plant supplied with 1,000 $\mu\text{mol}\cdot\text{mol}^{-1}$ CO₂ was the greatest in the F treatment. Photosynthetic rate significantly increased with increasing CO₂ concentration. These results suggested that the RBW which provided a wider spectrum of PAR and the highest CO₂ concentration provided the most the suitable environment condition for vegetative growth of lettuce among the tested light sources. To obtain plants with even higher quality, especially having greater content of anthocyanin, however, more considerations on supplemental light source including white LED are necessary in terms of optimum intensity, photoperiod, and optimum ratios of mixing with other LEDs.</p>
A3015	<p>Improvement of Growth and Phytochemicals of <i>Angelica gigas</i> by Hydroponics Cultivation Yuze Chen, Abinaya Manivannan, Prabhakaran Soundararajan, Hao Wei, and Byoung Ryong Jeong Gyeongsang National University, Republic of Korea</p> <p><i>Abstract</i>—<i>Angelica gigas</i>, an important medicinal plant, is widely used as a crude drug for anemia and some circulatory disorders. However, the cultivation of healthy plants with high phytochemical contents is a serious issue in soil based cultivation of <i>A. gigas</i> in Korea. Hydroponic technique is well known for its wide commercial applications for many crops, including a few medicinal plants. This experiment is the preliminary attempt to study the effects of hydroponic medium, both solid (Tosilee medium) and liquid types on the growth and phytochemical contents of <i>A. gigas</i>. In this experiment four months old seedlings were transplanted into nutrient solution containing appropriate macro- as well as micro-elements and Tosilee (commercial) medium. After one week, the growth parameters, such as stalk length, number of roots, root length, and fresh weight, were measured. In addition, the plant pigments such as chlorophyll a, chlorophyll b, carotenoids, and anthocyanin were also estimated. For phytochemical analysis, 80% methanol was used to obtain the extracts from the shoot and the root. Consequently, total polyphenol contents and total flavonoid contents have been analyzed from the extracts. Furthermore, the antioxidant activities of the extracts were analyzed by the phosphomolybdenum reduction assay and 2,2-diphenyl-1-picrylhydrazyl (DPPH) radical scavenging activity. Overall, the greatest growth and plant pigment contents were observed on the plant grown in the liquid medium. Similarly, the greatest total polyphenol content was also obtained on the shoot extracts of plants grown in a nutrient solution. However, the plant grown in Tosilee medium produced higher amounts of flavonoids due to the oxidative stress in root zone in the solid medium. Therefore, the modulation of the phytochemical accumulation has led to the non-significant difference on the radical scavenging property of the shoot and root extracts. In conclusion, these results suggest that among the hydroponic medium, liquid medium could enhance the growth and phytochemical contents of <i>A. gigas</i>.</p>
A3017	<p>A Novel Universal Water-Saving Irrigation System Based on Cam and Throttle Design Siwei Zhang, Huan Yang and Jianhang Si and Lei Kang and Xuesong Liu</p>

	<p>Northwestern Polytechnical University, China</p> <p><i>Abstract</i>—Making precise watering in horticulture development is becoming an inevitable trend for the lack of water resources in China. In order to solve the wasting problem, a new water-saving irrigation system with novel mechanical design is proposed to do accurate irrigation under different circumstances. As for various shapes of flower beds, we establish the watering model and calculate one specific shape as an example. The results provide a theoretical proof for the availability of watering system.</p>

Afternoon, October 09, 2014 (Thursday)

SESSION-2 (ICAAS 2014&ICEBS 2014)

Venue: Building 459, Room 310 (3rd Floor)

Session Chair: Prof. Fangyun Cheng

Time: 1:30pm-3:30pm

A0013	<p>Preliminary Phytochemical Screening and GC-MS Analysis of Ethanol Extract of <i>Physalis minima</i> L. (Solanaceae)</p> <p>Norhanizan Usaizan, Nur Ashikin Psyquay Abdullah, Siti Hajar Ahmad and Ghizan Saleh Sultan Idris Education University, Malaysia</p> <p><i>Abstract</i>—<i>Physalis minima</i> L. or locally known as pokok letup-letup is one of the interesting species in the genus <i>Physalis</i> due to the reports of its medicinal properties. This valuable plant can be found at warm temperate and subtropical regions throughout the world. This valuable plant is traditionally used as diuretic, purgative, analgesic, vermifuge, etc. Ethanolic extraction of leaf, root and fruit were screened by GS-MS to identify the phytochemical compounds. The obtained result showed that the plant have important compounds such as phytol, vitamin E, oleic acid and n-Hexadeconoic acid. Presence of antimicrobial and antioxidant in the three parts of the plant (leaf, root and fruit) confirms the application of <i>Physalis minima</i> for various ailments by practitioners. However, isolation of individual phytochemical constituents may proceed to find a novel drug.</p>
A0028	<p>Fabrication and Characterization of Banana Flower Extract Anthocyanin-based Organic Solar Cell</p> <p>Sutikno, Ngurah Made Dharmaputera and Sri Rahayu Semarang State University (Unnes), Indonesia</p> <p><i>Abstract</i>—Fabrication and characterization of organic solar cells with layer structure of ITO/PEDOT:PSS/PEG/PEG + Anthocyanin/Anthocyanin/Al/ITO using banana flowers as electron acceptors have been done successfully. The electrical properties, absorbances, surface structures, and anthocyanines are characterized completely. The deposition of each layer of PEDOT:PSS, PEG, and anthocyanin is made using spincoating, whereas aluminium</p>

	<p>is metallized by thermal evaporation method using <i>LADD Research Industries</i> evaporator. The electrical properties of organic solar cells are determined under illumination of xenon lamp 1000 W/m² using Keithley 2602A <i>system sourceMeter</i> in active area of 1 cm². The efficiency of organic solar cell measured is 1,03 x 10⁻⁴%.</p>
A3011	<p>Oxidative Stress and its Signaling Behavior during Developmental Stages of Secondary Somatic Embryogenesis in <i>Rosa hybrida</i> ‘Rock Fire’ Prabhakaran Soundararajan, Abinaya Manivannan and Byoung Ryong Jeong Gyeongsang National University, Republic of Korea</p> <p><i>Abstract</i>—Somatic embryogenesis is one of the complex processes and a clear evidence for totipotency of plants. During the mechanism of de-differentiation and re-differentiation of plant tissues various changes occur at the cellular level. The main objective of this study is to determine the oxidative stress and its signaling mechanism during the conversion of somatic embryos to plantlets in <i>Rosa hybrida</i> ‘Rock Fire’. Firstly, 2,4-dichlorophenoxyacetic acid (2,4-D) was used to induce embryogenic calli from the leaf explant. After 4 weeks, somatic embryos were induced on the half-strength Murashige and Skoog (MS) medium supplemented with 1.0 mg L⁻¹ N⁶-benzyladenine (BA) and 1.0 mg L⁻¹ gibberllic acid (GA₃). Primary somatic embryos were sub-cultured on the same medium for the secondary somatic embryogenesis. Adventitious somatic embryos at various stages, such as callus, globular, torpedo, cotyledonary, and plantlets, along with its leaf explant have been used for oxidative stress analysis. Among the stages mentioned above, callus possessed a lower protein content, whereas the explant and newly formed plantlets had higher protein contents. Superoxide dismutase (SOD) activity gradually increased from the callus to cotyledonary stage and newly developed plantlets showed a decreased activity. On contrary, peroxidase activity decreased until the cotyledonary stage, whereas the plantlets displayed a little increase in the POD activity. Non-significant difference in activities of the catalase and ascorbate peroxidase were also observed between the developmental stages. Importantly, the NATIVE-PAGE analysis showed that isomers of the SOD, POD, CAT, and APX highly differed among the treatments. Moreover, the higher non-enzymatic antioxidant activities and total phenol content were gradually decreased as the development stages of somatic embryos progressed. In addition, computational biology approaches have also been used to model the signaling pathways between the antioxidant enzymes and stress parameters. Furthermore, by genome mining among the Rosaceae family, tissue specific expression profiles has also been identified. Hence, it can be concluded that differentiation and development of secondary somatic embryos underwent various signaling pathways and it could be regulated by protein, antioxidant enzymes, and several stress signaling factors.</p>
A3013	<p>Factors Influencing Seed Germination of <i>Ligularia fischeri</i> in Vitro Hao Wei, Prabhakaran Soundararajan, Abinaya Manivannan, Yuze Chen and Byoung Ryong Jeong Gyeongsang National University, Republic of Korea</p> <p><i>Abstract</i>—<i>Ligularia fischeri</i> Turcz. is a perennial distributed over the East Asia countries such as Korea, China, and Japan. It is an important edible herb belongs to the Asteraceae family. This plant is effective against several diseases including rheumatic arthritis, jaundice, erysipelas, and scarlet fever. Usually, <i>L. fischeri</i> grows under shade in slope regions of</p>

	<p>mountains. Due to its narrow adaptability and seed dormancy, this plant is difficult to propagate commercially. In this experiment, factors influencing seed germination in vitro have been studied extensively. Seeds harvested from the Jiri Mountain, Korea were surface sterilized in 80% ethanol (v/v) for 1 min. and disinfected in 0.5% sodium hypochlorite for 7 min. After removing the surfactants with distilled water, seeds were soaked in 0, 250 or 500 mg L⁻¹ of gibberellic acid (GA₃) solution for 0, 4, or 8 h at 4°C. After treatments, seeds were sown on the ½ MS medium containing 3% (w/v) sucrose and 0.8% (w/v) agar supplemented with 0.1% activated charcoal (AC) and kept at 15 or 25°C. All cultures were maintained under a 16 h photoperiod provided by cool-white fluorescent light (45 μmol·m⁻² s⁻¹ PPF) in the growth chamber. After 15 days, greatest % germination (60%) was achieved in seeds soaked for 4 h in 250 mg L⁻¹ of GA₃ and germinated at 15°C. Next, 40% germination was observed at 250 mg L⁻¹ for 8 hours and maintained at 15°C. On the contrary, seeds soaked in GA₃ solutions and germinated at 25°C started to germinate, but failed to convert into seedlings. Only less than 10% of germination was observed in 0 h soaking in GA₃ solutions and distilled water treatment. Furthermore, the total protein and antioxidant enzymes, such as superoxide dismutase, catalase, guaiacol peroxidase and ascorbate peroxidase, acted as the markers during the germination. In conclusion, from this study optimal condition for germination and biochemical markers during seed germination of <i>L. fischeri</i> have been identified successfully.</p>
Q0013	<p>Depilatory Action of Crude Extract from <i>Leucaena leucocephala</i> (Lamk.) de Witt (Family Fabaceae) Sandra Dawn Burgos, Mac Ardy Gloria, Anna Nicole Pura, and Alicia Catabay University of the Philippines Manila</p> <p><i>Abstract</i>—Hair removal has received considerable attention because of aesthetic and medical purposes, among others. Although many methods have been developed to remove hair from the body, some pose disadvantages and detrimental risks. Thus, it is beneficial to determine a natural extract, which can act as a depilatory agent. This study generally aimed to determine the depilatory action of crude extract from the leaves of <i>Leucaena leucocephala</i> (Lamk.) de Witt (Family Fabaceae) or commonly known as Ipil-ipil in the Philippines. Hair Regrowth inhibition and Depilation resistance test were employed to assess the depilatory activity of the crude extracts (2.0%, 4.0% and 6.0%), mimosine standard solutions (2.0%, 4.0% and 6.0%) and blank (1.0% HCl in water) on Imprinting Control Region (ICR) mice. The results from the aforesaid tests were analyzed using a visual analog scale and ANOVA, respectively. Initially, phytochemical screening showed the presence of alkaloids, including mimosine that has been reported to cause depilatory activity. The Ipil-ipil crude extract concentrations, which exhibited shorter durations of hair regrowth inhibition, were found to have no significant difference with the blank in terms of the weight of depilated hair. Meanwhile, the 4.0% standard mimosine concentration showed a longer period of hair regrowth inhibition. Supportively, statistical analyses showed that at least one of the test substances was significantly different from the other groups (p-value = 0.001), and only the 4.0% standard was significantly different from the blank (p-value = 0.000). The equivalent amount of Ipil-ipil that could provide the same concentration of mimosine in the crude extract was 82.47 g of Ipil-ipil leaves to be extracted in 100.0 mL of 1.0% HCl in water. For future studies, it is recommended that biocompatibility testing should be performed to assess the</p>

	<p>safety of the crude extract. Moreover, tests to determine the presence of mimosine from the Ipil-ipil crude extract matrix should be performed.</p>
Q0014	<p>Concentrations of Urinary 3 Phenoxybenzoic Acid among School Children in Fang District, Chiang Mai Province, Thailand Nisa Pakvilai, Surat Hongsibsong, Tanyaporn Kerdnoi, and Tippawan Prapamontol Valaya Alongkorn Rajabhat University</p> <p><i>Abstract</i>—Synthetic pyrethroid insecticides are the most widely used in current agriculture and pest control in Thailand. Urinary 3-phenoxybenzoic acid (3-PBA), a common metabolite biomarker of exposure to synthetic pyrethroid insecticides, was often detected among farmers. In this study, we aimed to investigate the exposure level of synthetic pyrethroid insecticides among school children by measuring the concentration of urinary 3-PBA. School children (n = 290) were enrolled from primary schools in Fang district, one of intensive agricultural districts of Chiang Mai province. Concentrations of urinary 3-PBA were determined using a developed method which using gas chromatography with electron capture detection (GC-ECD) with the limit of detection (LoD) of 0.8 µg/L. Mean detection rate of urinary 3-PBA was 72.4 % which is 1.54 folder higher than the previous children study in Chiang Mai reported in 2009. Concentration of detected urinary 3-PBA ranged from 0.8 to 199.0 µg/L. The geometric mean concentration of urinary 3-PBA was 17.4 µg/L which is 87 fold higher than the study reported in 2009. Results from the present study indicate that children living in agricultural areas may be prone to agricultural insecticides' exposure.</p>
Q0018	<p>A Simple Device for Exhaled Breath Condensate Collection and its Application in Studying Inflammatory Marker of School Children Exposure to PM₁₀ Waraphan Phornwisetsirikun and Tippawan Prapamontol Chiang Mai University</p> <p><i>Abstract</i>—Objectives of the present study were to develop a portable exhaled breath condensate (EBC) collector device and then to apply to collect EBC samples from school children who exposed to different ambient PM₁₀ levels. The developed device was validated in collecting EBC from five healthy subjects to investigate the impact of collecting duration and the breathe patterns on EBC volume. All five subjects were able to complete the EBC collection procedure successfully without difficulty. Ten minute collection of normal tidal breathing is optimal for EBC volume required. We conducted a follow-up study among 54 healthy school children from a primary school in Chiang Mai city by measurement of pulmonary function and exhaled H₂O₂ concentrations analysis in rainy and dry seasons. In dry season, mean exhaled H₂O₂ concentration was significantly increased while mean FEV₁/FVC ratio was significantly decreased (p<0.05). The results of this study showed that the developed EBC collector device is safe, rapid and simple to use and exhaled H₂O₂ could be used as a biomarker of effect from elevated PM₁₀ exposure.</p>
Q0030	<p>Fractionation and Identification of Antioxidant Compounds from Bran of Thai Black Rice cv. Riceberry Panawan Suttiarporn, Phumon Sookwong, and Sugunya Mahatheeranont Chiang Mai University</p> <p><i>Abstract</i>—Bran of Thai Black Rice cv. Riceberry was extracted using solvent extraction</p>

	<p>(hexane, dichloromethane and methanol). The crude extracts obtained were investigated for their antioxidant property and total phenolic contents which were assessed by 1,1-diphenyl-2-picrylhydrazyl (DPPH) free radical scavenging assay and Folin-Ciocalteu's method, respectively. Results showed that the methanolic extract had the strongest total antioxidant activity and phenolic content at 97.83 % and 9.87 mg GAE/ml of extract, respectively. The methanolic extract was further fractionated by column chromatography to obtain ten fractions. The chemical components of the crude extracts and the fractions were analyzed by gas chromatography-mass spectrometry (GC-MS). Seventy-nine constituents were identified in all extracts of Riceberry bran. Among them, 9 simple phenolics and 4 flavonoids, which were previously reported to have antioxidant activities, were quantified. The major simple phenolic was 4-vinylguaiaicol and the major flavonoid was apigenin.</p>
Q0034	<p>The Interaction Effect of Growth Medium, Drought Stress and Potassium on Lilium Yield and Antioxidant Enzymes Activity Ali Mohammadi Torkashvand and Tahereh Toofiqi Alikhani Islamic Azad University, Rasht Branch</p> <p><i>Abstract</i>—Among the various kinds of bulbous plants, Lilium is uniquely beautiful flowers that its colorful plants favor high price and is grown as cut flowers or pot. To investigate the effect of different concentrations of potassium in the nutrient solution and medium (with variable humidity) on the yield of Lilium LA cv. Termoli, plant pigments and anti-oxidant enzyme activity and postharvest life of flowers, a two-factorial experiment based on completely randomized design was carried out. Medium in three level (perlite:sand (50:50); cocopeat:perlite:sand (60:20:20) and cocopeat:perlite:sand (40:30:30)) and potassium concentrations in three levels (K-free, 6 mM and 12 mM potassium /Hoagland solution) with 9 treatments each in three replications was performed. In the sand and perlite medium, the plant during the growth between two irrigations was faced with moisture stress. In this study, shoot dry/fresh weight, vegetative and reproductive height, postharvest and potassium rate in shoot was measured. Enzymes superoxide dismutase, peroxidase and ascorbate peroxidase activities in pre-harvest were measured. In sand and perlite medium, the effect of increased potassium concentrations on plant growth was much higher than Cocopeat medium. Postharvest life of flowers in the medium of sand and perlite increased with the increasing potassium concentration. The increasing concentration of nutrient solution potassium in sand and perlite decreased the activity of antioxidant enzymes ascorbate peroxidase and ascorbate peroxidase.</p>
Q3008	<p>Comparative Analysis of Physico-Chemical Properties of Oil Palm Trunk Syrups and Commercially Available Syrups Fazilah Ariffin, Rokiah Hashim, Abd Karim Alias, Syahariza Zainul Abidin, and Syazana, Sulaiman Universiti Sains Malaysia</p> <p><i>Abstract</i>—Syrups were produced from oil palm trunk sap with two different treatments to the trunk, freshly squeezed (OPTS 0) and squeezed after 60 days of storing the trunk (OPTS 60). These syrups were analysed together with commercially available syrups for their physical, chemical and antioxidant properties. Major sugar for OPTS 0 and OPTS 60 were glucose, different from the commercial syrups that is sucrose. The oil palm trunk syrups have high</p>

	<p>total phenolic content of 825.348 mg GAE/100g for OPTS 0 and 885.565 mg GAE/100g for OPTS 60 that was significantly higher than commercial syrups. Antioxidant scavenging activities of OPT0 and OPT60 were significantly higher than commercial syrups as well with vitamin C values of 79.387 ± 0.891 and 83.873 ± 0.623 VCEAC mg/100g and vitamin E values of 122.922 ± 1.380 and 129.867 ± 0.964 TEAC mg/100g respectively. These results show that syrups produced from oil palm trunk has potential to be used as an alternative sweetener.</p>
Q1003	<p>Modification of Palm Oil by Chemical Interesterification with Palm Kernel Oil Siti Hazirah Mohamad Fauzi, Norizzah Abd Rashid, and Zaliha Omar Universiti Teknologi MARA</p> <p><i>Abstract</i>—This study evaluated the effects of chemical interesterification (CIE) using sodium methoxide on palm oil (PO), palm kernel oil (PKO) and their constituent blends formulated using a mixture design based on simplex-lattice (Design Expert 8.0.4 Stat-Ease Inc., Minneapolis, 2010). The slip melting point (SMP), solid fat content (SFC), triacylglycerol composition (TAG), and microstructural of non-interesterified and interesterified blends were determined. Results indicated that all the interesterified PO and blends had higher SMP and SFC than non-interesterified blends except for PKO. Chemical interesterification also altered the distributions of fatty acids in TAG of blends and consequently modifies the microstructure of PO, PKO and blends following interesterification. This study has shown chemical interesterification is effective in modifying the physicochemical properties of palm oil and palm kernel oil blends.</p>
Q0016 poster	<p>Organophosphate Pesticide Exposure of Farmers in Chiang Mai Province, Northern Thailand Surat Hongsibsong, Tanyaporn Kerdnoi, Watcharapol Polyiem, Vanvimol Patarasiriwong, and Tippawan Prapamontol Chiang Mai University</p> <p><i>Abstract</i>—Organophosphate (OP) pesticides are the most commonly used pesticides among Thai farmers. Chiang Mai Province, in northern Thailand, substantially contributes agricultural produce to the markets. Due to the regular exposure to organophosphate pesticides, the farmers involved in the production run a considerable risk. The present study aimed to analyze biomarkers of exposure, i.e. cholinesterase and dialkylphosphate metabolites of organophosphate pesticides. The activities of cholinesterase enzymes were measured by a modified Elman's assay while DAP metabolites (DMP, DMTP, DMDTP, DEP, DETP, and DEDTP) were measured by GC-FPD. The results showed AChE and BChE activities ranging from 0.48 – 5.60 U/mL and 0.73 – 3.59 U/mL, respectively. All subjects had at least one of the DAP metabolite in their urine. Thus, farmers are exposed to organophosphate pesticides during the time they work on the farm, but also during the consumption of their produce. Showering or washing hands immediately after working in the farm, in particular after using organophosphate pesticides, will reduce the impact of possible exposure to pesticide residues.</p>
Q2004 poster	<p>A Learning Model of Pesticide Impact on Health and Environment of School Children in Highland Agricultural Communities, Chiang Mai Province, Thailand T. Kerdnoi, S. Hongsibsong, N. Pakvilai, P. Khumkerd, and T. Prapamontol Chiang Mai University</p>

	<p><i>Abstract</i>—Several ethnic hill tribes are living on the highland areas of Thailand, mostly consisting of agrochemical-based farm workers. The present study focuses on the health of school children, as they are prone to pesticide exposure in their environment. The objective of this study has been to develop a communication program to reduce the negative impact from exposure to pesticides of school children. Two hill tribes were examined, that is the Hmong (50.5%) and the Karen (43.9%), covering 198 school children, aged 11 - 12 years. The research activities comprised a lifestyle study of their families, the screening on pesticides exposure through the testing of finger blood cholinesterase enzymes, an assessment of knowledge learning activities, and an evaluation. It was found that almost all school children spent time helping their family when working both in the field and/or at home. The finger blood-screening test showed that 52.9 % were exposed to cholinesterase-inhibiting pesticides such as organophosphate and carbamate pesticides, at unsafe levels. Learning programs were developed and implemented within the context of the respective lifestyles. Short and clear messages about pesticides and their toxicity were developed and conveyed to the children through a learning-by-action approach. It was found that answers to four out of five questions relating to knowledge of pesticide impact on health and the environment, had changed. Moreover, the children were encouraged to present their grasp of their newly acquired knowledge by drawing posters, showing moppets and maintaining notebooks.</p>

Afternoon, October 09, 2014 (Thursday)

SESSION-3 (ICEBS 2014)

Venue: Building 459, Room 311 (3rd Floor)

Session Chair: Prof. Ridzwan Bin Hashim

Time: 1:30pm-3:30pm

Q0004	<p>Removal of Persistent Organic Pollutants in Sequencing Anoxic/Anaerobic-Aerobic Membrane Bioreactor at High SRT Zubair Ahmed and Saleh F. Magram King Abdulaziz University</p> <p><i>Abstract</i>—Membrane bioreactor (MBR) systems have widely been used to treat municipal wastewater, where a small footprint, water reuse, or stringent discharge standards were required. Persistent organic pollutants (POPs) present in the water environment may pose adverse health impact. It can be envisaged that a greater SRT could influence biota in the MBR and the physical nature of floc particles which would have an important effect on their affinity as sorbents. Therefore longer SRT are beneficial for removal of POPs. A pre-anoxic/anaerobic membrane bioreactor is used for enhance biodegradation of selected POPs and effect of sludge retention time on their biodegradation was studied. The solid retention time was set at 100 days in the MBR. Reactor was fed a complex synthetic water enriched with nutrients and spiked with the anthracene, hexachlorobenzene, trans-chlordan, cis-chlordane, trans-nonachlor, aldrin, dieldrin, endrin, p,p'-DDT, benzo[a]pyrene. The COD</p>
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	<p>removal efficiency was found above 90% throughout the operation. NH₃-N removal was higher than 99%, which indicates complete nitrification. The PO₄-P removal efficiency was up 36%. The removal efficiencies of anthracene, hexachlorobenzene, trans-chlordan, cis-chlordane, trans-nonachlor, aldrin, dieldrin, endrin, p,p'-DDT, benzo[a]pyrene were found about 90%. Pre-anoxic/anaerobic membrane bioreactor demonstrated efficient treatment efficiency for selected POPs.</p>
Q0007	<p>Kinetic and Sorption Isotherm of Cesium Sorption on Soil Fungi Prapamon Seeprasert, Minoru Yoneda, Yoko Shimada, and Yasuto Matsui Kyoto University</p> <p><i>Abstract</i>—Soil contamination by cesium from nuclear accidents has led to a resurgence of interest in microbe-radioactive interaction. Fate in the environment of cesium is mostly influenced by the sorption process. The aims of this study were: 1) to perform a kinetic model of nonlinear regression, and 2) to quantify the ability of soil fungi as bio-sorbent and sorption isotherm. The results show that the correlation coefficient (r^2) values for the pseudo 1st order are higher than those in the pseudo 2nd order, for all system studies. The adsorption equilibrium data were fitted with characteristic adsorption isotherms, such as the Langmuir and Freundlich isotherms, and the Cs adsorption which is best described by the Langmuir models, indicated a monolayer arrangement of Cs on the cell external surface.</p>
Q0022	<p>Biosorption of Phenol and Nickel(II) from Aqueous Solutions by Modified Chitosan Beads My Linh Nguyen and Ruey - Shin Juang Yuan Ze University</p> <p><i>Abstract</i>—The ability of phenol and nickel (II) biosorption on chitosan beads modified with <i>Saccharomyces cerevisiae</i> and histidine using glutaraldehyde as a crosslinking agent (SC-HIS-CCB) was studied. Biosorption experiments were performed by varying solution pH (2.0-7.0) and the amount of biosorbent (0.5-5 g L⁻¹). The optimal pH was found to be 2.0 and 6.0 for phenol and nickel (II), respectively. It has been found that the percentage removal efficiency of both phenol and nickel (II) increased as the biosorbent dose increased while the biosorption capacity decreased. The modified chitosan beads could be used as an effective biosorbent for the removal of phenol and nickel (II) from wastewater and contaminated water sources.</p>
Q0026	<p>Bioelectricity Generation and Treatment of Sugar Mill Effluent Using a Microbial Fuel Cell Lakhveer Singh, Ravinder Kumar, and Zularisam Ab. Wahid Universiti Malaysia Pahang (UMP) Malaysia</p> <p><i>Abstract</i>—Microbial fuel cells are fascinating bio-electrochemical devices that use living catalysts to produce electric energy from organic matter present naturally in the environment or in waste. In this study, sugar mill effluent (SME) was used as anodic substrate in a double chambered microbial fuel cell for an application of microbial fuel cell. The maximum power density, 140 mW/m² was achieved with 50% concentration of sugar mill effluent. Maximum chemical oxygen demand (COD) removal obtained was 56 % when 50% concentration of sugar mill effluent was used as anodic substrate. These results demonstrated that sugar mill effluent is a suitable substrate in a microbial fuel cell for bioelectricity production and its treatment.</p>

Q0029	<p>Decolorization of Pulp and Paper Mill Effluents using Wood Rotting Fungus <i>Fibrodontia</i> sp. RCK783S</p> <p>Onnapha Chaisan, Pilanee Vaithanomsat, and Torpong Kreetachat University of Phayao</p> <p><i>Abstract</i>—This work was conducted to evaluate the decolorization of pulp and paper mill effluents and the production of ligninolytic enzymes by wood rotting fungus <i>Fibrodontia</i> sp. RCK783S. Experimental studies were performed in growth minimal medium. As a result, Laccase activity was the main enzyme involved in decolorization of pulp and paper mill effluents. Optimization of Lac production was carried at C/N ratio 15.0 to 25.0, CuSO₄ of 0.002 to 0.0004 g/L and L-asparagine of 1.563 to 2.813 g/L. It was performed by Central Composite Design (CCD). A total of 20 experiments were carried out and the Lac production of 5,145 unit/L was observed at C/N ratio of 18.0, CuSO₄ 0.0035 g/L and L-asparagine 2.2256 g/L. In addition, the maximum color and TOC removal efficiency were 61.58 and 48.32% at 5 days of incubation, respectively.</p>
Q0032	<p>Influence of Disinfectants on Microbial Diversity and Efficiency of Activated Sludge Processes</p> <p>Nathiya Kreetachat and Tipawan Thukthuang University of Phayao</p> <p><i>Abstract</i>—This work aims to study (1) the microbial community in activated sludge system of hospital wastewater treatment plants (field study), and (2) the effect of disinfectants on treatment efficiency and microbial diversity in the experimental activated sludge systems (laboratory study). The results of PCR-DGGE analysis in sample from three oxidation ditch systems and two conventional activated sludge systems revealed the higher microbial diversity of the oxidation ditch systems than that of the conventional activated sludge. In the oxidation ditch systems, the heterotrophic bacteria were the dominant bacterial group over the denitrifying and nitrifying bacteria, respectively. Additionally, the average amount of three disinfectants, i.e. sodium hypochlorite, glutaraldehyde and povidone-iodine at 3.0, 0.1 and 8.0 mg/L, respectively, detected in the influent hospital wastewater did not clearly affect the microbial activities in most of treatment plants. In order to further investigate the effect of disinfectant concentration on microbial diversity and efficiency, the disinfectant concentration were varied at 2, 4 and 8 times of the average detected concentrations. As the results, sodium hypochlorite was shown to strongly inhibit the treatment efficiency more than glutaraldehyde and povidone-iodine, respectively. The microbial diversity results using PCR-DGGE confirmed that the contaminant disinfectants at higher concentration affected the microbial diversities due to their toxicity. The remaining heterotrophic uncultured <i>Bacillus</i> sp. was dominant to resist the contaminated disinfectants and survived throughout the experimental runs. In conclusion, the microbial diversity in hospital wastewater treatment system and system efficiency has been diminished by incrementally existing disinfectants.</p>
Q0042	<p>Reclamation of Dye Coloured of Tenun Textile Wastewater Using Application of Membrane Technology</p> <p>Siti Norsita Mohd Rawi, Zularisam Abdul Wahid, Mohd Nasrullah, Abdul Syukor Abdul Razak, and Nor Wahidatul Azura Zainon Najib Universiti Malaysia Pahang</p>

	<p><i>Abstract</i>—Homemade textile industry is very famous in the East Coast of Peninsular Malaysia. Known locally as TenunDirajaPahang, they are traditionally inherited from generation to generation. The textile industry makes a big contribution to the economic growth due to high demands locally and from abroad. However, this industry produces wastewater which contributes to water pollution since it utilizes a lot of chemicals. The main environmental problem of the textile industry is the high water consumption for their processes. Thus it is very important to reuse textile wastewater. This work is focused on the treatment of a tenun textile wastewater which the water is treated in order to be reused again for several times using combining physicochemical treatment and membrane technology. For the physio-chemical treated of dye wastewater was characterized using jar-tests experiments with PAC, different concentration and pH in order to obtain suitable way to treat the wastewater whether by nanofiltration (NF) or ultrafiltration (UF). The combination of the physico-chemical treatment and the nanofiltration leads to a COD removal of almost 100%. The results indicate that the NF membrane has satisfactory rejections against various dyes at most testing conditions. As a result, the combination of physicochemical treatment and nanofiltration provided treated water with good enough quality to be reused in the industry.</p>
Q0050	<p>Competitive Adsorption of Copper, Lead, and Mercury Ions Using Gel Beads Composed of Hydrolyzed Polyacrylamide and Chitosan Jie Cao, ShuangZheng, Jun Jiang, Ruizhe Tao, Xiaopeng Gang and Ying Chen China University of Petroleum (Huadong)</p> <p><i>Abstract</i>—The removal of Cu^{2+}, Pb^{2+} and Hg^{2+} ions from aqueous solution by gel beads containing hydrolyzed polyacrylamide (HPAM) and chitosan components was investigated in competitive process. These gel beads exhibited a good performance for heavy metal removal. The removal order was $\text{Pb}^{2+} > \text{Cu}^{2+} > \text{Hg}^{2+}$ when the concentration of each ion was equal. Moreover, the total metal uptake capacity in competitive process (2.04 mmol/g) is better than that in non-competitive process (Pb^{2+}, 1.69 mmol/g). The effects of different experimental parameters, such as initial pH and temperature on the adsorption capacities were studied. Desorption study indicated that the gel beads were easy to be regenerated.</p>
Q0051	<p>The Efficiency of <i>Eichhornia crassipes</i> Sp. (Water Hyacinth) and <i>Pistia stratiotes</i> Sp. (Water Lettuce) for Heavy Metal Removal in Backwash Water Using We-Treat System Hasmanie Binti Abdul Halim, Abdul Syukor Bin Abd Razak, Aziz, E. A, Suryati Binti Sulaiman, and Keshvan Raj a/l Chandra Universiti Malaysia Pahang</p> <p><i>Abstract</i>—The study was conducted to determine the efficiency of two free floating aquatic macrophytes, <i>Eichhornia crassipes</i> and <i>Pistia stratiotes</i> to be used in We-Treat system. The system is an engineered wetland ecosystem, which was based on horizontal sub-surface flow constructed wetland. In this paper, the potential of these plants to remove parameters such as Fe, Cd, Pb, Zn from the heavy metal contaminated backwash water was investigated. From the results obtained, both of these plants have the highest removal efficiency for all the parameters being tested, which has proven the feasibility of employing phytoremediation technology in constructed wetland ecosystem in order to treat backwash water.</p>
Q0064	<p>Adsorption of Methylene Blue onto Pili Nut (<i>Canarium ovatum</i>) Shells Marjorie Baynosa, Rhena Mae Abundo and Cassandra Lee</p>

	<p>University of the Philippines Diliman</p> <p><i>Abstract</i>—In this study, the feasibility of using Pili nut shells (PNS) as adsorbent for methylene blue (MB) in simulated wastewater was investigated using batch adsorption experiments. <i>Canarium ovatum</i> or pili nut is an endemic plant species in the Philippines and its shells are considered agricultural wastes. Experimental results show that dye removal was found to increase with increasing initial dye concentration. Values for percentage dye removal ranged from 85.81% to 98.96%. The maximum methylene blue uptake was found to be 4.92 mg MB/g PNS for an initial dye concentration of 30 mg/L and adsorbent dose of 5 g/L at 120 min of contact time. From FTIR images, a change in peak for the dye-loaded adsorbent was observed at a frequency of approximately 2357.2 cm^{-1}, which is characteristic of methylene blue.</p>
Q2007	<p>Treatment of Palm Oil Mill Effluent by Electrocoagulation Method with Presence of Hydrogen Peroxide as Oxidizing Agent and Polialuminum Chloride as Coagulant-Aid M. Nasrullah, A. R. Abdul Syukor, M. R. SitiNorsita, Lakhveer Singh, and A. W. Zularisam Universiti Malaysia Pahang</p> <p><i>Abstract</i>—Electrocoagulation method by using either iron or aluminium as sacrificial electrodes has been made to remove chemical oxygen demand (COD) from Palm Oil Mill Effluent (POME) in the presence of H_2O_2 and polialuminum chloride (PAC), as a coagulant-aid. The effects of operating parameters such as current density, electrode material, amount of hydrogen peroxide using as an oxidizing agent and addition of coagulant-aid, on percent removal have been investigated. According to the study, Fe was determined more effective than Al as an electrode. It has been shown that the removal of COD increased with the increased current density and increasing PAC and H_2O_2. The results indicate that electrocoagulation is very efficient and able to achieve more than 70% COD removal in 180 min at current density $30\text{-}80\text{ mAcm}^{-2}$ depending on the concentration of H_2O_2 and coagulant aid. It is obtained that the electrocoagulation in absence of coagulant aid and oxidant is not too efficient to treat this type of wastewater.</p>
Q3004	<p>Aerobic Post-Treatment of Different Anaerobically Digested Palm Oil Mill Effluent (POME) Kian Weng, Chou, Siew Wei, Tan and Norli, Ismail UNIVERSITI SAINS MALAYSIA</p> <p><i>Abstract</i>—This study presents an investigation of the effect of aerobic post-treatment on different anaerobically digested palm oil mill effluent (POME) using lab scale aerobic digesters. Anaerobically digested POME was collected from anaerobic digesters operated at room temperature, mesophilic and thermophilic conditions, respectively. The experimental results showed the performance of each aerobic digester in term of chemical oxygen demand (COD), biodegradation rate, TSS and VSS removal. Room temperature digested POME was slightly more accessible to COD, TSS and VSS removal than others; whereas thermophilic digested POME was easier to be biodegraded than others.</p>
Q0017 poster	<p>Optimization of Reactive red-159 Removal by NZVI Coupled with Ca^{2+} Using Box-behnken Design Visanu Tanboonchuy, Thanyathorn Sangprasert, and Chanita Katavut Mahanakorn University of Technology</p>

	<p><i>Abstract</i>—This research investigated enhancement effect of reactive red-159 (RR-159), a dye contaminant, remediation by nano-zero valent iron (NZVI) coupled with Ca^{2+}. The Box-Behnken Design (BBD) was applied to search for the optimal condition for RR-159 removal. Three variable parameters, initial pH, initial concentration of RR-159, and Ca^{2+} dosage per 0.1 g of NZVI were applied for the removal of the contaminant. The results revealed that high removal of RR-159 (95.64%) can be obtained when the conditions of the removal were initial pH at 3, 1000 mg/L of initial concentration of RR-159, and 0.15 of Ca^{2+} per 0.1 g of NZVI.</p>
Q0040 poster	<p>A Simple Device for Exhaled Breath Condensate Collection and its Application in Studying Inflammatory Marker of School Children Exposure to PM_{10} Waraphan Phornwisetsirikun and Tippawan Prapamontol Chiang Mai University</p> <p><i>Abstract</i>—Objectives of the present study were to develop a portable exhaled breath condensate (EBC) collector device and then to apply to collect EBC samples from school children who exposed to different ambient PM_{10} levels. The developed device was validated in collecting EBC from five healthy subjects to investigate the impact of collecting duration and the breathe patterns on EBC volume. All five subjects were able to complete the EBC collection procedure successfully without difficulty. Ten minute collection of normal tidal breathing is optimal for EBC volume required. We conducted a follow-up study among 54 healthy school children from a primary school in Chiang Mai city by measurement of pulmonary function and exhaled H_2O_2 concentrations analysis in rainy and dry seasons. In dry season, mean exhaled H_2O_2 concentration was significantly increased while mean FEV_1/FVC ratio was significantly decreased ($p < 0.05$). The results of this study showed that the developed EBC collector device is safe, rapid and simple to use and exhaled H_2O_2 could be used as a biomarker of effect from elevated PM_{10} exposure.</p>

3:30pm-3:50pm

Coffee Break

Afternoon, October 09, 2014 (Thursday)

SESSION-4 (ICEBS 2014)

Venue: Building 459, Room 102 (1st Floor)

Session Chair: Prof. Chan Jin Park

Time: 3:50pm-5:40pm

Q0015	<p>Levels of Road Traffic Heavy Metals in Tree Bark Layers of Cassia fistula Tree Rungruang Janta, Somporn Chantara, Angkhana Inta, Munetsugu Kawashima, and Kenichi Satake Chiang Mai University</p> <p><i>Abstract</i>—Use of vegetation as a bioindicator of atmospheric heavy metal accumulation has received more attention worldwide due to the fact that this method has been found to be</p>
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	<p>effective, cheap and simple to use. This study aims to find out the levels of heavy metals found in tree bark layers and to test the factors (exposed sides of tree to traffic and size of tree trunk) that affect atmospheric heavy metal accumulation in the bark of <i>Cassia fistula</i>, which is a common tree commonly found along the road sides and planted for shading and decoration. In order to provide the necessary information with regard to using a native tree species as a bioindicator, heavy metals emitted from road traffic including Cr, Cu, Fe, Ni, Pb and Zn were investigated. The results showed that only Cu, Fe and Zn were detected. Their concentrations were highest in the cork layer, decreased in the second (chlorenchyma), third (phloem) layers and increased in the innermost layer (vascular cambium). Heavy metals found on the outer most layer of bark definitely came from atmospheric pollution due to direct exposure to the environment. However, the concentrations in the vascular cambium were higher than in the chlorenchyma and phloem. This is probably due to some diffusion that took place in the xylem, which is connected to the cambium layer. Concerning the factors affecting the heavy metal accumulation in the tree bark, the size of <i>Cassia fistula</i> tree trunks (5 - 30 cm) was not significantly correlated ($p > 0.05$) with the heavy metal concentrations found in the bark. This was also true of the sides of the exposure of the tree in relation to the traffic source. This means that the bark sampling can be done easily without any limitations with regard to the size of tree trunk and direction of exposure.</p>
Q0024	<p>Application of Statistical Design to the Optimization of Bioethanol Production from Oil Palm Trunk Juice Norhazimah A. H., Mior Ahmad Khushairi, Che Ku M. Faizal Universiti Malaysia Pahang</p> <p><i>Abstract</i>—The optimization of bioethanol from oil palm trunk (OPT) juice was performed using statistical methodology. Selection of the most important factor (10 factors) was attempted using Plackett-Burman design (PBD). Factors of initial pH, peptone and corn steep liquor (CSL) concentration were found to have a high influence towards bioethanol production from OPT juice. Steepest-ascent was performed to find suitable curvature of the experimental region. Then, selected factors was optimize at identified region using Box-Benhken design (BBD) under response surface methodology. It is predicted that the maximum ethanol yield of 0.5406 g/g can be obtained using OPT juice medium consisting initial pH of 6.50, peptone 6.80 g/l and CSL 13.28 g/l. These conditions were validated experimentally and the predicted result after optimization was in good agreement with the experimental data.</p>
Q0054	<p>The Application of Biosurfactant Produced Azotobacter sp. For Oil Recovery and Reducing the Hydrocarbon Loading in Bioremediation Process Merry Sianipar, Edwan Kardena, Syarif Hidayat, and Qommaruddin Helmy Institut Teknologi Bandung (ITB)</p> <p><i>Abstract</i>—Biosurfactant is potentially used to enhance oil recovery from oil sludge. The exopolysaccharide-formed biosurfactant is produced from Azotobacter sp. Using 2 w/v% glucose sources. The oil sludge taken from company X and biosurfactant is agitated under the speed of 150 rpm and temperature of 20-25 °C. The ratios of oil sludge and biosurfactant were varied by 1:1, 2:1 and 3:1. After 7 h agitation, the mixture was stood alone for 12 hours to obtain the 3 separated phases among oil (top), water (middle) and solid (bottom). The role</p>

	<p>of biosurfactant as surface tension reducer successfully separated among oil, water, solid from the oil sludge. The amounts of oil recovered from oil sludge are 55.95%, 51.76% and 25.57% for ratio 3:1, ratio 2:1, and ratio 1:1, respectively. Further, the slurry phase bioremediation method under 120 rpm of impeller velocity was applied to treat the bottom formation (slurry) from previous process. Both 5 w/v% Petrophilic bacteria (Unidentified Mix Culture) as degrader agent and 5 w/v% fertilizer as nutrient were added in the first day of bioremediation process. Under controlled 10-40% solid concentration, 5.5-9.5 pH, 20-40 °C (mesophilic condition), the total petroleum hydrocarbon (TPH) was successfully decreased until 6.83%, 3.48%, and 2.11% for slurry of ratio 1:1, ratio 2:1, and ratio 3:1 in 35 days.</p>
Q0056	<p>Production of Biodiesel Feedstock by Integrated Growth of Isolated Oleaginous Yeast and Microalgae Rattanaporn Baojungharn, Mutiyaporn Paungbut, and Ratanaporn Leasing Khon Kaen University</p> <p><i>Abstract</i>—The aim of this study is to produce microbial lipid as biodiesel feedstock by microalgae <i>Chlorella</i> sp. KKU-S2 and yeast <i>Torulaspora maleeae</i> Y30 via integrated cultivation technique using CO₂ emissions from yeast cultivation as inorganic carbon source for mixotrophic growth of microalgae. A maximum specific growth rate of <i>Chlorella</i> sp. KKU-S2 of 0.380(1/d) was obtained via integrated growth using CO₂ emissions from yeast grown on molasses while specific growth rate of 0.219(1/d) was found via non-integrated growth. A high value of lipid productivity (Q_P, 0.338 g/L/d), specific product yield ($Y_{P/X}$, 0.202), biomass productivity (Q_X, 1.633g/L/d) of <i>Chlorella</i> sp. KKU-S2 were found by integrated growth with yeast cultivation on molasses, overall biomass and lipid yield of 17.71g/L and 2.89g/L was obtained, respectively, while low biomass and lipid yield of 3.72g/L and 0.410g/L was obtained from non-integrated cultivation technique.</p>
Q0057	<p>Parametric Study for Maximizing Heating Value of Gasification Syngas Samson Mekbib Atnaw, Shaharin Anwar Sulaiman, and Suzana Yusup Universiti Malayisa Pahang</p> <p><i>Abstract</i>—The potential of oil palm derivative biomass for renewable energy in major producing countries in the South East Asia has been well documented involving a number of experimental and theoretical studies on energy conversion of this abundant biomass residue. In previous studies, results of equilibrium model of downdraft gasification of oil palm fronds (OPF), developed using chemical process simulator software and its validation was presented. The current paper focuses on optimizing the major output parameter of significant importance (namely higher heating value of syngas) with respect to the main operating parameters temperature, equivalence ratio (ER), and moisture content. The response surface method (RSM) is used to generate a mathematical relation between the response of interest which is heating value of syngas. The method was used to further determine the optimum conditions that lead to a higher heating value of syngas. The optimum values identified by RSM were; oxidation zone temperature of 1000°C, moisture content in the range of 4% and equivalence ratio of 0.35. These optimum operating condition values and the corresponding higher heating value of syngas was found to be in agreement with experimental results.</p>
Q0061	<p>Conversion of Fermented Rice Noodle Wastewater to Microbial Lipid by Mixed Culture of Microalgae and Yeast</p>

	<p>Mutiyaoporn Paungbut, Suthasinee Rattanachan and Ratanaporn Leeing Khon Kaen University</p> <p><i>Abstract</i>—In this study, mixed culture of microalgae <i>Chlorella</i> sp. KKU-S2 and yeast <i>Tolurasporea maleeae</i> Y30 using fermented rice noodle wastewater hydrolysate (FRNWH) as carbon substrate were investigated under mixotrophic growth for 6 days. Comparison of growth on FRNWH using yeast extract as nitrogen source, 2.71g/L biomass with lipid yield of 117.3mg/L, 2.32g/L biomass with lipid yield of 72mg/L, 2.02g/L biomass with lipid yield of 150.4mg/L were obtained from monoculture of <i>T. maleeae</i> Y30, <i>Chlorella</i> sp. KKU-S2 and mixed culture of both strains, respectively. Effect of nitrogen source on growth and lipid yield of mixed culture was investigated. Meat extract supported the maximum biomass of 5.32g/L with biomass productivity of 0.89g/L/d and specific growth rate of 0.28 (1/d), while urea supported the maximum lipid yield of 199.0 mg/L with lipid productivity of 33.17mg/L/d.</p>
Q0062	<p>Producing of Microbial Oil by Mixed Culture of Microalgae and Oleaginous Yeast Using Sugarcane Molasses as Carbon Substrate Thidarat Papone and Ratanaporn Leeing Khon Kaen University</p> <p><i>Abstract</i>—In this work, microbial oil production from mono and mixed cultures of microalgae <i>Chlorella</i> sp. KKU-S2 and yeast <i>Tolurasporea maleeae</i> Y30, <i>Tolurasporea globosa</i> YU5/2 under mixotrophic cultivation using sugarcane molasses as carbon substrate was demonstrated. In monoculture, a biomass of 5.23g/L with lipid yield of 0.31g/L, 9.43g/L of biomass with lipid yield of 0.20g/L, 3.3g/L with lipid yield of 0.12g/L was obtained from <i>T. maleeae</i> Y30, <i>T. globosa</i> YU5/2 and <i>Chlorella</i> sp. KKU-S2, respectively. In mixed culture of microalgae <i>Chlorella</i> sp. KKU-S2 and <i>T. maleeae</i> Y30, a biomass of 5.47g/L and lipid yield of 0.25g/L were obtained. A biomass of 6.90g/L with lipid yield of 0.33g/L was obtained for a mixed culture of <i>T. globosa</i> YU5/2 with <i>Chlorella</i> sp. KKU-S2. Maximum process product yield ($Y_{P/S}$) of 0.03g/L and maximum volumetric lipid production rate (Q_P) of 0.041 were obtained in mixed culture of <i>T. globosa</i> YU5/2 with <i>Chlorella</i> sp. KKU-S2. The results obtained from this study shows that mixed culture of yeast with microalgae is a desirable cultivation process for enhance of microbial oil production.</p>
Q0066	<p>Design and Implementation of Dual-Intelligent Sensor Networks for Air-conditioning Room Environment Anantachai Suwannakom, Waraporn Ratanungpisat, Buntoon Weiamun and Thanaban Tathawee Naresuan University</p> <p><i>Abstract</i>—Dual-intelligent sensor networks system enables monitoring, data acquisition and data logger in air-conditioning room. The sensor network consists of two major components as follows host-standalone which is web-based design using the Matlab/Simulink integrated with ARM Cortex-M4 microcontroller, and sensor nodes are made miniature and low power. The measuring signal from sensor node is transmitted by wire and wireless sensor. The results show that the data of internal temperature-humidity have highly correlation to happening events in the room over day and night. In addition, the external</p>

	<p>temperature-humidity is similar to local meteorological ambient temperature-humidity. Therefore, the results indicate that a high accurate and efficient system is easier to implement.</p>
Q0068	<p>Biodiesel Feedstock Production from Freshwater Microalgae Grown in Sugarcane Juice Hydrolysate Supaporn Kookkhunthod and Ratanaporn Leeing Khon Kaen University</p> <p><i>Abstract</i>—Heterotrophic cultivation of freshwater microalgae <i>Chlorella</i> sp. K KU-S2 for lipid as biodiesel feedstock production by using sugarcane juice hydrolysate as carbon substrate, different nitrogen source and concentrations, different concentration of carbon substrate were investigated. Using 1.0 g/L of NaNO₃ as nitrogen source, the maximum biomass yield of 11.60g/L with biomass productivity of 1.45g/L/d was obtained using 20g/L SJH. The maximum lipid yield of 2.55g/L with lipid productivity of 0.32g/L/d was obtained when 50g/L SJH was used. Maximum process product yield ($Y_{P/S}$) of 0.26 was obtained when SJH concentration was 50 g/L.</p>
Q1002	<p>The Crude Oils' Characterization through SARA Analysis Josefina B. Janier, Ermaliza Bt. Ulul, Radzuan B. Razali, Afza Bt. Shafie Universiti Teknologi Petronas</p> <p><i>Abstract</i>—In Oil and Gas Industry, asphaltene deposition is a serious problem that affects the production operation from the formation to production line and surface facilities which decreases oilfield output. This causes high production costs due to frequent treatments for prevention and deposit removal. Minimizing the deposition has been a major goal for all crude oil operation and a study of its composition can help in understanding the deposition of asphaltene. The characterization of six crude oil samples by determining its composition in terms of saturate, aromatic, resin and asphaltene (SARA) and evaluate its effect to asphaltene stability using the high pressure liquid chromatography (HPLC) was done. The results showed that even though a crude oil has very low asphaltene content it does not guarantee that it has a stable asphaltene. It was found out that any change in the amount of SARA fraction influence the colloidal instability index (CII) value which will indicate the stability of asphaltene.</p>
Q2003	<p>Wind Speed Variability with respect to Warm-Dry and Cool-Wet Periods over Turkey and Determination of Wind Power Density Hilal ARSLAN and Mete TAYANÇ Marmara University</p> <p><i>Abstract</i>—In this study, the effect of wind speed and variability on power generation in the 1980-2013 period over Turkey was studied by using Weibull distribution. The results show large variability in the wind speed corresponding to spatial and temporal scales. Wind power potential was found to be largest at Çanakkale. The highest average seasonal power density was observed in winter, with a value of 81.34 W/m². Spring, summer and autumn has average power densities as 49.01 W/m², 51.12 W/m² and 50.13 W/m², respectively. To check the hypothesis that the wind speed decreases during warm and dry periods, we compared the average wind speed of Çanakkale in 1980-1993 cool period with the average wind speed in</p>

	2007 and 2013 years characterized with severe drought and high temperatures. Average wind speed was 3.3 m/s in 2007 and it was 3.5 m/s in 2013, while 1980-1993 average was 3.8 m/s, thus it is obvious that annual average wind speed can decrease up to 0.5 m/s during warm and dry periods.

Afternoon, October 09, 2014 (Thursday)

SESSION-5 (ICEBS 2014)

Venue: Building 459, Room 310 (3rd Floor)

Session Chair: Associate Prof. NORLI ISMAIL

Time: 3:50pm-5:40pm

Q0035	<p>Activated Carbon Production from Oil Palm Meal by Zinc Chloride Activation Anusorn Boonpoke, Rungthiwa Phetwich, and Warisa Anukulreangkitt University of Phayao</p> <p><i>Abstract</i>—Palm oil meal is an abundant agro-waste generated from palm oil mills. Without proper waste management it can become a serious environmental problem, especially in tropical countries. Waste utilisation is a good waste management practice. In this study palm oil meal was used as raw material for activated carbon production using a chemical activation method. The research investigated the optimum conditions for the use of palm oil meal in activated carbon synthesis. Zinc chloride (ZnCl₂) was used as the activation reagent. Production conditions were varied. Waste biomass to ZnCl₂ ratios used were 1:0.5, 1:1 and 1:2, carbonisation time 30 to 90 minutes and carbonisation temperature 400 to 800 °C. Results indicated that the optimum impregnation ratio was 1:1 with 60 minutes carbonisation time at a temperature of 600 °C. The activated carbon produced gave a maximum iodine number of 817.37 mg/g, 760 m²/g of BET surface area and 0.154 cm³/g of micro pore volume. The iodine number was in excess of 600 mg/g indicating that the activated carbon was of good quality according to the Thai Industrial Standards Institute (TISI.900-2004).</p>
Q0036	<p>Impacts of Cumulus Convective Parameterization Schemes on Precipitation at Grey-Zone Resolutions: A Case Study over Complex Terrain in Upper Northern Thailand Sittichai Pimonsree, Phakawan Ratnamhin, Patipat Vongruang, and Sulak Sumitsawan University of Phayao</p> <p><i>Abstract</i>—Betts-Miller-Janji ć, Kain-Fritsch, and Grell-Devenyi cumulus convective parameterization schemes had been applied in the Weather Research and Forecasting model. This study simulated impacts of various schemes on precipitation over complex terrain in the upper Northern Thailand at grey-zone resolutions during 1-7 August 2008. The results of 3 km resolution show that each cumulus scheme creates different precipitation patterns reflecting the influence of cumulus scheme on the grey-zone resolution. Nevertheless, all the schemes have the capability to reasonably reproduce the main character of spatial</p>

	distributions of precipitation. Detailed comparison indicates that Grell-Devenyi scheme and the ensemble of three schemes give a better performance of simulating spatial pattern than the other cumulus schemes.
Q0037	<p>Modeling of Formaldehyde Adsorption on Nanosilver Activated Carbon in Fixed bed Wara Dyah Pita Rengga, Mahmud Sudibandriyo, and Mohammad Nasikin Univeritas Negeri Semarang</p> <p><i>Abstract</i>—The adsorption's behaviour of formaldehyde was conducted by using activated carbon from bamboo biomass attached to nano-silver (Ag-AC) in a fixed-bed column. The Ag-AC adsorbed formaldehyde better than activated carbon (AC) because it has a greater adsorption potential. The performance of the Ag-AC column was evaluated by varying influent flow rates and initial concentrations of formaldehyde. The increased initial concentration and flow rate caused the exhaustion time of the breakthrough curve to become relatively small. The experimental data described the dynamic adsorption behaviour of the fixed-bed column according to Thomas and Yoon-Nelson modelling. Thomas and Yoon-Nelson models fit the data well, with less than 5% deviation. The experimental and theoretical data have a significant relationship in, which the experimental data fit well with the modelling of adsorption.</p>
Q0038	<p>Atmospheric PM_{2.5} and Its Elemental Composition from near Source and Receptor Sites during Open Burning Season in Chiang Mai, Thailand Chanakarn Khamkaew, Somporn Chantara, and Wan Wiriya Chiang Mai University</p> <p><i>Abstract</i>—Open burning is an important source of atmospheric particulate matter (PM) emissions in the South East Asian Region. PM_{2.5} samples were collected in dry season (March 2013) at two sampling locations in Chiang Mai Province, Thailand. Doi Ang Khang (DAK) site is located uphill near the Myanmar border representing a near source site and Chiang Mai University (CMU) is located downhill in the city of Chiang Mai representing a receptor. The samples were collected by mini volume air samplers on daily basis (24 hours) and analyze for elemental composition. It was found that the average PM_{2.5} concentration at CMU ($74.5 \pm 43.5 \mu\text{g m}^{-3}$) was higher than that at DAK ($59.1 \pm 44.1 \mu\text{g m}^{-3}$). However, they were well correlated ($r = 0.780$) and not significantly different ($p > 0.05$). The major elements found in the PM_{2.5} samples collected from both sites were K, Mg, Al and Fe. The element with the highest mass content was K ($2.06 \mu\text{g m}^{-3}$ at DAK and $2.23 \mu\text{g m}^{-3}$ at CMU). Therefore, it can be revealed that biomass burning was a major source of PM_{2.5} collected at both sites due to K is known as biomass burning tracer. Concentrations of PM_{2.5} and K at both sites were not much different. This is probably due to large area of open burning in the upper part of Northern Thailand and in neighboring countries causing haze covered the whole area. Even there was no significant difference of air pollutants at both sites, correlation between PM_{2.5} and K was higher at near source site than receptor site supporting that K was emitted from biomass burning. Backward trajectory was performed to identify air mass movement to the sampling sites. The major air mass (45%) to DAK was from western direction, while the air movement (52%) to CMU was from southwest direction.</p>
Q0039	PM _{2.5} and Polycyclic Aromatic Hydrocarbons Emitted from Incense Burning at Shrine in Chiang Mai, Thailand

	<p>Susira Bootdee, Somporn Chantara, Thipawan Prapamonton, Urai Tengjaroenkul, and Pitchaya Mungkornasawakul Chiang Mai University</p> <p><i>Abstract</i>—This study aims to determine fine particles (PM_{2.5}) and polycyclic aromatic hydrocarbons (PAHs) emitted from incense burning at shrine to assess human health risk. PM_{2.5} samples were collected on Teflon filters using a mini volume air sampler and analyzed for 16 PAHs by GC-MS. The samples were collected for 8 hrs (8 am – 4 pm) and 24 hrs during special occasions comparing with normal period. The 8 hrs and 24 hrs average PM_{2.5} concentrations in descending order were Chinese New Year ($625 \pm 147 \mu\text{g}/\text{m}^3$ and $406 \pm 159 \mu\text{g}/\text{m}^3$) > other special occasions ($184 \pm 85 \mu\text{g}/\text{m}^3$ and $133 \pm 71 \mu\text{g}/\text{m}^3$) > normal period ($94 \pm 44 \mu\text{g}/\text{m}^3$ and $50 \pm 20 \mu\text{g}/\text{m}^3$). Their concentrations were significantly different between occasions due to number of visitors and amount of incense being burned. Correlation of PM_{2.5} and total PAHs concentrations was relatively strong. In addition, PM_{2.5} concentrations were highly correlated with carcinogenic PAHs (c-PAHs) indicated that carcinogenic compounds were dominant in the particulate PAHs and generated from incense burning. The values of toxicity equivalent concentration (TEQ) indicated that human health risk from PAHs inhalation, where high amount of incense burning was performed i.e. during Chinese New Year, was relatively high ($34 \pm 8.4 \text{ ng}/\text{m}^3$ (8 hrs) and $15 \pm 4.9 \text{ ng}/\text{m}^3$ (24 hrs)).</p>
Q0047	<p>The Role of Venture Capitals on Innovation in Korean Biotechnology Industry Kyung-Nam Kang and Byung-Kuk Sohn Management of Technology, Sungkyunkwan University</p> <p><i>Abstract</i>—Venture capital financing is generally considered as the most suitable external financing mode for New technology based SMEs, such as biotech SMEs. However, the way in which venture capital investments influence a firm's innovation performance is not as certain. In this paper, we empirically analyzed the impact of venture capital investments on networks and innovation performance in Korean biotech SMEs. Venture capital investment was positively associated with downstream partnerships, supporting Hypothesis 1-2 ($\beta=0.29$, $p<0.001$). Inter-firm collaborations were positively correlated with a firm's innovation performance, supporting Hypothesis 2 ($\beta=0.18$, $p=0.010$ in upstream partnerships, $\beta=0.61$, $p<0.01$ in downstream partnerships). This study showed the mechanism of venture capital investment influencing innovation via promoting downstream collaborations.</p>
Q0048	<p>The Nagoya Protocol and the Biotechnology Industry Kyung-Nam Kang, Chan-Sik Jung, Tae-KyuRyu Korea Institute of Intellectual Property</p> <p><i>Abstract</i>—While the Nagoya Protocol will affect the biotechnology industry, industry awareness of the protocol is still fairly low. In this paper, we introduce the Nagoya Protocol and analyze its expected impact on the biotechnology industry. The results show that companies in the biopharmaceutical field and the health functional food field are likely to be relatively highly impacted. Although the Nagoya Protocol may increase legal certainty and transparency, participants in companies have voiced concerns that it will negatively affect firms' innovation performance by leading to increased costs and complexity of obtaining</p>

	genetic resources. This study suggests that procedures for accessing genetic resources should be clearly and transparently certified.
Q0052	<p>Fish Movement Analysis in Steady Swimming Ali Sadr Vaghefi, Majid Abbaspour, and Zaeem Mosavi Mohammadi Islamic Azad University</p> <p><i>Abstract</i>—Steady swimming of four <i>Pangasius sanitwongsei</i> with different total length was studied experimentally and taped by high speed digital video and undulatory movement of each fish at different velocity was revealed. According to the video images, pattern of body undulatory movement of the fish were drawn. The relationship between Reynolds number and Strouhal number of four <i>Pangasius sanitwongsei</i> with different Lf/L were studied here. Then the relationship between effective non-dimensional parameters in thrust force and kinematic parameters was found experimentally. This equation indicates that, as much as the ratio of the end part of fish with high undulatory movement (body and caudal fin) to the total length goes up, the ratio of amplitude to the total length increases. Consequently, displacement increases and thrust force increases too.</p>
Q0065	<p>An Analysis on the Temporal Patterns of Heat Island Effect in Kaohsiung Yu-Long Chao National Kaohsiung Normal University</p> <p><i>Abstract</i>—According to the hourly temperature data from the database of Environmental Protection Administration, this study compared the temperature in January and July 2011 in three downtown locations with those in three suburban locations. Possible causes of temperature differences between downtown and suburban locations were discussed; in particular the temperature rise resulted from economic activities such as the traffic in rush hours and waste heat of air conditioners of buildings. The temperature records were analyzed based on hours and days and hence day patterns and week patterns of temperature differences between downtown and suburban were obtained. Results revealed that temperature change was directly influenced by surrounding physical environment but certain patterns of temperature differences still emerged. With respect to day patterns, temperature differences reached peaks around 2 PM and were in greater variances in summer than in winter. For week patterns, by contrasting weekday temperature with weekend temperature, it was found that cycles of temperature peaks probably caused by economic activities were obvious during weekdays in winter. Downtown was also found warmer than suburban at winter nights, consistent with the phenomenon of heat island effect. Practical implications for urban environmental management were discussed.</p>
Q0069	<p>The Fractionations of Arsenic in the Different Particles-size of Sediments from the Thermal Valley in Taipei, Taiwan Sheng-Chi Lin, Wei-JhanSyu, Wei-Chin Chen and Tsun-Kuo Chang National Taiwan University</p> <p><i>Abstract</i>—Sediments in the thermal spring system of Beitou contains an unusually large amount of arsenic (As), which raises concerns that hot spring activity could promote increased As mobility. The purpose of this study was to investigate the fractionation of As by using the sequential extraction procedure (SEP) in the different particles-size sediments of</p>

	<p>Huang Gang Creek. Sediment samples were collected along the creek and sieved to fine-grained fractions: 1.19-0.84 mm, 0.84-0.15 mm, 0.15-0.075 mm, 0.075-0.05 mm and <0.05 mm in order to analyze the processes absorbed by As. The results showed that the percentage of the amorphous and poorly-crystalline hydrous oxides of Fe and Al (35%), well-crystallized hydrous oxides of Fe and Al (29%) and specifically-sorbed (23%) were higher than its non-specifically-sorbed (<10%) and residual phases (<3%). Meanwhile, finer grained sediment samples from 0.075-0.05 mm to <0.05 mm tend to have higher concentrations of total As, except for the particle-size of 1.19-0.84 mm. The study also indicated that finer grained sediment samples don't tend to have higher concentrations of As under considering each step of SEP.</p>
Q1005	<p>The Role of Collaborative Procurement of Transportation Services in Improving the Green Supply Chain Management Chefi Triki Sultan Qaboos University</p> <p><i>Abstract</i>—The lack of collaborative opportunities for the procurement of truckload transportation services can expose companies to high costs while transporting their goods. Moreover, carriers are forced to perform many movements with empty trucks for repositioning which represent a big environmental challenge. Our idea is to conduct e-procurement auctions in order to encourage the companies to diversify their channels for the transportation procurement. In this context, combinatorial auctions (CAs) represent an ideal tool to achieve this goal. In this new settings, new decisional policies should be defined by both the companies and the carriers. This work stands from the carrier's viewpoint who would be interested to collaborate with his competitors in order to achieve savings and to contribute for a green supply chain management. In this paper, we solve the problem of generating bids to be submitted to CAs in order to ensure loads for trucks that would travel otherwise empty. We discuss an decision support model and validate it through computational experiments.</p>

Afternoon, October 09, 2014 (Thursday)

SESSION-6 (ICEBS 2014 & ICAFS 2014)

Venue: Building 459, Room 311 (3rd Floor)

Session Chair: Prof. Byoung Ryong Jeong

Time: 3:50pm-5:50pm

Q0005	<p>Comparative Studies of Mineral and Fatty Acid Contents in Freshwater Prawns <i>Macrobrachium rosenbergii</i> Collected from Several Rivers in Pahang, Malaysia Ridzwan Bin Hashim International Islamic University Malaysia</p> <p><i>Abstract</i>—Giant freshwater prawn identified as <i>Macrobrachium rosenbergii</i> is one of the</p>
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	<p>famous delicacies in the state of Pahang, Malaysia. It is locally known as ‘udang galah’. This study, therefore, was aimed to determine the mineral and fatty acid contents of this prawn collected from three rivers; Sg. Pahang, Sg. Pahang Tua and Sg. Rompin. The concentrations of heavy metals (Pb, Cd, Hg and As) and trace elements (Co, Cu, Zn, Mn and Se) were determined by using Inductively Coupled Plasma-Mass Spectrometry (ICP-MS), while the fatty acid contents were analysed by using Gas Chromatography-Mass Spectrometry (GC-MS). The results showed there were significant differences ($p < 0.05$) in the mineral contents (As, Cd, Hg, Cu, Co, Mn and Se) of <i>M. rosenbergii</i> collected from the three rivers with As, Cd, and Cu exceeded the permissible limits established by the Malaysian Foods and Regulation (MFR). Meanwhile, Hg and Pb contents in the prawns of Sg. Pahang Tua and Pb in the prawns of Sg. Rompin exceeded the MFR. Variations in fatty acid profiles were also observed among the prawns collected with Sg. Pahang the least value and Sg. Pahang Tua the highest value of polyunsaturated fatty acids (PUFA).</p>
Q0043	<p>Electrochemical Flow Injection Determination of Ascorbic Acid in Fruit Samples Employing a Graphene-Polyaniline Electrode Pojanee Norfun, Orn-Anong Arqueropanyo, Saisunee Laiwruangrath and Kontad Ounnunkad Chiang Mai University</p> <p><i>Abstract</i>—A simple flow injection analysis (FIA) equipped with an electrochemical graphene (GP)-polyaniline (PANI) nanocomposite sensor as a detector has been investigated for determination of ascorbic acid (AA) in fruit samples. Northern Thai fruits (longans and lychees) harvested in Chiang Mai and Lamphun districts were selected for this study. The GP-PANI nanocomposite was interfacially polymerised and characterised by cyclic voltammetry. Observable electro-oxidation response of AA over the nanocomposite electrode with high peak current at a low potential was found. Optimisations of the experimental conditions were carried out which were found to be 0.1 M phosphate buffer, pH 7, 1.5 mLmin⁻¹ flow rate, 100 µL sample injection volume, respectively. The good linear range of calibration curve, low limit of detection, and high sensitivity for the proposed method were found to be 0.05–0.50 mM, 0.027 mM, and 4.5478 mAmm⁻¹, respectively.</p>
Q0055	<p>Comparison of HTLV and STLV by Using Apriori Algorithm and Decision Tree Jinwon Kwon, Subin Yoon, Cheryn Kim, Sang Ryul Kim, and Teaseon Yoon Hankuk Academy of Foreign Studies</p> <p><i>Abstract</i>—In this study, Apriori algorithm and Decision tree C5.0 algorithm were employed to compare the sequence patterns of HTLV(Human T-lymphotropic) and STLV(Simian T-lymphotropic) viruses. HTLV and STLV are Deltaretroviruses and are counterparts. However, these viruses have a complex history. One used to be HIV and some were found and named recently. To find the congruity of these viruses, we decided to compare them. Amino acids of the HTLVs showed that pattern of HTLV-1 and 2 could also be applied to HTLV-3, but HTLV-4 has a different pattern. Rules of the sequences tend to follow HTLV-2’s rule, yet it is too subtle to come into consideration.</p>
Q2006	<p>Biosynthesis and Characterization of Silver Nanoparticles Produced by <i>Bacillus licheniformis</i> Shaarika Sarangadharan and Nallusamy Sivakumar</p>

	<p>SULTAN QABOOS UNIVERSITY</p> <p><i>Abstract</i>—Silver nanoparticles were synthesized using <i>Bacillus licheniformis</i> isolated from Al Thwara hot spring, Oman. Supernatant and biomass of <i>B. licheniformis</i> were tested for their ability to reduce silver nitrate solution to silver nanoparticles by adding 1 and 3mM silver nitrate solution. Silver nanoparticle production was observed both in supernatant and biomass. Biosynthesis of silver nanoparticles occurred in presence of light. The particles maintained a good stability over time course. The average size of silver nanoparticles was 66 nm for 1 and 3mM silver nitrate solution with supernatant and 110 and 107 nm for 1 and 3mM silver nitrate solution with biomass respectively.</p>
Q3003	<p>Isolation and Identification of 17α- Ethinylestradiol-Degrading Bacterial Strains from POME and Cow Dung</p> <p>Lim Yee Ling, Norhashimah Morad, Japareng bin Lalung, Chan SieYie, and Siti Aishah Abu Bakar</p> <p>Universiti Sains Malaysia</p> <p><i>Abstract</i>—The isolation of 17α- Ethinylestradiol (EE2)-degrading bacterial strains was done using samples sourced from Palm Oil Mill Effluent (POME) and fresh cow dung. Screening processes were conducted to identify the potential strains. The three highest potential EE2-degrading bacterial strains obtained from each sample source were selected for further batch experiments. A batch study with the strains fed with only salt medium containing EE2 as the sole carbon source was conducted for 9 days. The bacterial strain isolated from POME that was capable of degrading EE2 of up to 64.0 % at EE2 concentration of 5 mg/L was identified as <i>Hyphomicrobium facile</i>. The strain isolated from the cow faeces that was capable of degrading EE2 up to 55.1 % at a concentration of 10 mg/L was identified as <i>Enterobacter cloacae</i>.</p>
Q3005	<p>Production of Endo- and Exo-glucanase Using Acid/Heat Treated Rice Straw by Locally Isolated <i>Aspergillus niger</i> via Solid State Fermentation</p> <p>Lisa Gaik Ai Ong, Heera Rajandasb, and Ai Lan Chew</p> <p>Universiti Tunku Abdul Rahman & Universiti Sains Malaysia</p> <p><i>Abstract</i>—Rice straw that has been treated with hydrochloric acid or sulfuric acid followed by heat treatment was used for the production of endo- and exo-glucanase. Solid state fermentation was carried out with the following condition: inoculum size, 10%; moisture content, 50%; ammonium sulphate, 1%. After 6 days of fermentation, endo-glucanase and exo-glucanase were extracted; subsequently, carboxymethyl cellulase (CMCase) and filter paper (FPase) assays were carried out. The highest FPase and CMCase activity obtained were 8.16 ± 0.12 U/g_{rice straw} and 11.25 ± 0.14 U/g_{rice straw}, respectively using the treated rice straw which was soaked in 15% of sulfuric acid for 2 hours. Conclusively, there was interaction between soaking time, concentration of acid and type of acid, and significant ($p < 0.05$) improvement in cellulase yield when compared to untreated rice straw.</p>
S1001	<p>Effects on Physical and Functional Properties of Dried Whole Eggs of Cassava (<i>Manihot Esculenta</i> Crantz) Starch Additive and Corn Syrup Additive</p> <p>Joanna Tess Masilungan-Manuel, Christa Loraine G. Sino, Aiza V. Jarin, and Flordeliza C. De Vera</p>

	<p>Mapua Institute of Technology</p> <p><i>Abstract</i>—Primarily eggs were marketed as shelled eggs, but due to breakages and spoilage, better storage techniques were needed. Oven drying is one of the preservation techniques used to address this concern. Powdered egg is a convenient alternative to fresh egg because it can be stored for a longer period. Usually, carbohydrates such as corn syrup are used as additive to powdered egg to increase its shelf-life. Literatures indicate that tapioca starch has more carbohydrate content than corn syrup. Thus, a comparative analysis between tapioca starch and corn syrup as additive for powdered egg was conducted. Physical and functional properties of the product showed that 20% tapioca starch is the optimal amount to be added to liquid eggs prior to drying. In addition, drying curve and sorption isotherm implies that tapioca starch facilitates shorter drying time and displays lower value of moisture content after drying, making it shelf-life more stable.</p>
S1005	<p>Structure Formation in Food Systems Based on Agar-Agar and Melon Pulp Tazhibayeva S., Tanybayeva A., Musabekov K., Tusupova B., and Zhumabayeva A. Al-Farabi Kazakh National University</p> <p><i>Abstract</i>—Actions devoted to search components of special application gets notable actuality at the present time due to unfavourable influence of environment. Confectionery and food productions based on structured pulps are especially valuable from this point. Natural biopolymers such as gelatin, starch, agar-agar are applied as structure formation materials at confectionery. However structured gels based on individual polymers possess with increased elastic-strengthening characteristics and so to the production technology of these gels must include processes for regulation its properties. In this work were defined peculiarities of structure formation of agar-agar-melon pulp system. It is stated that melon pulp in an individual state does not get structurized, however, its introduction into agar increases the strength of the system and decreases the critical concentration of structure formation of the agar-agar from 0.75 % to 0.25 %. Structure formation is realized by hydrogen bonds of COOH-groups of galacturonic acid of melon pulp and OH-groups of agar as well as hydrophobic interactions between non-polar parts of these substances.</p>
S1006	<p>Liquid Smoke Application to Smoke Milkfish (<i>Chanos chanos</i> Forsk) Processed by Using Electrical and Mechanical Oven Fronthea Swastawati, Herry Boesono S, and Dian Wijayanto Diponegoro University</p> <p><i>Abstract</i>—This research was aimed to find out the effects of using electrical (A_1) and mechanical oven (A_2) to the quality of liquid smoked milkfish in terms of moisture content, TMA, PV, TVB and TBA value. All bones of fish were removed prior dipped for about 15 minutes into 5% of coconut shell liquid smoke; then divided into two groups. One group was dried by using an electrical oven and the other was using a mechanical oven within $\pm 80^{\circ}\text{C}$ temperature for about 3 hours. The results of T-Test data showed that the differences in drying methods gave some quality differentiation of liquid smoked milkfish ($P < 0,05$). The moisture content of A_1 sample was found $55.29\% \pm 0.38$ whereas A_2 sample was 51.80 ± 0.52. In terms of TMA content, A_1 sample was found $56.91 \text{ mg nitrogen}/100 \text{ gr} \pm 0.23$; and A_2 sample was $55.23 \text{ mg nitrogen}/100\text{g} \pm 0.45$. PV; TVB; and TBA value of both samples (A_1</p>

	<p>and A₂) were found 1.95 mlec/kg±0.034 and 2.01 mlec/kg±0.06; 100.79 mgNH₃/100g±1.06 and 118.56 mgNH₃/100g±2.67; 2.38 mg malonaldehyd/100g±0.02 and 4.02 mg malonaldehyd/100g±0.006 respectively. Generally smoked fish processed with an electrical oven is better than a mechanical oven due to quality characteristics changes controlling during smoking.</p>
S1007	<p>Chromium (Cr) Content in Green Mussel (<i>Perna Viridis</i> Linnaeus): Case Study at 10 Markets in Semarang, Central Java, Indonesia Nanik Heru Suprapti, Azis Nur Bambang, and Fronthea Swastawati Diponegoro University</p> <p><i>Abstract</i>—In terms of maintaining food safety for continuing national development, it is important to put in concern toward food especially those who caught from the sea (seafood), including green mussels (<i>Perna viridis</i> Linnaeus); from the dangerous threat of heavy metals. This research was aimed to analyze the content of Chromium in green mussels (<i>Perna viridis</i> Linnaeus) bought from several traditional markets in Semarang, Central Java, that had been done in February 2014 - April 2014. This research was done with systematic random sampling methods at 10 traditional markets in Semarang. The data was analyzed with Descriptive Analysis in ways of comparing the Chromium (Cr) content in green mussels based on a guideline of Food and Drug Administration. Test of heavy metal content was analyzed using Atomic Absorption Spectrophotometer (AAS) in Laboratory of Chemical Analysis, Diponegoro University, Semarang. The results showed that the content of Chromium (Cr) in green mussels range from 0.93 ppm – 2.40 ppm and still below of United States FDA standards, which is 13 ppm. However, daily value allowed for consuming Chromium is 0.13 ppm, so that green mussels from Semarang are not recommended to consume every day.</p>
S2001	<p>Effects of Some Drying Methods on Nutritional Characteristics of Moringa (<i>Moringa Oleifera</i>) Seeds A. K. Aremu and A. Akintola University of Ibadan</p> <p><i>Abstract</i>—<i>Moringa Oleifera</i> seeds have been found to be highly nutritious and medicinal. Drying preserves and enhances nutritional characteristics of the seeds; hence, moringa seeds were dried using, oven-drying, sun-drying, cabinet tray drying and shadow drying methods to study the effects of drying on nutrient retention so as to determine the suitable drying method that will retain the maximum nutrient expected from the seeds. 200g of the seeds were used for each drying experiment and each drying process was monitored by weighing the samples periodically until bone dry was achieved. The nutrient retained in the dried samples was determined using proximate analysis according to AOAC standard. The nutrients retained after drying using oven, sun, cabinet tray and shadow respectively are protein (31.31, 30.01, 32.13 and 30.79%), crude fat (15.55, 15.92, 16.78 and 15.80%), Carbohydrate (31.29, 27.22, 29.95 and 28.37%) and crude fibre (9.15, 14.72, 9.38 and 13.28%). More nutrients were retained in cabinet-tray drying method (in terms of protein and fat) compared to other drying methods. It was concluded that the cabinet tray drying method was the best method of drying of moringa seeds.</p>
Q0011	Effects of Different Grinding Methods on Chemical and Functional Properties of MR211

	<p>Rice Flour Asmeda Rajab and Noorlaila Ahmad Universiti Teknologi MARA</p> <p><i>Abstract</i>—Investigation on chemical and functional properties as affected by different grinding techniques was carried out during the milling process of rice grains into rice flour production. Proximate analysis revealed that dry ground flour had significantly ($p < 0.05$) highest protein, lipid, ash and carbohydrate contents. Wet grinding technique yielded flour that exhibit significantly finest average particle size distribution (9.32 μm), with significantly lowest damaged starch (4.08%) and highest L^* value (93.55). Water absorption index, flour swelling volume and solubility were significantly highest in dry ground flour when compared to others. Pasting profiles showed that the pasting temperature varied between 81.20-83.15 $^{\circ}\text{C}$ for all milling. Results indicated that different grinding methods significantly affected chemical and functional properties of starch and data generated provide additional opportunities of exploiting rice flour utilization and hence boost its value-addition potentials for product development.</p>

6:00pm	Dinner
To be added	

Conferences ending, thanks!

October 10, 2014 (Friday)

One Day Visit

Let's visit Jinju, Korea

October 10, 2014 from 9:00am to 8:00pm

Visit Characteristics:

Beauty spot, tremendous difference, classic characteristic and special features, those are all included in the Academic Visit in Jinju, Korea. The academic visit will lead participants to several places in Jinju, mainly agriculture-related organizations and farms, which can show the current status of Korean agriculture, especially horticulture. The world famous Namgang River International Lantern Festival and The Gaecheon Art Festival will be held during the conference period, and also be visited during the extended schedule in the evening. All the participants can be attracted by the hundreds of beautiful local and international lantern designs and its pleasure to visit along the river. The visit will provided experience which you cannot get from any other places. Also, delicious local lunch and dinner can be enjoyed during the visit. What a fun choice! Welcome to Jinju, Korea and please join us!



1. Centralized Scientific Instrumentation Facility (CSIF) of Gyeongsang National University (GNU)

The CSIF was established to house and manage the university's expensive and delicate scientific instruments. Currently, it is equipped with about 200 cutting-edge analysis devices such as a Nuclear Magnetic Resonance Spectroscopy, Transmission Electron Microscope, Scanning Electron Microscope, Mass Spectrometer (GC/LC, Maldi-Tof Mass), EPMA, and X-ray devices.

2. GNARES and ATEC

The GNARES provides a good place for learning advanced agricultural technology and seeing the growing and farming industry through R&D and technology distribution. The ATEC runs educational and training programs year round to introduce advanced technologies from overseas to be adapted to the rapidly changing global markets.



Lunch



3. Persimmon Orchard

The Bubu Orchard run by Mr. Seong in Jinju produces the best quality sweet persimmon fruits in Korea.

4. Paprika Production Greenhouse

Many greenhouse growers in Jinju produce very high quality paprika for both Japanese and Korean markets.



5. Strawberry Production Greenhouse

Strawberry is a very popular cool season crop in Korea and they are grown in greenhouses, but not on open fields, and it is number one hydroponic crop in Korea now.

Dinner

6. The Namgang River International Lantern Festival and The Gaecheon Art Festival

The JinjuNamgangYudeung Festival originates from the lantern lighting custom used during the Jinjuseong Fortress Battle of the Imjinwaeran War (Japanese invasion in 1592) as a military strategy to prevent Japanese troops from wading the Namgang River. The highlights of the festival are the floating of lanterns carrying personal wishes of the citizens along the Namgang River, and the parade of lanterns created by the students themselves. In addition, the festival features the Gaejesik (lighting of lanterns in remembrance of the Jinjuseong Fortress Battle veterans), an exhibition of the world's traditional lanterns, and many more participatory cultural programs.

The Gaecheon Art Festival is the oldest art and cultural festival in Korea. Both of these festivals attract millions of travelersevery year to the historical city Jinju.



Conference venue

Gyeongsang National University-College of Agriculture and Life Science

http://eng.gnu.ac.kr/sub/02_03_06.jsp

Gyeongsang National University is located near the southern coast of the Republic of Korea (South Korea) in Jinju City, which is located in South Gyeongsang Province.

Jinju is less than an hour's drive from Korea's southern coast and is about an hour's drive from Korea's famous Chiri Mountain. The city has a population of about 340,000 (including surrounding communities), which is relatively small by Korean standards.

Nevertheless, the city has a long, rich history, modern infrastructure, and good public transportation (including a busy domestic airport).

Surrounded by mountains and pine- and bamboo-covered hills and divided by the winding South River, Jinju is one of Korea's most beautiful cities.

University Map:



APCBEES FORTHCOMING CONFERENCES

<http://www.cbees.org/events/>

DATE	NAME		PUBLICATION
Dec. 27-28, 2014, Phuket, Thailand	ICABT 2014	2014 2nd International Conference on Agriculture and Biotechnology (ICABT 2014) www.icabt.org	Volume of Journal (IPCBEES, ISSN: 2010-4618)
	ICESB 2014	2014 4th International Conference on Environment Science and Biotechnology (ICESB 2014) www.icesb.org	Journal of Environmental Science and Development (IJESD, ISSN:2010-0264)/ International Journal of Bioscience, Biochemistry and Bioinformatics (IJBBB, ISSN: 2010-3638)
	ICCSE 2014	2014 3rd International Conference on Chemical Science and Engineering (ICCSE 2014) www.iccse.org	International Journal of Chemical Engineering and Applications (IJCEA, ISSN:2010-0221)
Jan. 10-11, 15, 2014, Dubai, UAE	ICEBE 2015	The aim objective of the 2015 International Conference on Environment and Bio-Engineering http://www.icebe.org/	Journal of Environmental Science and Development (IJESD, ISSN:2010-0264)/ International Journal of Bioscience, Biochemistry and Bioinformatics (IJBBB, ISSN: 2010-3638)
	ICPPE 2015	2015 2nd International Conference on Petroleum and Petrochemical Engineering http://www.icppe.org/	International Journal of Environmental Science and Development (IJESD, ISSN:2010-0264)
	ICGCE 2015	2015 2nd International Conference on Geological and Civil Engineering http://www.icgce.org/	Volume of Journal (IPCBEES, ISSN: 2010-4618)
Jan. 24-25, 2015, Taipei, Taiwan	ICFEE 2015	2015 5th International Conference on Future Environment and Energy http://www.icfee.org/	Journal of Clean Energy Technologies (JOCET, ISSN: 1793-821X)
	ICBBB 2015	2015 5th International Conference on Bioscience, Biochemistry and Bioinformatics http://www.icbbb.org/	Volume of Journal (IPCBEES, ISSN: 2010-4618)
	ICCCH 2015	2015 4th International Conference on Climate Change and Humanity http://www.iccch.org/	APCBEE Procedia (Journal under Elsevier, ISSN: 2212-6708)

2014 APCBEES JINJU CONFERENCES

Feb. 08-09, 2015, Rangoon, Burma	ICOGE 2015	2015 International Conference on Geological Engineering http://www.icoge.org/	International Journal of Geological Engineering (IJGE, ISSN: 2301-3818)
	ICERE 2015	2015 International Conference on Environment and Renewable Energy http://www.icere.org/	Journal of Environmental Science and Development (IJESD, ISSN:2010-0264)
	ICFES 2015	2015 International Conference on Food and Environmental Sciences http://www.icfes.org/	International Journal of Food Engineering (IJFE, ISSN: 2301-3664)
Feb. 14-15, 2015, Amsterdam, Netherlands	ICESD 2015	2015 6th International Conference on Environmental Science and Development http://www.icesd.org/	Journal of Environmental Science and Development (IJESD, ISSN:2010-0264)
	ICCCP 2015	2015 5th International Conference on Chemistry and Chemical Process http://www.cbees.org/events/	International Journal of Chemical Engineering and Applications (IJCEA, ISSN:2010-0221)
	ICCGE 2015	2015 4th International Conference on Clean and Green Energy http://www.iccge.org/	Journal of Clean Energy Technologies (JOCET, ISSN: 1793-821X)
Mar. 10-11, 2015, Seoul, South Korea	ICFEB 2015	2015 6th International Conference on Food Engineering and Biotechnology http://www.icfeb.org/	International Journal of Food Engineering (IJFE, ISSN: 2301-3664); Journal of Medical and Bioengineering (JOMB, ISSN: 2301-3796)
	ICBET 2015	2015 5th International Conference on Biomedical Engineering and Technology http://www.icbet.org/	Volume of Journal (IPCBEE, ISSN: 2010-4618)
	ICEII 2015	2015 5th International Conference on Environment and Industrial Innovation http://www.iceii.org/	International Journal of Innovation, Management and Technology (IJIMT, ISSN: 2010-0248); International Journal of Environmental Science and Development (IJESD, ISSN:2010-0264)
Mar. 19-20, 2015, Florence, Italy	ICCBS 2015	2015 2nd International Conference on Chemical and Biological Sciences http://www.iccbs.org/	International Journal of Chemical Engineering and Applications (IJCEA, ISSN:2010-0221); International Journal of Bioscience, Biochemistry and Bioinformatics (IJBBB, ISSN: 2010-3638)
	ICCUE 2015	2015 2nd International Conference on Civil and Urban Engineering http://www.iccue.org/	International Journal of Engineering and Technology (IJET, ISSN:1793-8236)

2014 APCBEES JINJU CONFERENCES

	ICFSN 2015	2015 2nd International Conference on Food Security and Nutrition http://www.icfsn.org/	Volume of Journal (IPCBEES, ISSN: 2010-4618)
Apr. 6-7, 2015, Kyoto, Japan	ICCOE 2015	2015 2nd International Conference on Coastal and Ocean Engineering http://www.iccoe.org/	Journal of Environmental Science and Development (IJESD, ISSN:2010-0264)
	ICCFE 2015	2015 2nd International Conference on Chemical and Food Engineering http://www.iccfe.org/	International Journal of Chemical Engineering and Applications (IJCEA, ISSN:2010-0221); International Journal of Food Engineering (IJFE , ISSN: 2301-3664)
	ICBAE 2015	2015 International Conference on Biotechnology and Agriculture Engineering http://www.icbae.org/	Journal of Advanced Agricultural Technologies (JOAAT, ISSN:2301-3737); Journal of Medical and Bioengineering (JOMB, ISSN: 2301-3796)
Apr. 24-25, 2015, Istanbul, Turkey	ICESE 2015	2015 5th International Conference on Environment Science and Engineering	Volume of Journal (IPCBEES, ISSN: 2010-4618)
	ICLST 2015	2015 5th International Conference on Life Science and Technology	Journal of Life Sciences and Technologies (JOLST, ISSN: 2301-3672)
	ICBFS 2015	2015 5th International Conference on Biotechnology and Food Science	International Journal of Food Engineering (IJFE , ISSN: 2301-3664); Journal of Medical and Bioengineering (JOMB, ISSN: 2301-3796)

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Presentation Tracking Contents

SESSION-1 (ICAAS 2014) Venue: Building 459, Room 102 (1st Floor) Session Chair: Associate Prof. Suparman Time: 1:30pm-3:30pm			SESSION-2 (ICAAS 2014&ICEBS 2014) Venue: Building 459, Room 310 (3rd Floor) Session Chair: Prof. Fangyun Cheng Time: 1:30pm-3:30pm		
PAGE	PAPER ID	PRESENTER	PAGE	PAPER ID	PRESENTER
6	A0014	Shafeeqa Shahrudin	12	A0013	Norhanizan Usaizan
6	A0015	Mohammad Sadegh Allahyari	12	A0028	Sutikno
7	A0020	Kitsada Pitija	13	A3011	Prabhakaran Soundararajan
7	A0021	Suparman	13	A3013	Hao Wei
8	A0027	Natedara Chanutsa	14	Q0013	Sandra Dawn Burgos
8	A3008	Abinaya Manivannan	15	Q0014	Nisa Pakvilai
9	A3009	Chung Ho Ko	15	Q0018	Waraphan Phornwisetsirikun
9	A3010	Hye Min Kim	15	Q0030	Panawan Suttiarporn
10	A3012	Sowbiya Muneer	16	Q0034	Ali Mohammadi Torkashvand
10	A3014	Yoo Gyeong Park	16	Q3008	Fazilah Ariffin
11	A3015	Yuze Chen	17	Q1003	Siti Hazirah Mohamad Fauzi
11	A3017	Siwei Zhang	17	Q0016	Surat Hongsisong
			17	Q2004	T. Kerdnoi
SESSION-3 (ICEBS 2014) Venue: Building 459, Room 311 (3rd Floor) Session Chair: Prof. Ridzwan Bin Hashim Time: 1:30pm-3:30pm			SESSION-4 (ICEBS 2014) Venue: Building 459, Room 102 (1st Floor) Session Chair: Prof. Chan Jin Park Time: 3:50pm-5:40pm		
PAGE	PAPER ID	PRESENTER	PAGE	PAPER ID	PRESENTER
18	Q0004	Saleh F. Magram	23	Q0015	Rungruang Janta
19	Q0007	Prapamon Seeprasert	24	Q0024	Norhazimah A. H.
19	Q0022	My Linh Nguyen	24	Q0054	Merry Sianipar
19	Q0026	Lakhveer Singh	25	Q0056	Rattanaporn Baojungharn
20	Q0029	Torpong Kreetachat	25	Q0057	Samson Mekbib Atnaw
20	Q0032	Nathiya Kreetachat	25	Q0061	Mutiyaporn Paungbut

2014 APCBEES JINJU CONFERENCES

20	Q0042	Siti Norsita Mohd Rawi	26	Q0062	Thidarat Papone
21	Q0050	Jie Cao	26	Q0066	Anantachai Suwannakom
21	Q0051	Hasmanie Binti Abdul Halim	27	Q0068	Supaporn Kookkhunthod
21	Q0064	Marjorie Baynosa	27	Q1002	Josefina B. Janier
22	Q2007	M. Nasrullah	27	Q2003	Hilal ARSLAN
22	Q3004	Norli, Ismail			
22	Q0017	Visanu Tanboonchuy			
23	Q0040	Waraphan Phornwisetsirikun			
<p align="center">SESSION-5 (ICEBS 2014) Venue: Building 459, Room 310 (3rd Floor) Session Chair: Associate Prof. NORLI ISMAIL Time: 3:50pm-5:40pm</p>			<p align="center">SESSION-6 (ICEBS 2014 & ICAFS 2014) Venue: Building 459, Room 311 (3rd Floor) Session Chair: Prof. Byoung Ryong Jeong Time: 3:50pm-5:50pm</p>		
PAGE	PAPER ID	PRESENTER	PAGE	PAPER ID	PRESENTER
28	Q0035	Anusorn Boonpoke	32	Q0005	Ridzwan Bin Hashim
28	Q0036	Sittichai Pimonsree	33	Q0043	Poajanee Norfun
29	Q0037	Wara Dyah Pita Rengga	33	Q0055	Jinwon Kwon
29	Q0038	Chanakarn Khamkaew	33	Q2006	Nallusamy Sivakumar
29	Q0039	Susira Bootdee	34	Q3003	Norhashimah Morad
30	Q0047	Byung-Kuk Sohn	34	Q3005	Lisa Gaik Ai Ong & Ai Lan Chew
30	Q0048	Kyung-Nam Kang	34	S1001	Joanna Tess Masilungan-Manuel
31	Q0052	Ali Sadr Vaghefi	35	S1005	Tazhibayeva S.
31	Q0065	Yu-Long Chao	35	S1006	Fronthea Swastawati
31	Q0069	Sheng-Chi Lin	36	S1007	Fronthea Swastawati
32	Q1005	Chefi Triki	36	S2001	A. K. Aremu
			36	Q0011	Asmeda Rajab

