2016 APCBEEES TOKYO CONFERENCE
ABSTRACT

April 08-09, 2016

HOTEL SUNROUTE PLAZA SHINJUKU

Tokyo, Japan

Sponsored and Published by
# Table of Contents

2016 APCBEEES Tokyo Conference Introductions .......................... 10

Presentation Instructions .................................................. 12

Keynote Speaker Introductions ........................................... 13

Brief Schedule for Conferences .......................................... 16

Detailed Schedule for Conferences ...................................... 17

**Session 1**

T0006: De Novo Transcriptome Characterization and Growth Related Gene Expression Profiling of Diploid and Triploid Bighead Catfish (*Clarias Macrocephalus*) ........................................ 18

*Satid Chatchaipun, Jin-Hyoung Kim, Robert H. Devlin, and Uthairat Na-Nakorn*

T0017: Using Satellite Image to Estimate the Effects of El Nino Occurrence on Agriculture in Gunung Kidul, Yogyakarta, Indonesia .................................................. 19

*Bayu Dwi Apri Nugroho*

T0018: Drying Characteristics of Crackers from Sorghum Using Tray Dryer in Different Drying Air Velocities ................................................................. 20

*Devi Yuni Susanti, Joko Nugroho Wahyu Karyadi, and Siti Mariyam*


*Hanim Z Amanah, Sri Rahayoe, and Anne I Amelia*

T0021: A New Continuous Cell Line of *Spodoptera exigua* and its Susceptibility to *Autographa californica* Multicapsid Nucleopolyhedrovirus .................................................. 22

*Sudawan Chaeychomsri, Win Chaeychomsri, Motoko Ikeda, and Michihiro Kobayashi*

T0026: Identifying Optimal Cultivation Conditions for Enhanced DHA Production of an Indigenous Heterotrophic Microalga .................................................. 23

*Ya-Ting Yang, Chun-Yen Chen, Wen-Lung Lee, and Jo-Shu Chang*

F0018: Agrochemical Smart Nano-delivery Systems for Improved Efficiency and Safety .................................................. 24

*Haixin Cui, Yan Wang, Bo Cui, Xiang Zhao, and Changjiao Sun*

F0030: Construction and Characterization of Controlled-release Nano-delivery Systems for Pesticide .................................................. 25

*Yan Wang, Haixin Cui, Changjiao Sun, and Xiang Zhao*

**Session 2**

T0014: Application of Sweetwater as Potential Carbon Source for Rhamnolipid Production by Marine *Pseudomonas Aeruginosa* UMTKB-5 .................................................. 26

*Mohamad Azran Faris Mohamad Azemi, Noor Fazielawanie Mohd Rashid, Jasnizat Saidin,*
Abdul Wahid Mohd Effendy, and Kesaven Bhubalan

T0023: High Sensitivity RF Biosensors for Dielectric Characterization of HepG2 Cells
Yu-Fu Chen, Kuan-Yu Chen, Hung-Wei Wu, Yong-Han Hong, and Hsin-Ying Lee

T0024: Effects of Large Volume Crocodile Blood Collection on Hematological Values of Siamese Crocodiles (Crocodylus siamensis)
Win Chaeychomsri, Sirilak Yamkong, Jindawan Siruntawineti, and Sudawan Chaeychomsri

T0027: Land Use Change Impacts on Sediment Yield in a Tropical Watershed
Samkele Tfwala and Yu-Min Wang

T2006: Bioremediation of Hydrocarbons by Microorganisms
Wichuda Klawech, Alita Yeunyong, and Phaichit Chaipolrit

T3010: Developing a High Recovery Technologies for Succinic Acid (SC)
Tzu-Yu Li, Chieh-Lun Cheng, Yung-Chung Lo, and Jo-Shu Chang

T3011: A Two-Stage Fermentation Strategy for Butanol Production with Immobilized Clostridium acetobutylicum
Wei-Yu Chou, Yung-Chung Lo, Chieh-Lun Cheng, and Jo-Shu Chang

T3013: High-Performance Succinic acid Production by PVA-Immobilized Actinobacillus succinogenes Using Carbohydrate-Rich Microalgae as Feedstock
Ya-Yun Chiang, Chieh-Lun Cheng, Yung-Chung Lo, Shin-Te Wu, I-Son Ng, and Jo-Shu Chang

T2008: Physicochemical Changes of Film Containing Anthocyanin Extracted from Purple Potato Sweet (Ipomoea batatas L.) as an Indicator of Chicken Nugget Deterioration during Storage
Ismed

Session 3

C0004: Effect of Plateau Length on the Transformation of Internal Solitary Waves
Ming-Hung Cheng, Chih-Min Hsieh, Robert R. Hwang, and Shih-Feng Su

C0005: Modeling Drill Cuttings Sedimentation on Corals for Exploration Wells Z-1 and B-1, Offshore Sabah
Su Yean Teh and Hock Lye Koh

C0006: A General Technical Route for Parameter Optimization of Ship Motion Controller Based on Artificial Bee Colony Algorithm
Yanfei Tian, Liwen Huang, and Yong Xiong

C0008: Simulation of Potentially Catastrophic Landslide Tsunami in North West Borneo Trough
Hock Lye Koh, Wai Kiat Tan, Su Yean The, and Mui Fatt Chai

C0009: Experimental Study of Effect the Spreading Buoyant Gravity Current on the Coastal Environment
Dhafar Ibrahim Ahmed, Noureddine Latrache, and Blaise Nsom
2016 APCBEEs Tokyo Conferences

C0010: Comparison of Three Ways to Assess the Influence Range of Different Artificial Reefs

HUANG Luiyi, CHENG Hui, TANG Yanli, YANG Qian, and WAN Xinxin

C0013: Analysis of Egyptian Red Sea Fishing Ports

Mahmoud Sharaan, Abdelazim Negm, Moheb Iskander, and Mohamed El-Tarabily

C0014: Water Wave Interaction by Dual Cylindrical Cylinders with Partial Porous Area

Min-Su Park, Youn-Ju Jeong, and Young-Jun You

Session 4

F0008: Alpha-amylase Inhibitors from Indigenous Medicinal Plants in Dak Lak Province, Vietnam

Van Bon Nguyen, Quang Vinh Nguyen, Anh Dzung Nguyen, and San-Lang Wang

F0035: Physical and Electrochemical Characterization of Palm Kernel Shell Biochar (PKSB) as Supercapacitor

Wan Azlina Wan Ab Karim Ghani, Praveen Shawn Fernandez, Mohamad Qayyum Halele, Shafreeza Sobri, and Jasronita Jasni

F0026: Comprehensive Study on The Solvation of Sr(II) Ion

Ika N. Fitriani, Wiji Utami, Niko Prasetyo, and Ria Armunanto

F0027: Fast Biofilm Formation and its Role on Power Generation in Palm Oil Mill Effluent Fed Microbial Fuel Cell

Maksudur R. Khan, Baranitharan E., Prasad D. M. R. and Chin K. Cheng


Jay V. Ranoco, JC Justine G. Quintos, and Rizalinda L. de Leon

F0032: Design of an Air-Sparged Tubular Photocatalytic Reactor for the Degradation of Methylene Blue: Mass-Transfer Limitation Studies

Patrick Ramoso and Maria Lourdes Dalida

F0039: Effect of the Bromine-Based Flame Retardant Plastic Pyrolysis of Hydrotalcite

N. Morita, Y. Kawabata, T. Wajima, A. T. Saito, and H. Nakagome

F0049: Phosphate Adsorption on Zirconium-Loaded Activated Carbon, and its Application for Phosphate Recovery from Deep Seawater

Takaaki Wajima

F0051: Implementation of Cleaner Production in a Natural Dye Batik Industry SME: A way to Enhance Biodegradability of Batik Wastewater?

Elzavira Felaza and Cindy Rianti Priadi

F3011: Photo-physical Properties Investigation of 5,10-diphenylindeno-[2,1-a]-indene (DPI) Derivatives for the D-π-A Type Dye Sensitized Solar Cell (DSSC)

Ken-Hao Chang, Chin-Kuen Tai, and Bo-Cheng Wang
F2004: Crystal Structures and Gas Sorption Properties of Zn-bpe MOFs with Flexible Ditopic α,ω-Alkane(or Alkene) Dicarboxylate Bridging Ligands

Seong Huh, Hyun-Chul Kim, and Youngmee Kim

Session 5

T0005: Range Operation Studies of Microbial Fermentation for Biopharmaceutical Applications
Lalintip Hocharoen and Kosin Jittipanyakul

T0009: Wound Healing Property of Carica papaya Stem in Albino Rats
Marzha Ancheta and Liwayway Acero

T0012: Micromotion Improvement and Applications for Abutment-Implant System by Uniform Design and Kriging Interpolation
Yung-Chang Cheng, Deng-Huei Lin, and Cho-Pei Jiang

T0210: Low-Dose tPA Improves Thrombolytic Therapy in a Thromboembolic Stroke Model of Mouse
Ju-Hui Fu

F0028: Assessing the Efficacy of Honey in Diabetes Using SD Rats: by Comparing Acacia honey, Manuka honey, and Sugar
Wonsang Gong, Seoyeon Shin, Seongmin Choi, Minjeong Kim, and Høj Kim

F0038: Antimicrobial Activity of Fatty Acid Salts Against Microbial in Koji-Muro
Aya TANAKA, Mariko ERA, Takayoshi KAWAHARA, Takahide KANYAMA, and Hiroshi MORITA

F0045: Phytochemical Screening, Total Phenolic Content, Antioxidant Activities and Cytotoxicity of Dendrobium signatum Leaves
Thitiphan Chimsook

F1002: Blumea balsamifera (sambong) Tea as a Therapeutic Drink for Calcium Oxalate Stones
Charlimagne M. Montealegre, and Rizalinda L. De Leon

F1003: TCH-1122 Liposome Improves the Anticancer Activity and Water Solubility of TCH-1122
Chiung-Wen Hsu, Stephen Chu-Sung Wu, Hui-Min Cheng, Chih-Hua Tseng, Ming-Hong Yen, and Feng-Lin Yen

T0016: Effects of Lactic Fermentation on Total Polyphenol Content and Antioxidant Activity of Ginger (Zingiber officinale Roscoe)
Tezar Ramdhun and Anil Kumar Anal

T0019: Hypoglycemic Effect of Aloe Vera Instant on the Diabetic Rats
Chatarina Wariyah and Riyanto

Session 6

T0004: Quality of Probiotic Fermented Milk Produced Using Lactobacillus casei Subsp. casei r-68 with the Variation of Skim Milk and Sucrose
Usman Pato, Yusmarini Yusuf, Evy Rossi, Rianida Yunaira, and Tiara Githasari
T2009: Optimizing the Formulation of Instant Baby Porridge Based on Snakehead Fish (Channa striata) Flour and Canna Tuber (Canna edulis) Flour

Abu Bakar Tawali, Meta Mahendradatta, Amran Laga, and Haryati

F0013: Bubble Motion along Inclined Superhydrophobic and Superhydrophilic Surfaces

Wen Lin, Cyuan-Jhang Wu, Yu-Jane Sheng, and Heng-Kwong Tsao

F0006: The Effect of Computer-Assisted Instruction for Elementary School Students in Food Safety and Sanitation Knowledge

Yi-Horning Lai

F0009: The Organic Food Purchase Behaviour: Using ECT to Explore Customers’ Satisfaction

Hui Hsin Huang

F0036: The Storage Stability of Anthocyanins in Mao (Antidesma thwaitesianum Müll. Arg.) Juice and Concentrate

Arunya Prommakool and Kriangkrai Phattayakorn

F0040: Empirical Modeling on Hot Air Drying of Fresh and Pre-treated Pineapples

Yardfon Tanongkankit, Kanjana Narkprasom, and Nukrob Narkprasom

F0041: Extraction of Coconut Oil from Coconut Milk Foulants Using Enzyme

Phanida Saikhwan, Chanokchat Nuchnet, Wannakarn Wanakayont, and Angkana Suksa-nga

F0042: Effect of Pre-treatment Methods on the Color Changes during Drying of Red Chilli (Capsicum frutescens L.)

Rattapon Saengrayap, Natthida Boonlap, and Uthumporn Boonsorn

F0043: The Effect of Molecular Sieve Addition on the Thermal Decomposition of Japanese Cedar

M. Nakayasu, N. Morita, Y. Kawabata, T. Wajima, and H. Nakagome

F0044: Feasibility Study of Aseptic Homogenization: Affecting Homogenization Steps on Quality of Sterilized Coconut Milk

Chanthima Phungamngoen, Tippuns Asawajinda, Rujira Santad, and Wanticha Sawedboworn

Session 7

F0010: Facile Fabrication of Hysteresis-free Liquid-infused Surfaces with Anti-smudge Performance

Cheng-Chung Chang, Yu-Jane Sheng, and Heng-Kwong Tsao

F0011: Contact Angle Hysteresis Induced by Surface Roughness: Dissipative Particle Dynamics Simulation

Cheng-Hsing Juan and Heng-Kwong Tsao

F0012: Contact Angle Hysteresis on Graphene Surfaces and Hysteresis-free Behavior on Oil-infused Graphite Surfaces

Chuan-Chang Wu, Yu-Jane Sheng, and Heng-Kwong Tsao
F0014: Room Temperature Sintering of Nano/Micron Sized Copper Powders

*Meng-Ting Su, Chuan-Chang Wu, Yu-Jane Sheng, and Heng-Kwong Tsao*

F0017: Total Wetting on a Surface: High Surface Energy of Solid or Low Surface Tension of Liquid

*Yu-Lan Hsu, Cyuan-Jhang Wu, Yu-Jane Sheng, and Heng-Kwong Tsao*

F0052: Water Diffusion Modelling of CFB Fly Ash Thermoset Composite

*Ralph P. Villa, Herbie T. Bella, Julian S. De Lara, and Romelando R. Juanatas*

F1001: Improvement of Physicochemical Characteristics, Water Solubility, and Skin Penetration: Eupragit E100-Polyvinyl Alcohol Loaded-7,3′,4′-Trihydroxyisoflavone

*Pao-Hsien Huang, Stephen Chu-Sung Hu, Chiang-Wen Lee, Anchi Yeh, Chih-Hua Tseng, and Feng-Lin Yen*

F1005: Green Composites Using Lignocellulosic Waste and Cellulosic Fibers from Corn Husks

*Terence P. Tumolva, Danilo S. Enguero Jr, Tracy Joy C. Laus, and Benedict A. Requejo*

CA034: Evolution of Fracture Aperture Mediated by Dissolution

*Batoul Mahmoudzadeh, L. Liu, L. Moreno, and I. Neretnieks*

**Session 8**

F0033: Antioxidant Properties and Functional Characteristics of Radiation-Processed Fungal Chitosan from *Ganoderma tsugae* Residue

*Shih-Jeng Huang, Tsun-Hsien Tung, and Shu-Yao Tsai*

F0037: Improving the Yield of Glucoamylase and α-amylase in Solid-state Co-culture

*Haruka Takefuji, Junko Ninomiya, and Hiroshi Morita*

F0050: Semi-mechanistic Model Applied to the Search for Economically Optimal Conditions and Blending of Gasoline Feedstock for Steam-cracking Process

*Adam Karaba, Petr Zámostný, Tomáš Herink, and Vendula Kelbichova*

F1004: Investigation of Various cyclodextrin-784isoflavone Inclusion Complex

*Chih-Yu Hsu, Feng-Lin Yen, Stephen Chu-Sung Hu, Chih-Hua Tseng, and Pao-Hsien Huang*

CA033: A Method for Recovery of N-methyl 2-pyrrolidone from Wastes of Solvent Regeneration Unit in 1,3-Butadiene Extraction Plant

*H. R. Mortaheb, Akbar Bolhasani, F. Meshkini, F. Ghaemmaghami, and K. Tabar Heidar*

F3004: Recycling of Greenhouse Gas and Odor Management in Landfills near Urban Area

*Eun Ji Woo, Ji Ye Yoo, and Chan Jin Park*

F3005: The Optimization of Greenhouse Gas Reduction and Odor Emissions from Wastewater Treatment Plant

*Ji Ye Yoo, Eun Ji Woo, and Chan Jin Park*

F3007: Synthesis of Molecularly Imprinted Polymer for Sterol Separation

*Ratanaporn Yuangsawad, Nuengruthai Chuayrueng, Nattawat Nonthanasin, Krittin Binabdullah, and Duangkamol Na-Ranong*

F3008: Advances in Super-Saturation Measurement and Estimation Methods for Sugar Crystallisation Process
Aniediong M. Umo and Sunday B. Alabi

F3009: Predictive Model for Post-Seeding Super-Saturation of Sugar Massecuite in a Fed-Batch Evaporative Crystalliser

Aniediong M. Umo and Sunday B. Alabi

Session 9

C0015: Experimental Study on Shape Dependent Wave Force of Offshore Support Structures

Youn-Ju Jeong, Min-Su Park, and Young-Jun You

C0018: An Experimental Method for Evaluating the Overturn Moment of Submerged Structures

Young-Jun You, Youn-Jun Jeong, and Min-Su Park

C0019: Observations of Acoustic Propagation due to Subaqueous Sand Dunes in the South China Sea

Linus Y. S. Chiu, Andrea Y. Y. Chang, and Davis B. Reeder

C1002: An Experimental Study of Wave Runup: Cylinder Fixed in Waves versus Cylinder Surging in Still Water

Deping Cao, Edmond Lo Yat-Man, Wei Jian, and Zhenhua Huang

C1003: Onshore and Offshore Wind Speed Distributions at the Western Waters in Taiwan

Jui-Fang Tsai, Hsien-Kuo Chang, Jin-Cheng Liou, and Lian-Sheng Ho

C3001: Investigation of Mangrove Biomass Potential in Indragiri Hilir Wetlands, Indonesia

Ari Sandhyavitri, Fajar Restuhadi, Rudianda Sulaiman, Sigit Sutikno, and Koichi Yamamoto

C3003: Shoreline Change Analysis of Peat Soil Beach in Bengkalis Island Based on GIS and RS

Sigit Sutikno, Ari Sandhyavitri, Muhammad Haidar, and Koichi Yamamoto

Poster Session

T2007: Viral Diversity in Patients with Dengue Infection

Patcharawan Sujayanont, Kwanrutil Chin-inmanu, Teo Yiik Ying, Prida Malasit, and Prapat Siriaphol

F0015: Ion-exchange Resin Based on Phenyl Functionalized Polystyrene-butadienerandomcopolymer

Wu Bin Ying, Sat Byeol Park, Ji Uk Jang, Jin Yong Seol, and Bum Jae Lee

F3006: Three-dimensional Co-DpyDtolP-MOF with Hexagonally Oriented Micropores

Youngmee Kim, Hyun-Chul Kim, and Seong Huh

F3010: Pretreatment of Corn Stover Using Hot-water for Sugar Recovery and Fermentable Sugars Production

Tae Hyun Kim, Jun Seok Kim, and Kyeong Keun Oh

F0007: Efficient Production of Mastoparan B, a Cationic Venom Peptide, Via the Artificial Oil Body-cyanogen Bromide Purification Platform

Feng-Chia Hsieh and Tzyy-Rong Jinn
F0056: Optimization of Processing Technology of Compound Dandelion Wine

Jixuan Wu, Guangren Sun, Xiuli Cao, Yuting Han, Xuesong Sun, Huan Zhang, Lei Zhang, and Ataer Dang

F2001: Research on Catalytic Oxidation Pretreatment of Organic Pesticide Wastewater with High Concentration

Jing Jiang

F2002: Study on the Varying Patterns of Total Phospholipids, Selenium, Phosphorus, Reducing Sugar and Total Sugar, Hydrolyzed Amino Acids in the Velvet Antler of Northeast Sika Deer in Growth Period

Shu-li Wang and Yan-mei Wang

F3001: The Research on Analytical Method of Diquat Dibromide in Diquat Technical Concentrates

Bing Gu and HuiMing Xiao

F3003: Purification of Food-grade Magnesium Chloride

Lianmin Ji, Zhiqi Liu, Lijuan Li, Xuexue Song, Zhongmin Zeng, and Feng Nie

Conference Venue

Note

Feedback Information
Welcome to CBEES 2016 conferences in Tokyo, Japan. The objective of the Tokyo conference 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 Coastal and Ocean Engineering, Biotechnology and Agriculture Engineering, Chemical and Food Engineering.

**2016 3rd International Conference on Coastal and Ocean Engineering (ICCOE 2016)**

※ Paper publishing and index: ICCOE 2016 papers will be published in one of the following journals:

- **Journal of Environmental Science and Development (IJESD, ISSN:2010-0264)**, and all papers will be included in the Engineering & Technology Digital Library, and indexed by WorldCat, Google Scholar, Cross ref, ProQuest, CABI.
- **International Journal of Engineering and Technology (IJET, ISSN: 1793-8236)**, and all the papers published in IJET will be indexed by Chemical Abstracts Services (CAS), DOAJ, Engineering & Technology Digital Library, Google Scholar, Ulrich Periodicals Directory, Crossref, ProQuest, Electronic Journals Library, Index Copernicus, EI (INSPEC, IET).

※ Conference website and email: [http://www.iccoe.org/](http://www.iccoe.org/); iccoe@cbees.net.

**2016 2nd International Conference on Biotechnology and Agriculture Engineering (ICBAE 2016)**

※ Paper publishing and index: ICBAE 2016 papers will be published in the one of the following journals:

- **Journal of Advanced Agricultural Technologies (JOAAT, ISSN:2301-3737)**, and all papers will be included in the Ulrich’s Periodicals Directory, Google Scholar, Engineering & Technology Digital Library, Crossref and Electronic Journals Digital Library.
- **International Journal of Bioscience, Biochemistry and Bioinformatics (IJBBB, ISSN: 2010-3638)**, and all the papers published in IJBBB will be included in the Engineering & Technology Digital Library, and indexed by WorldCat, Google Scholar, Cross ref, ProQuest.

※ Conference website and email: [http://www.icbae.org/](http://www.icbae.org/); icbae@cbees.net.
Paper publishing and index: ICCFE 2016 papers will be published in volume of MATEC Web of Conferences (ISSN: 2261-236X), which is indexed by Ei Compendex, Inspec, DOAJ, CPCI (Web of Science) and Scopus.

Or will be published in one of the following journals:

- International Journal of Chemical Engineering and Applications (IJCEA ISSN: 2010-0221), which will be indexed by Chemical Abstracts Services (CAS), Ulrich’s Periodicals Directory, CABI, DOAJ, Electronic Journals Library, Google Scholar, Engineering & Technology Digital Library, ProQuest, and Crossref.

- International Journal of Food Engineering (IJFE, ISSN: 2301-3664), which will be indexed by Chemical Abstracts Services (CAS), Ulrich’s Periodicals Directory, CABI, DOAJ, Electronic Journals Library, Google Scholar, Engineering & Technology Digital Library, ProQuest, and Crossref.

Conference website and email: http://www.iccfe.org/; iccfe@cbees.net.

Paper publishing and index: JCCEA 2016 1st papers will be published in International Journal of Chemical Engineering and Applications (IJCEA ISSN: 2010-0221), which will be indexed by Chemical Abstracts Services (CAS), Ulrich’s Periodicals Directory, CABI, DOAJ, Electronic Journals Library, Google Scholar, Engineering & Technology Digital Library, ProQuest, and Crossref.

Conference website and email: http://www.ijcea.org/jccea/1st/; ijcea@ejournal.net.
Presentation Instructions

Instructions for Oral Presentations

Devices Provided by the Conference Organizer:
Laptop Computer (MS Windows Operating System with MS PowerPoint and Adobe Acrobat Reader)
Digital Projectors and Screen
Laser Sticks

Materials Provided by the Presenters:
PowerPoint or PDF Files (Files should be copied to the Conference laptop at the beginning of each Session.)

Duration of each Presentation (Tentatively):
Regular Oral Presentation: about 10 Minutes of Presentation and 5 Minutes of Question and Answer
Keynote Speech: about 25 Minutes of Presentation and 5 Minutes of Question and Answer

Instructions for Poster Presentation

Materials Provided by the Conference Organizer:
The place to put poster

Materials Provided by the Presenters:
Home-made Posters
Maximum poster size is A1
Load Capacity: Holds up to 0.5 kg

Best Presentation Award
One Best Oral Presentation will be selected from each presentation session, and the Certificate for Best Oral Presentation will be awarded at the end of each session on April 8-9, 2016.

Dress code
Please wear formal clothes or national representative of clothing.
Keynote Speaker Introductions

Keynote Speaker I

Prof. Kokyo Oh
Center for Environmental Science in Saitama, Japan

Prof. Kokyo Oh is a senior researcher in Center for Environmental Science in Saitama, Japan. He graduated with his MSci degree and Ph.D. degree (soil science) in Chinese Academy of Sciences, and was honored as a STA research fellow by Japan government from 1997 to 1999. The research areas include soil science, environmental conservation, environmental chemistry, and atmospheric environment. His current research is mainly on soil remediation, environmental agronomy, atmospheric PM2.5 and water environment conservation. He has published more than 90 publications.

Topic: “Development of Environmental Friendly Agriculture in Japan”

Abstract: Japan is a mountainous country with high population density and very limited flat land, which is quite unfavorable for agriculture and environmental conservation. However, Japan has developed its own way on environmentally friendly agricultural systems to conserve the multiple functions of agricultural fields, and to ensure the agriculture maintains at high level in quality, productivity, safety and environmental conservation. This study briefly introduces and discusses how Japan develops the environmental friendly agriculture to ensure the high quality, high productivity, and high safety of agricultural products as well as environmental conservation from government policies and feasible environmental friendly farming practices. The system of environmental friendly agriculture in Japan possibly provides important information for sustainable agriculture and environmental protection in the world.
Keynote Speaker II

Prof. Chan Jin Park
Incheon National University, Republic of Korea

Prof. Park Chan Jin graduated from Korea University, and got Master and PhD degrees in same university. His major fields of research are the air pollution control, greenhouse gas technology and odor management technology. His another interests is green growth policy. He is now full-professor in Incheon National University at Urban and Environmental Engineering School. He is member of INU ensemble taking part in piano (Chamber orchestra of his University).


Abstract: The characteristics of food waste and the environmental treatment with the generation of bio-energy and regeneration of new materials in Korea was investigated. The characteristics of odor generation and greenhouse gas during the process of food waste recycling were analyzed and the minimization of odor and greenhouse gas was considered in chemical and biological and other processes. The odor management methods were illustrated with the optimal treatment technology in the food waste treatment facilities. On-line odor monitoring systems which are operating were considered to explain the accurate and fast methods of odor measuring systems in the fields of food waste recycling plants. Finally the reduction of greenhouse gas emission was illustrated with the food recycling process to make solutions for the recent protocol of climate changes.
Keynote Speaker III

Prof. Miwako Hosoda
Seisa University, Tokyo, Japan

Prof. Miwako Hosoda. Vice-President of Seisa University, has been doing her sociological research in the field of healthcare and environmental sciences. She is interested in the balance of human activities and advocates the protection of natural environments. Dr. Hosoda is also working to achieve a sustainable healthcare policy, and promotes the public’s participation in the medical domain, both globally and locally. She graduated from the Department of Sociology at the University of Tokyo in 1992, and received an MA and PhD in Sociology from the University of Tokyo. After spending time as a research fellow in the Japan Society for the Promotion of Science, she studied at Columbia University Mailman School of Public Health and Harvard School of Public Health. Dr. Hosoda is now serving as a board member for the International Sociological Association, Research Committee of Sociology on Health.

Topic: “Sato-yama, Sato-umi---The Natural Environment and Human Beings Living in Harmony”

Abstract: Having pointed out the need for sustainable development within the global society, preservation of the ecosystem and the promotion of a setting where nature and humans can coexist is becoming increasingly important. In Japanese, the places where nature and people coexist are called “Sato-yama” and “Sato-umi”, roughly translated as moutain village and sea village, respectively. I wish to exemplify this symbiotic relationship between humans and nature by raising cases such as the aquaculture of oyster in Kesennuma, Miyagi Prefecture, the breeding of the Toki in the Sado Island of Niigata Prefecture, and the breeding of the Konotori in Tomioka Town in Hyogo Prefecture. I think there is much we can learn through discussing such instances where human-beings are able to contribute to the protection of our environment.
## Brief Schedule for Conferences

### Day 1

**April 8, 2016 (Friday) 10:00–18:35**

**Venue: Hotel Lobby & Cattleya Room**

Arrival Registration, Keynote Speech, and Conference Presentation

<table>
<thead>
<tr>
<th>Morning</th>
<th>Venue: Hotel Lobby</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arrival Registration</td>
<td>10:00-12:00</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Afternoon</th>
<th>Venue: Cattleya Room (Level 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening Remarks</td>
<td>13:20–13:30</td>
</tr>
<tr>
<td>Keynote Speech I</td>
<td>13:30–14:00</td>
</tr>
</tbody>
</table>

**Session 1:** 14:00–16:00 (8 presentations-Topic: “Agriculture Science”)

Coffee Break & Photo Taking 16:00–16:20

**Session 2:** 16:20–18:35 (9 presentations-Topic: “Bioscience”)

### Day 2

**April 9, 2016 (Saturday) 8:50–19:00**

**Venue: Fuyo Room & Cattleya Room & Minuet Room & Freesia Room**

Arrival Registration, Keynote Speech, and Conference Presentation

**Morning Conferences**

<table>
<thead>
<tr>
<th>Venue: Fuyo Room (Level 1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opening Remarks</td>
</tr>
<tr>
<td>Keynote Speech II</td>
</tr>
<tr>
<td>Keynote Speech III</td>
</tr>
<tr>
<td>Coffee Break &amp; Photo Taking</td>
</tr>
</tbody>
</table>

**Session 3:** 10:30–12:30 (8 presentations-Topic: “Ocean Engineering”)

Lunch 12:30–13:30

<table>
<thead>
<tr>
<th>Morning</th>
<th>Venue: Hotel Restaurant</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Afternoon Conferences</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Session 4:</strong> 13:30–16:15</td>
</tr>
<tr>
<td><strong>Session 5:</strong> 13:30–16:15</td>
</tr>
<tr>
<td><strong>Session 6:</strong> 13:30–16:15</td>
</tr>
</tbody>
</table>

**Venue: Cattleya Room (Level 2)**

11 presentations-Topic: “Chemical Engineering”

11 presentations-Topic: “Medical Science”

11 presentations-Topic: “Food Technology”

Coffee Break 16:15–16:30

**Session 7:** 16:30–18:45

**Session 8:** 16:30–19:00

**Session 9:** 16:30–18:15

**Venue: Cattleya Room (Level 2)**

9 presentations-Topic: “Chemical Engineering”

10 presentations-Topic: “Chemical Engineering”

7 presentations-Topic: “Ocean Engineering”

Dinner: 19:00

<table>
<thead>
<tr>
<th>Venue: Freesia Room (Level 2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>11 presentations-Topic: “Ocean Engineering”</td>
</tr>
</tbody>
</table>

**Venue: Hotel Restaurant**

### Tips:

Please reach conference room 10 minutes before the session beginning to upload PPT.
Detailed Schedule for Conferences

April 8, 2016 (Friday)

Venue: Hotel Lobby

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>10:00–18:35</td>
<td>Arrival and Registration</td>
</tr>
</tbody>
</table>

Note: (1) The registration can also be done at any time during the conference.
(2) The organizer doesn’t provide accommodation, and we suggest you make an early reservation.
(3) One Best Oral Presentation will be selected from each oral presentation session, and the Certificate for Best Oral Presentation will be awarded at the end of each session on April 8-9, 2016.

Afternoon, April 8, 2016 (Friday)

Venue: Cattleya Room (Level 2)

13:20–13:30 | Opening Remarks &
Prof. Chan Jin Park
Incheon National University, Republic of Korea

13:30–14:00 | Keynote Speech I
Prof. Kokyo Oh
Center for Environmental Science in Saitama, Japan
Topic: “Development of Environmental Friendly Agriculture in Japan”

Let’s move to the Sessions!
Session 1

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Afternoon, April 8, 2016 (Friday)

Time: 14:00~16:00

Venue: Cattleya Room (Level 2)

Session 1: 8 presentations-Topic: “Agriculture Science”

Session Chair: Prof. Kokyo Oh

T0006 Presentation 1 (14:00~14:15)

De Novo Transcriptome Characterization and Growth Related Gene Expression Profiling of Diploid and Triploid Bighead Catfish (*Clarias Macrocephalus*)

Satid Chatchaipun, Jin-Hyoung Kim, Robert H. Devlin, and Uthairat Na-Nakorn

Kasetsart University, Thailand

Abstract—Bighead catfish (*Clarias macrocephalus*) is one of the most important aquacultured species in South East Asia. In this work, we obtained transcriptome information of bighead catfish the Illumina HiSeq 2000 sequencing platform. Approximately 68,227,832 raw reads were generated from liver tissues. Totally, 53,149 unigenes were assembled, with an average length of 765 bp and N50 length of 1,283 bp. Approximately 33,428 (62.89%) unigenes could be annotated according to their homology with matches in the Nr, Nt, SwisseProt, COG, GO, or KEGG databases. Gene expression comparison revealed that 362 up-regulated and 83 down-regulated unigenes were annotated with at least two fold changes between diploid and triploid bighead catfish liver. Fifteen genes from DEGs selected based upon growth related genes for qRT-PCR showed that the expression profiles of DEGs were in consistent with results from RNA-Seq analysis. Regarding ploidy levels, we found that most of the revealed genes expression showed a lack of gene dosage effect in triploids relative to the diploid counterpart, however, with minor exception. We hope that the sequence information regarding the liver transcriptome of bighead catfish can provide some insight into the understanding of transcriptome profile and valuable resources for further research.
Afternoon, April 8, 2016 (Friday)

Time: 14:00~16:00

Venue: Cattleya Room (Level 2)

Session 1: 8 presentations-Topic: “Agriculture Science”

Session Chair: Prof. Kokyo Oh

T0017 Presentation 2 (14:15~14:30)

Using Satellite Image to Estimate the Effects of El Nino Occurrence on Agriculture in Gunung Kidul, Yogyakarta, Indonesia

Bayu Dwi Apri Nugroho

Universitas Gadjah Mada, Indonesia

Abstract—Although many studies has been investigated the effects of El Nino in Indonesia, but little evidence is available for estimation the effects of El Nino using satellite images in the hilly areas. This study is to estimate the effects of El Nino occurrence on agriculture using statistical and satellite images. The study was conducted at Gunung Kidul district, one of district in Yogyakarta Special Province, which is located in hilly region, during 2002 – 2007. In El Nino year shows negative index of Southern Oscillation Index (SOI) and decrease in rainfall and wetland paddy production. Also based on landsat ETM+ in October 12, 2006, mean of NDVI in wetland paddy (-0.1) and rain-fed dry land crops (-0.2) was low vegetation. Comparing with normal year, in landsat ETM+ in October 12, 2004, mean of NDVI in wetland paddy (0.05) and rain-fed dry land crops (0.02), it is indicated vegetation is high. Correlation between mean of NDVI and percentage of planted area in wetland paddy, both of the year, El Nino and normal year was in good correlation, which in El Nino year \( R^2 = 0.685 \) and in normal year \( R^2 = 0.716 \) and rain-fed dry land crops, only in El Nino year had good correlation with \( R^2 = 0.431 \). The result in correlation because cropping pattern in both of land, in wetland paddy with monoculture, the amount of crop only one crop was planted but in rain-fed dry land crops with intercropping, sometimes in rain-fed dry land crops is double counted in each crop. Also, in rain-fed dry land crops is depend on water sufficiency in the land, if enough of water, the correlation is not good because intercropping was done as usual.
Afternoon, April 8, 2016 (Friday)

Time: 14:00~16:00

Venue: Cattleya Room (Level 2)

Session 1: 8 presentations-Topic: “Agriculture Science”

Session Chair: Prof. Kokyo Oh

T0018 Presentation 3 (14:30~14:45)

Drying Characteristics of Crackers from Sorghum Using Tray Dryer in Different Drying Air Velocities

Devi Yuni Susanti, Joko Nugroho Wahyu Karyadi, and Siti Mariyam

Universitas Gadjah Mada, Indonesia

Abstract—A tray dryer using source of energy from biomass and solar was developed to dry sorghum crackers. In this dryer, solar dryer was combined with a heating system of drying air through pipes above the furnace while cooking sorghum stem’s juice. This research investigated drying characteristics of sorghum crackers using the dryer in various drying air velocities. This drying air velocity was conducted at 0.0176; 0.0194 and 0.0272 m$^3$/s. The higher drying air velocity blown into the dryer through pipes above the furnace, the lower temperature of drying air. There is a little different of drying air and crackers temperature in each tray. Sorghum crackers was dried from 186.78% d.b. to approximately 13.88% d.b. The mechanism of drying consist of constant rate periode and falling rate periode. The constant value during constant rate period in each drying air velocity was 0.0109; 0.0102 and 0.0098 %/s while during falling rate period velocity was 0.0085; 0.0089 and 0.0085 %/s. The drying air velocity affected constant value during constant periode significantly. These model were valid to predict moisture content during drying and describe the drying process in the dryer.
Afternoon, April 8, 2016 (Friday)

Time: 14:00~16:00

Venue: Cattleya Room (Level 2)

Session 1: 8 presentations-Topic: “Agriculture Science”

Session Chair: Prof. Kokyo Oh

T0020 Presentation 4 (14:45~15:00)


**Hanim Z Amanah**, Sri Rahayoe, and Anne I Amelia

Universitas Gadjah Mada, Indonesia

*Abstract*—Simple hybrid dryer is a dryer that combine greenhouse effect and other source of energy such as LPG or biomass. This dryer could increase the drying rate and the visual quality of dried product. The objectives of this research are to evaluate heat and mass transfer of sliced red beet root that dried using simple hybrid dryer by determining the drying rate constant (k) and convective heat transfer coefficient (h). There are two different capacities and three drying methods that applied in this research. The result shows that the convective heat transfer coefficient (h) for hybrid dryer ranging from 4.44 to 14.11 J s\(^{-1}\) m\(^{-2}\)°C. The drying rate constants (k) for hybrid dryer ranging from 0.35 to 2.95 s\(^{-1}\), while for dryer by employing greenhouse effect ranging from 0.3 to 3.48 s\(^{-1}\). The k-values for both dryer are slightly higher than k-value of open direct sun dryer that ranging from 0.4 to 1.75 s\(^{-1}\) respectively. Employing greenhouse effect and hybrid dryer resulted in the drying rate higher than by employing direct sun drying.
Afternoon, April 8, 2016 (Friday)

Time: 14:00~16:00

Venue: Cattleya Room (Level 2)

Session 1: 8 presentations-Topic: “Agriculture Science”

Session Chair: Prof. Kokyo Oh

T0021 Presentation 5 (15:00~15:15)

A New Continuous Cell Line of Spodoptera exigua and its Susceptibility to Autographa californica Multicapsid Nucleopolyhedrovirus

Sudawan Chaeychomsri, Win Chaeychomsri, Motoko Ikeda, and Michihiro Kobayashi
Kasetsart University, Thailand

Abstract—A continuous cell line, designated KU-SENL-1 (SENL1), has been established from minced neonate larvae of Spodoptera exigua (Lepidoptera: Noctuidae) treated with collagenase. The primary culture was maintained in TC100 medium supplemented with 10% fetal bovine serum (FBS), 3% Helicoverpa armigera hemolymph and incubated at 27°C. This continuous cell line was cultured in TC100 medium supplemented with 10% FBS and subcultured at 5-day intervals. The cell line consisted of a mixture of two cell types, epithelial-like cells and spindle-shaped cells, both of which grown as attached monolayers. The population doubling time of this new cell line during the logarithmic phase of growth was 45 h. RAPD and DAF analyses confirmed that the origination of the SENL1 cell line was S. exigua. The susceptibility of this cell line to the Autographa californica multicapsid nucleopolyhedrovirus (AcMNPV) was high and by 3 days postinfection (pi) greater than 90% of the cells contained occlusion bodies (OBs) or were greatly hypertrophied, indicating they were infected. This cell line was highly effective for budded viruses (BV) titration of the AcMNPV. Therefore, the SENL1 cell line will be a valuable new tool for biological characterization of AcMNPV in cell culture and also for protein expression using the baculovirus-insect cell expression vector system.
Afternoon, April 8, 2016 (Friday)

Time: 14:00~16:00

Venue: Cattleya Room (Level 2)

Session 1: 8 presentations-Topic: “Agriculture Science”

Session Chair: Prof. Kokyo Oh

T0026 Presentation 6 (15:15~15:30)

Identifying Optimal Cultivation Conditions for Enhanced DHA Production of an Indigenous Heterotrophic Microalga

Ya-Ting Yang, Chun-Yen Chen, Wen-Lung Lee, and Jo-Shu Chang

National Cheng Kung University, Taiwan

Abstract—Docosahexaenoic acid (DHA), the omega-3 polyunsaturated fatty acid (ω-3 PUFA) helps in preventing cardiovascular and Alzheimer's disease. The major industrial source of DHA is fish oil, yet there are concerns of fish's sustainability, contamination, and its complex fatty acid profile. In this study, a heterotrophic microalga with a high cellular DHA content, was examined for its potential to serve as a promising alternative source for DHA. The optimal cultivation conditions (temperature and pH) for cell growth and DHA accumulation were first determined in serum bottles with aeration and agitation. When grown at 25°C and pH 7.5, the strain gave a highest specific growth rate, biomass concentration, DHA content, and DHA productivity of 0.19 h⁻¹, 5.23 g/L, 6.49% and 184.61 mg/L/d, respectively. To further enhance DHA productivity, a 5-L stirred-tank bioreactor was used to grow the strain. The effect of different agitation rate (0, 50, 100 and 150 rpm) on algal biomass concentration and DHA productivity was investigate. The results show that when the cultivation was operated at an agitation rate of 100 rpm, the highest biomass productivity (4.15 g/L/d) and DHA productivity (266 mg/L/d) were achieved when the aeration rate was 0.4 vvm. It was also found that when the aeration rate was increased from 0.4 to 1.2 vvm, the biomass productivity and DHA productivity could be further increased to 4.59 g/L/d and 379 mg/L/d, respectively. This reveals that aeration conditions play a crucial role in the performance of biomass and DHA productivity in this strain.
Afternoon, April 8, 2016 (Friday)

Time: 14:00~16:00

Venue: Cattleya Room (Level 2)

Session 1: 8 presentations-Topic: “Agriculture Science”

Session Chair: Prof. Kokyo Oh

F0018 Presentation 7 (15:30~15:45)

Agrochemical Smart Nano-delivery Systems for Improved Efficiency and Safety

Haixin Cui, Yan Wang, Bo Cui, Xiang Zhao, and Changjiao Sun

Institute of Environment and Sustainable Development in Agriculture, Chinese Academy of Agricultural Sciences, China

Abstract—Pesticide is the foundation for preventing major biological disasters and the safeguard of national food security. However, conventional pesticide formulation process has presented some serious disadvantages, such as use of harmful solvent, poor dispersion, dust drift, etc. Also, pesticide loss of up to 70-90% in the field spraying process has caused some serious social concerns in food safety and ecological environment. Therefore, developing an efficient, safe, and green pesticide formulation process has become a national and strategic need to protect the national food and ecological security through nano-delivery system of pesticides with nanotechnology to improve the efficacy and safety of pesticides. Advance of nanotechnology offers some new approaches for the pesticide development: 1) developing novel formulations of high efficacy and safety pesticide; 2) developing sustainable agriculture system; and 3) controlling pesticide food residues and environmental pollution. The pesticide nano-delivery systems will be comprehensively introduced with perfect properties of water dispersion, chemical stability, efficacy, duration and degradation.
Afternoon, April 8, 2016 (Friday)

Time: 14:00~16:00

Venue: Cattleya Room (Level 2)

Session 1: 8 presentations-Topic: “Agriculture Science”

Session Chair: Prof. Kokyo Oh

F0030 Presentation 8 (15:45~16:00)

Construction and Characterization of Controlled-release Nano-delivery Systems for Pesticide
Yan Wang, Haixin Cui, Changjiao Sun, and Xiang Zhao

Institute of Environment and Sustainable Development in Agriculture, Chinese Academy of Agricultural Sciences

Abstract—The rapid development of nanoscience and nanotechnology provides new ways to improve the performances of conventional pesticide formulations by constructing nano-delivery system, including nano-sphere and nano-capsule etc. We have successfully loaded some typical pesticides using environmentally friendly and low-cost nanomaterials as carriers and constructed the controlled-release nano-delivery system with different structures. The nano-delivery systems can significantly improve the performance of controllable release, photostability, and water-solubility of pesticide by controlling the structure, size and loading content, which is favorable to improve the bioavailability and reduce the residues of pesticides.
Session 2

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Afternoon, April 8, 2016 (Friday)

Time: 16:20~18:35

Venue: Cattleya Room (Level 2)

Session 2: (9 presentations-Topic: “Bioscience”)

Session Chair: Prof. Meta Mahendradatta

T0014 Presentation 1 (16:20~16:35)

Application of Sweetwater as Potential Carbon Source for Rhamnolipid Production by Marine Pseudomonas Aeruginosa UMTKB-5

Mohamad Azran Faris Mohamad Azemi, Noor Fazielawanie Mohd Rashid, Jasnizat Saidin, Abdul Wahid Mohd Effendy, and Kesaven Bhubalan

Universiti Malaysia Terengganu, Malaysia

Abstract—Rhamnolipid (RL), the major component of biosurfactant is commonly produced via bacterial fermentation from selected carbon sources. Biosynthesis of RL is initiated by nitrogen limitation and presence of excess carbon source. RL is completely biodegradable and non-toxic. Applications of RL include the production of fine chemicals, enhancement of biodegradation, food industries and pharmaceutical products. In this study, efforts were taken to biosynthesize RL using Pseudomonas aeruginosa UMTKB-5 isolated from marine sediment. The bacterium was fed with cane sugar refinery by-product, sweetwater as sole carbon source and 5 different types of nitrogen sources. Three different of carbon to nitrogen (C/N) ratios were tested in this study. The sweetwater was first characterized for its components. Sweetwater is mainly comprised of water (79.9 wt%) and glycerol (10.3 wt%). The total sugar content is 17.4 wt% and mainly comprises of sucrose, glucose and fructose. Biosynthesis of RL was carried out in 50 mL shaken-flask cultures, incubated at 30°C for 72 h at 200 rpm. Sulfuric acid was used to hydrolyze rhamnose groups of RL in the culture supernatant into methyl furfural. The hydrolyzed sample containing rhamnose was reacted with orcinol (1-3-dihydroxy-5-methylbenzene). The concentration of RL produced was measured spectrometrically at 421 nm. The surface tension was measured using Du Nouy Ring method. The result obtained showed that production of RL using sweetwater was in the range of 42 – 50 mg/L. The cell biomass was recorded in the range of 329 – 729 mg/L. The
lower surface tension (47.26 mN/m) activity occurred when ammonium chloride with C/N ratio of 35 was applied. The findings of this study demonstrate the potential application of agro-industrial by-product, sweetwater as a renewable carbon feedstock for RL production via bacterial fermentation.
Afternoon, April 8, 2016 (Friday)

Time: 16:20~18:35

Venue: Cattleya Room (Level 2)

Session 2: (9 presentations-Topic: “Bioscience”)

Session Chair: Prof. Meta Mahendradatta

T0023 Presentation 2 (16:35~16:50)

High Sensitivity RF Biosensors for Dielectric Characterization of HepG2 Cells

Yu-Fu Chen, Kuan-Yu Chen, Hung-Wei Wu, Yong-Han Hong, and Hsin-Ying Lee

Kun Shan University, Taiwan

Abstract—The radio frequency (RF) biosensors using semi-lumped LC resonator-based and transmission-line-based structure for cancer cells (HepatomaG2, HepG2) dielectric characterization are proposed. The LC resonator-based biosensor is formed by a parallel circuit of an interdigital electrodes and two spiral transmission lines, operated frequency at 23.8 GHz. The transmission-line-based biosensor is formed by the microwave coplanar waveguide transmission line so as to provide the high sensitive detection with very wide frequency bandwidth up to 40 GHz. The biosensors could be applied on the applications to cancer cells dielectric characterization for post-surgical diagnosis.
Afternoon, April 8, 2016 (Friday)

Time: 16:20~18:35

Venue: Cattleya Room (Level 2)

Session 2: (9 presentations-Topic: “Bioscience”)

Session Chair: Prof. Meta Mahendradatta

T0024 Presentation 3 (16:50~17:05)

Effects of Large Volume Crocodile Blood Collection on Hematological Values of Siamese Crocodiles (Crocodylus siamensis)

Win Chaeychomsri, Sirilak Yamkong, Jindawan Siruntawineti, and Sudawan Chaeychomsri
Kasetsart University, Thailand

Abstract—Freeze-dried blood from Siamese crocodile (Crocodylus siamensis) is a natural product which can serve as food supplement. For collecting a large volume of blood, the blood is commonly collected at the time of slaughter from crocodile via a closed system of collection at the slaughterhouse. Thus, the present study aimed to develop the blood collection process without killing animals in order to extend their life and keep them healthy. The collection process was performed from 20 captive breeding crocodiles. These crocodiles were 4-5 years of age, with an average weight 27 kg, and 191 cm in length. They were randomly divided into control group and 3 experimental groups. Ten milliliters of blood were collected from control group every week for 12 weeks. Experimental group 1, blood samples were withdrawn 150 ml on week 1 and 12 and collected 10 ml weekly on week 2-11. Experimental group 2, blood samples were withdrawn 150 ml on week 1 and 12 and collected 10 ml on week 4 and 8. Experimental group 3, blood samples were withdrawn 150 ml on week 1 and 12. All blood samples were subjected to hematological analysis. The results showed that there were no significant differences (p < 0.05) in hematological values among the blood samples taken from experimental group 1, 2, 3 and those of the control group at all time intervals. The results of hematological values as well as the results obtained from the behavioral observation revealed that large volume blood collection up to 150 ml or 25% of the total blood volume had no detrimental effect on crocodile health and behavior. Therefore, large volume blood withdrawal can be accepted and used for harvesting of crocodile blood without killing animals. The results from the present study offer a possible alternative to conventional way for commercial crocodile blood collection.
Afternoon, April 8, 2016 (Friday)

Time: 16:20~18:35

Venue: Cattleya Room (Level 2)

Session 2: (9 presentations-Topic: “Bioscience”)

Session Chair: Prof. Meta Mahendradatta

T0027 Presentation 4 (17:05~17:20)

Land Use Change Impacts on Sediment Yield in a Tropical Watershed

Samkele Tfwala and Yu-Min Wang

National Pingtung University of Science and Technology, Taiwan

Abstract—In the present study, we observed land cover for four time periods; 1984, 1996, 2005 and 2015. Satellite datasets with different spatial and temporal resolutions were used for land cover/use classification and these included; Landsat 4 MSS (1984), Landsat 5 MSS (1996), Landsat TM (2005) and Landsat 8 OLI TIRS (2015). The former 2 satellite images had four bands with 60 m resolution and the latter had a 30 m resolution with 7 and 11 bands, respectively. Land cover classification was carried out in ENVI 5.3 from EXELIS visual information systems. The classification process was based on K-Means (unsupervised classification). This was accomplished by using generated random sample points from the final classified image on Google earth 7.1. The overall classification accuracy was 88 % and 92.86 % for the Landsat 2005 and Landsat 2015, respectively. A Kappa coefficient, which measures the agreement between classification and ground truth pixels was 0.675 for 2005 and 0.829 for 2015. Further, the overall sediment yield increased from 1984 to 2015, with a sharp increase observed between 1984 and 1996. In 1984, the yield was 86,862 m$^3$, and 127,912 m$^3$, 149,218 m$^3$ and 176,048 m$^3$, respectively for 1996, 2005 and 2015.
Afternoon, April 8, 2016 (Friday)

Time: 16:20~18:35

Venue: Cattleya Room (Level 2)

Session 2: (9 presentations-Topic: “Bioscience”)

Session Chair: Prof. Meta Mahendradatta

T2006 Presentation 5 (17:20~17:35)

Bioremediation of Hydrocarbons by Microorganisms

Wichuda Klawech, Alita Yeunyong, and Phaichit Chaipolrit

Thaksin University, Thailand

Abstract—The aim of this research to studied the hydrocarbons remediation by microorganisms which isolate and screen the waste lubricating oil degrading-microorganisms from oil contaminated soil that collected from Songkhla and Phatthalung Provinces, Thailand. The isolation and screening of microorganisms showed the existence of 81 isolates (60 bacteria isolates and 21 yeast isolates) capable of degrading the waste lubricating oil (WLO). The most active microorganism in the assimilation of WLO and bio-emulsifier production, GR 2.4 bacterial isolate, when characterized on nutrient agar plates, appeared to have smooth edge and an off-white color. Morphological examination indicated the shape of short rod, gram negative bacteria without endospore. Determination of the nucleotide sequence of the gene encoding 16S rDNA identified the GR 2.4 isolate to be Serratia sp. This isolate showed 60.64±0.07 % WLO degrading activity (measured by weight loss method) when grow on basal salt medium (BSM) containing 1 g/L WLO as sole carbon source, whereas the control showed 15.00±0.00%. Upon cultivation in the same media without nitrogen source, initial pH 8 or at the optimum temperature, 37 °C, WLO degrading activity was 61.22 ±0.09%, 63.00±0.00% and 65.85±0.08%, respectively. In addition, Serratia sp. GR 2.4 produced bio-emulsifier with xylene with the best emulsification activity (%EA) of 54.55±0.00%. Moreover, the crude bio-emulsifier was stable at pH range 2.0-10.0. It was stable in temperature between 28-30 °C for 24 h and still retained activity at 100 °C for 1 h.
Afternoon, April 8, 2016 (Friday)

Time: 16:20~18:35

Venue: Cattleya Room (Level 2)

Session 2: (9 presentations-Topic: “Bioscience”)

Session Chair: Prof. Meta Mahendradatta

T3010 Presentation 6 (17:35~17:50)

Developing a High Recovery Technologies for Succinic Acid (SC)

Tzu-Yu Li, Chieh-Lun Cheng, Yung-Chung Lo, and Jo-Shu Chang

Department of Chemical Engineering of National Cheng Kung University, Taiwan

Abstract—Succinic acid is one of the major products in TCA cycle with varieties of industrial applications. In 2020, the global succinic acid production size is expected to approach 642.45 thousand tons per year. Due to the environmental and sustainability issues, the share of biological succinic acid production would be increasing. As a result, fermentative succinic acid production could become an emerging industry. In this study, calcium hydroxide was used to recover succinic acid for enhancing productivity and reducing the production cost. The experimental parameters to be studied include (1) effect of protein concentration of in the broth, (2) effect of pH and temperature during the reaction, (3) effect of the loading of calcium hydroxide, and (4) effect of the concentration of succinic acid in the broth. Our preliminary study showed that the optimum conditions for succinic acid recovery are as follows: temperature, 25°C; pH, 3.8; calcium hydroxide loading, 70 g/L. Under these conditions the recovery efficiency could reach 25% when the succinic acid concentration in the fermentation broth was 60 g/L. The ultimate goal of this study is to develop a low production cost and high recovery efficiency technology that is sustainable and easy to commercialize.
Afternoon, April 8, 2016 (Friday)

Time: 16:20~18:35

Venue: Cattleya Room (Level 2)

Session 2: (9 presentations-Topic: “Bioscience”)

Session Chair: Prof. Meta Mahendradatta

T3011 Presentation 7 (17:50~18:05)

A Two-Stage Fermentation Strategy for Butanol Production with Immobilized *Clostridium acetobutylicum*

Wei-Yu Chou, Yung-Chung Lo, Chieh-Lun Cheng, and Jo-Shu Chang

National Cheng Kung University, Taiwan

*Abstract*—Previous study showed that continuous butanol production with immobilized *Clostridium acetobutylicum* suffered a poor glucose utilization efficiency of 53% at HRT of 6 h. Thus, in this work, a two-stage fermentation strategy was applied for butanol production to improve the conversion of glucose. In this two-stage process, the carbon source (totally 60 g/L of glucose) was equally divided into two parts. The first half of the carbon source was used in the first stage for the generation of butyric acid via acidogenesis metabolism and the butyric acid was then used as the precursor for butanol production in the next stage, where the second half of carbon source was used for butanol production via solventogenesis pathway. Response surface methodology (RSM) was used to optimize the conditions for the continuous culture, showing that the optimal condition was: glucose concentration, 30-33 g/L; butyric acid, 5-7 g/L; HRT, 6 h. Under this optimal condition, the immobilized *C. acetobutylicum* could obtain a butanol productivity, butanol concentration, and glucose utilization of 1.2 g/l/h, 7.2 g/l, and 95%, respectively. For the two stage operation experiments, the 30 g/L glucose was fermented in the first stage using the same strain under acidogenic conditions to produce 7 g/L butyrate in the culture broth. The effluent of the first-stage process was used to prepare medium for butanol production in the second stage (solventogenic stage). The butanol fermentation in batch culture using 30 g/L glucose supplemented with 5 g/L butyrate produced in the the first stage showed similar performance to that obtained from using synthetic butyric acid. Therefore, the two-stage fermentation strategy has been successfully applied in butanol production to increase the butanol productivity.
Afternoon, April 8, 2016 (Friday)

Time: 16:20~18:35

Venue: Cattleya Room (Level 2)

Session 2: (9 presentations-Topic: “Bioscience”)

Session Chair: Prof. Meta Mahendradatta

T3013 Presentation 8 (18:05~18:20)

High-Performance Succinic acid Production by PVA-Immobilized Actinobacillus succinogenes Using Carbohydrate-Rich Microalgae as Feedstock

Ya-Yun Chiang, Chieh-Lun Cheng, Yung-Chung Lo, Shin-Te Wu, I-Son Ng, and Jo-Shu Chang

National Cheng Kung University, Taiwan

Abstract—Succinic acid is a dicarboxylic acid produced as an intermediate of aerobic metabolism and the tricarboxylic acid cycle. Succinic acid can be used in the biodegradable polymers, cosmetics, drugs, surfactants, green solvents, antiseptics and herbicides. It is also a precursor for many specialty chemicals. The production of succinic acid from conventional fossil oil refining is expensive, requiring complicate process and costly pollutant treatment. With the expected growth in the market for succinic acid, it is of great demand to develop more sustainable and cost-effective succinic acid producing process. In this study, we used fermentation system to produce succinic acid via immobilized Actinobacillus succinogenes ATCC55618 with the polyvinyl alcohol (PVA). To further enhance succinic acid production, we optimized the culture conditions (including PVA particle loading, initial glucose concentration and carbon dioxide supply) that would improve succinic acid synthesis. Using 15% PVA particle loading, the succinic acid production was performed to achieve a maximum succinate concentration of 25.5 g/L, productivity of 3.23 g/L/h and yield of 0.875 mol/mol at pH 7.0 and 37°C under carbon dioxide supply 0.02 vvm (45%) and 40 g/L glucose. Comparing with free-cell system, the immobilized cells exhibited higher succinate titer, productivity and yield. In addition, the third generation feedstock-microalgae was utilized to develop a cost effective process for succinic acid production. Using the carbohydrate-rich microalgae as the substrate could obtain higher succinate concentration and yield than glucose. For this result, we developed a low-pollution and high-efficiency microalgae-based bio-succinic acid production system, which is not only free of carbon dioxide emissions but also sustainable.
Afternoon, April 8, 2016 (Friday)

Time: 16:20~18:35

Venue: Cattleya Room (Level 2)

Session 2: (9 presentations-Topic: “Bioscience”)

Session Chair: Prof. Meta Mahendradatta

T2008 Presentation 9 (18:20~18:35)

Physicochemical Changes of Film Containing Anthocyanin Extracted from Purple Potato Sweet (*Ipomoea batatas* L.) as an Indicator of Chicken Nugget Deterioration during Storage

Ismed

Andalas University, Indonesia

Abstract—The aim of this study was to evaluate the characteristics of film with anthocyanin extracted from purple potato sweet as an indicator of chicken nugget deterioration during storage periods. A film made of starch, glycerol, and anthocyanin was prepared using the casting technique. Chicken nugget samples were placed in a polypropylene containing an anthocyanin film on the top side. This research used completely randomized design with two factors. First factor consisting temperature storage (25±1°C, 3±1°C, -121°C), second factors consisting time of storage (0, 7, 14, 21, 24 days). The results showed that the indicator could be used to determine the changes of colour (L*, a, b, H\(_\text{ab}\)) and total colour difference (TDC). Chicken nugget samples were analyzed for moisture content and pH value. The L, a, and H\(_\text{ab}\) . The total colour difference showed significant difference (p<0.05) of film indicator during storage. Moisture content and pH value of chicken nugget samples showed significant difference (p<0.05). Based on results indicates the presence of film with anthocyanin as indicator was able to detect changes in the chicken nugget during storage through changes in the colour, moisture and pH value.

Let’s move to next day!
Morning, April 9, 2016 (Saturday)

Venue: Fuyo Room (Level 1)

<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Speaker</th>
</tr>
</thead>
<tbody>
<tr>
<td>8:50–9:00</td>
<td>Opening Remarks</td>
<td>Prof. Miwako Hosoda Seisa University, Tokyo, Japan</td>
</tr>
</tbody>
</table>
| 9:00–9:30  | Keynote Speech III                         | Prof. Chan Jin Park Incheon National University, Republic of Korea
| 9:30–10:00 | Keynote Speech II                          | Prof. Miwako Hosoda Seisa University, Tokyo, Japan
|            | Topic: “Sato-yama, Sato-umi---The Natural Environment and Human Beings Living in Harmony” |                                             |
| 10:00–10:30| Coffee Break & Photo Taking                |                                              |

Let's move to the Sessions!
Session 3

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

April 9, 2016 (Saturday)

Time: 10:30~12:30

Venue: Fuyo Room (Level 1)

Session 3: (8 presentations-Topic: “Ocean Engineering”)

Session Chair: Prof. Miwako Hosoda

C0004 Presentation 1 (10:30~10:45)

Effect of Plateau Length on the Transformation of Internal Solitary Waves

Ming-Hung Cheng, Chih-Min Hsieh, Robert R. Hwang, and Shih-Feng Su

National Taiwan Ocean University, Taiwan

Abstract—The propagation and dissipation of internal waves over continental shelf bathymetry are complex phenomenon. The waveform would be re-generated while transmitting a submerged deep-shallow-deep topography. To study the effect of the marine topography on the evolution of an internal wave, numerical simulation is utilized to perform the flow evolution and waveform inversion of a large depression internal wave over a trapezoidal obstacle with different plateau. A finite volume based Cartesian grid method is adopted to solve the Reynolds averaged Navier-Stokes equations using a $k-\varepsilon$ model for the turbulence closure. Numerical results reveal that the re-generated waveform does not occur due to baroclinic wave. The shorter plateau length would induce strong vortex in back of the obstacle. Moreover, the wave amplitude, vorticity and turbulent kinetic energy are dissipated significantly. However, the level of the phenomenon decreases as the plateau length is larger than the wavelength.
April 9, 2016 (Saturday)

Time: 10:30~12:30

Venue: Fuyo Room (Level 1)

Session 3: (8 presentations-Topic: “Ocean Engineering”)

Session Chair: Prof. Miwako Hosoda

C0005 Presentation 2 (10:45~11:00)

Modeling Drill Cuttings Sedimentation on Corals for Exploration Wells Z-1 and B-1, Offshore Sabah

Su Yean Teh and Hock Lye Koh

Universiti Sains Malaysia, Malaysia

Abstract—Oil well drilling activities generate residues called drill cuttings that will be treated before being disposed onsite. When drill cuttings are released into the sea, drill cutting piles or mounds will form on the seabed. These pile formations may hinder future under-sea operation. They may have adverse impacts on corals if the thickness of the pile over the coral beds is persistently high. This simulation study is conducted at the drill cuttings release sites Z-1 and B-1 in the South China Sea off the coast of Sabah. This modelling study will assess the potential impacts of the pile formation on coral community and on the ecology in the dive site (shipwreck) nearby. For Z-1, the particles settle on the seabed far away from the corals and far away from the shipwreck sites. Hence they will have no adverse impact on the corals nor on the shipwreck site environment and ecology. For B-1, the coral site is located at a shorter distance from the discharge location. The pile height at the coral site varies between 0.05 mm to 0.5 mm. The average sedimentation rate varying between 3.1 to 31 mg/cm²/day occurs over a short duration of 3.875 days. This low sedimentation rate over a short duration will have insignificant impact on the corals.
April 9, 2016 (Saturday)

Time: 10:30~12:30

Venue: Fuyo Room (Level 1)

Session 3: (8 presentations-Topic: “Ocean Engineering”)

Session Chair: Prof. Miwako Hosoda

C0006 Presentation 3 (11:00~11:15)

A General Technical Route for Parameter Optimization of Ship Motion Controller Based on Artificial Bee Colony Algorithm

Yanfei Tian, Liwen Huang, and Yong Xiong

Wuhan University of Technology China

Abstract—The most practical application in industrial process control is still the conventional PID control algorithm. However, PID parameter tuning and optimizing, where the difficulty lies in as well, is an important issue in the field of automatic control. It is the direction to achieve global optimization of PID parameters using intelligent optimization algorithm. Aiming at the difficult problems in parameter tuning of PID controllers in industrial control, A parameter tuning and optimization method based on artificial bee colony algorithm is proposed, the parameter of PID controller need to be tuned is seen as the nectar source, the high-quality combination of parameters is searched using the unique role change mechanism of the bees; and the ITAE index is selected as the objective function for parameter optimization. Simulation implemented on MATLAB-Simulink proved the proposed process was of feasibility and availability in the optimization work. The process and results showed that proposed technical route was simple and feasible with strong adaptability, making it an effective computer aided offline parameter optimization method for PID controller.
April 9, 2016 (Saturday)

Time: 10:30~12:30

Venue: Fuyo Room (Level 1)

Session 3: (8 presentations-Topic: “Ocean Engineering”)

Session Chair: Prof. Miwako Hosoda

C0008 Presentation 4 (11:15~11:30)

Simulation of Potentially Catastrophic Landslide Tsunami in North West Borneo Trough

Hock Lye Koh, Wai Kiat Tan, Su Yean The, and Mui Fatt Chai

Sunway University, Malaysia

Abstract—Seismic–tectonic activity and sedimentary instability processes can generate submarine landslides that seriously damage seafloor infrastructures and generate large destructive tsunamis if the slide volume is high (more than 1 km³). Sedimentary instability had resulted in a submarine mass failure (SMF) along the North West Borneo Trough (NWBT). This paper presents numerical simulations for a potential landslide tsunami triggered by a SMF in NWBT by a combination of TUNA-LS and TUNA-M2. TUNA-LS simulates landslide tsunami generation based upon an empirical formulation for landslide tsunami initialization. TUNA-M2 solves the 2-D non-linear shallow water equations for simulating tsunami propagation, using tsunami initial conditions calculated by TUNA-LS as input. This landslide tsunami is potentially destructive, with source trough maximum wave height of 120 m. The waves in the front propagate forward in the primary dominant slide direction due northeast. Sabah, Brunei and Sarawak are located in the direction perpendicular to this primary dominant propagation direction. Hence the secondary waves travel southeast towards Sabah, southwest towards Brunei and Sarawak. Simulated offshore wave heights at 50 m depth may reach 15 m to 20 m. Run-up wave heights may exceed 45 m to 60 m depending on locations, exposing communities to extreme hazards.
April 9, 2016 (Saturday)

Time: 10:30~12:30

Venue: Fuyo Room (Level 1)

Session 3: (8 presentations-Topic: “Ocean Engineering”)

Session Chair: Prof. Miwako Hosoda

C0009 Presentation 5 (11:30~11:45)

Experimental Study of Effect the Spreading Buoyant Gravity Current on the Coastal Environment

**Dhafar Ibrahim Ahmed**, Noureddine Latrache, and Blaise Nsom

Université de Bretagne occidentale, France

*Abstract*—The experiments of injection gravity currents were completed in a rectangular basin by release the fresh water over a salty water surface at rest. The surface flow of lighter liquids horizontally can be considered as a special case of a two dimensional gravity current, and the spreading law of the fresh water is validated by using image processing technique to record the progress of the injection current. The jet fluid was colored and the digital video can have a variation of light intensity in order to obtain the shape of the outer boundary of the gravity current and its distance from the source point with relation to time, initial, or flow parameters of the jet source.
April 9, 2016 (Saturday)

Time: 10:30~12:30

Venue: Fuyo Room (Level 1)

Session 3: (8 presentations-Topic: “Ocean Engineering”)

Session Chair: Prof. Miwako Hosoda

C0010 Presentation 6 (11:45~12:00)

Comparison of Three Ways to Assess the Influence Range of Different Artificial Reefs

HUANG Luiyi, CHENG Hui, TANG Yanli, YANG Qian, and WAN Xinxin

Ocean University of China, China

Abstract—Artificial reefs have been constructed throughout the world, but there is no uniform method to assess the influence range of artificial reef. The physical influence on surrounding flow of artificial reef can be mainly represented by three kinds of flow pattern including upwelling current, wake flow and back eddy. In this paper we compare three different methods, based on influence length, influence area, and influence volume, to find out an effective method to indicate the impact effect of the artificial reef. The numerical method of renormalization group $k$-$\varepsilon$ turbulence model is used to calculate the characteristics of the flow field around four kinds of artificial reefs and the above three kinds of assessment methods are applied to compare the flow field. The results show that: 1. The influence volume is better than the other two in general; 2. Influence area and length can be a misjudgment sometimes especially when the artificial reef is asymmetric; 3. Influence area is a better way to show the diversity of wake flow; 4. Influence length cannot reflect the back eddy. It is recommended to use the influence volume as the main measurement assessing the influence range of artificial reef. Meanwhile, the influence area may be a good indicator to assess the wake flow and the influence length just be a simple comparison.
Session 3: (8 presentations-Topic: “Ocean Engineering”)  
Session Chair: Prof. Miwako Hosoda
C0013 Presentation 7 (12:00~12:15)

Analysis of Egyptian Red Sea Fishing Ports

Mahmoud Sharaan, Abdelazim Negm, Moheb Iskander, and Mohamed El-Tarabily

Egypt-Japan University of Science and Technology, Egypt

Abstract—This study aims to present a comprehensive analysis for four cases of Egyptian fishing ports that located on the sensitive environmental area on the Suez Gulf and the Red Sea coasts. The analysis includes the current environmental, planning, and facilities issues. The four investigated ports are the developed, undeveloped artificial fishing ports, natural fishing port, and landing site for fishing practices. The analyzed data are collected from different sources including field survey, visual observation (as a monitoring technique to update the collected data), personal interviews, discussion with the main stakeholders (fishers and administrators) and the available official reports. The current status of these fishing ports is highlighted. The results show that the investigated fishing ports are suffering from increasing of wastes forms with different levels. The findings associated with the catches issues of this sensitive area of the Red Sea and the related fishermen activities are discussed. Also, the results indicate a significant deterioration of the basic infrastructure of natural port and undeveloped artificial ports. A significant variance of the available facilities in the four ports is observed. The recommendation for the future improvements and expansions plans to increase the efficiency of each port are presented.
April 9, 2016 (Saturday)

Time: 10:30~12:30

Venue: Fuyo Room (Level 1)

Session 3: (8 presentations-Topic: “Ocean Engineering”)

Session Chair: Prof. Miwako Hosoda

C0014 Presentation 8 (12:15~12:30)

Water Wave Interaction by Dual Cylindrical Cylinders with Partial Porous Area

Min-Su Park, Youn-Ju Jeong, and Young-Jun You

Korea Institute of Civil Engineering and Building Technology, South Korea

Abstract—In the present study, the 3D numerical analysis method is developed with Eigenfunction expansion method to evaluate the wave forces acting on the array of dual cylindrical cylinders with partial porous area, which consist of an impermeable inner cylinder and a porous outer cylinder. The wave forces and water wave interaction on dual cylindrical cylinders with partial porous area are presented for various porosity depths, and the comparison between the impermeable cylinder and the permeable cylinder is made to examine the effects of porosity. From these results, the present method is very useful to evaluate the wave force and water wave interaction acting on the array of dual cylindrical cylinders with partial porous area.

Lunch

12:30-13:30

Hotel Restaurant
Session 4

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Cattleya Room (Level 2)

Session 4: 11 presentations-Topic: “Chemical Engineering”

Session Chair: Assoc. Prof. Terence P. Tumolva

F0008 Presentation 1 (13:30~13:45)

Alpha-amylase Inhibitors from Indigenous Medicinal Plants in Dak Lak Province, Vietnam

Van Bon Nguyen, Quang Vinh Nguyen, Anh Dzung Nguyen, and San-Lang Wang

Tamkang University, Taiwan

Abstract—Amylase inhibitors are substances that prevent certain starches from being absorbed by the body. The main use for amylase inhibitors is weight loss. Recent studies have shown that highly concentrated versions of amylase inhibitors may block the absorption of certain starches, which could lead to lower carbohydrate consumption and, theoretically, cause a person to lose weight. Dak Lak Province is located in the Central Highlands of Vietnam. This province has several national parks and nature reserves. The ethnic minorities that live in the buffer zones of national parks and nature reserves have valuable indigenous knowledge about traditional remedies from local medicinal plants for the treatment of diseases including cancer, diabetes, and other diseases. However, the use of traditional remedies is just based on personal experiences without any scientific evidence to support their use. Moreover, the quality of medicinal plants is also uncontrolled. Therefore, it is important to collect and evaluate the bioactivity of these medicinal plants based on indigenous knowledge and then discover the bioactive compounds in these plants, their bioactive properties and their relative contents within medicinal plants for purposes of quality control. In the present paper, we focus on the collection, screening and evaluation of α-amylase inhibitors derived from indigenous medicinal plants in Dak Lak Province. The trunk bark extract of Euonymus laxiflorus Champ (ELC extract) showed inhibitory activity against human saliva α-amylase with remarkably thermal stability. The ELC extract also showed potential inhibitory activity against porcine amylase than commercial products of Acarbose.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Cattleya Room (Level 2)

Session 4: 11 presentations-Topic: “Chemical Engineering”

Session Chair: Assoc. Prof. Terence P. Tumolva

F0035 Presentation 2 (13:45~14:00)

Physical and Electrochemical Characterization of Palm Kernel Shell Biochar (PKSB) as Supercapacitor

Wan Azlina Wan Ab Karim Ghani, Praveen Shawn Fernandez, Mohamad Qayyum Halele, Shafreeza Sobri, and Jasronita Jasni

Universiti Putra Malaysia

Abstract—A potential low cost and environmentally friendly supercapacitor has been prepared from Palm Kernel Shell Biochar (PKSB). In this study, physical and electrochemical properties of raw, activated and chemical treated (potassium hydroxide (KOH)) as supercapacitors such as high carbon content, high charge storage capacity and stable were evaluated. For physical analyses, the scanning electron microscopy (SEM) was used to study the surface morphology and surface area and porosity were measured using Brunaurer-Emmert-Teller (BET). The chemical treated PKSB shows the highest surface area values of 55.15 m²/g as compared to raw and activated samples with surface area are 0.17 m²/g and 19.32 m²/g, respectively. This is verified by in enhancement of capacitance achieved from 1.76 x10⁻³ Fg⁻¹ for the activated biochar and 1.87x10⁻⁶ Fg⁻¹ for untreated PKSB showed by Raman spectroscopy. This enhancement reflected the charge storage capacity is attributed to the creation of broad distribution in pore size and a larger surface area. In addition, this phenomenon also supported by the electrochemical profiles through cyclic voltammogram (CV) measured by Potentiostat-Gavanostat (EIS). CV of the treated PKSB gave better square shape than the activated and raw biochar samples. These characterizations conclude that the raw palm kernel biochar need further treatment to become supercapacitor electrodes to replace activated carbon.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Cattleya Room (Level 2)

Session 4: 11 presentations-Topic: "Chemical Engineering"

Session Chair: Assoc. Prof. Terence P. Tumolva

F0026 Presentation 3 (14:00~14:15)

Comprehensive Study on The Solvation of Sr(II) Ion

Ika N. Fitriani, Wiji Utami, Niko Prasetyo, and Ria Armunanto

Austria-Indonesia Centre (AIC) for Computational Chemistry, Gadjah Mada University, Indonesia

Abstract—Solvation of Sr²⁺ ion in liquid ammonia has been studied using the HF, DFT (B3LYP), second-order Møller-Plesset (MP2) and CCSD theory. Single valence basis sets were applied. Total and sequential binding energies are evaluated for all strontium-ammonia clusters containing 1-6 ammonia molecules. Total binding energies and distance calculated using the high level G09 calculations. For each addition of an ammonia molecules, the change of the Sr-N distance in metal-ammonia clusters is the highest at the HF level. HF is the best compromise between computational effort and accuracy.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Cattleya Room (Level 2)

Session 4: 11 presentations-Topic: “Chemical Engineering”

Session Chair: Assoc. Prof. Terence P. Tumolva

F0027 Presentation 4 (14:15~14:30)

Fast Biofilm Formation and its Role on Power Generation in Palm Oil Mill Effluent Fed Microbial Fuel Cell

Maksudur R. Khan, Baranitharan E., Prasad D. M. R. and Chin K. Cheng

Abstract—In the present study, fast formation and characterization of biofilm and its role on power generation in the microbial fuel cell (MFC) were investigated and the biofilm formation was also correlated with electrochemical behavior of the MFC. MFC was operated with palm oil mill effluent as substrate and carbon cloth as electrode. A biofilm comprising electrochemically active bacteria on the anode surface showed crucial effect to enhance the performance of the MFC. Usually the formation of biofilm in MFC during the initial stage of operation takes long time while in this study the stable biofilm formed within short period of time using palm oil mill anaerobic sludge as inoculum. The presence of biofilm was confirmed using Infrared spectroscopy and Thermogravimetric analysis whereas the morphology of biofilm was examined using Scanning electron microscopy. Electrochemical impedance spectroscopy was done to monitor the progress of the anode colonization by the microorganisms in the MFC. The findings of this study demonstrated that the stable biofilm formed within 7 days of operation and facilitated the electron transport as well as decreased the charge transfer resistance of the anode and thus increased the power generation in the cell.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Cattleya Room (Level 2)

Session 4: 11 presentations-Topic: “Chemical Engineering”

Session Chair: Assoc. Prof. Terence P. Tumolva

F0029 Presentation 5 (14:30~14:45)

Synthesis, Characterization and Liquid-Carrying Capacity of Zeolitic Material from Circulating Fluidized Bed Fly Ash

Jay V. Ranoco, JC Justine G. Quintos, and Rizalinda L. de Leon

University of the Philippines Diliman

Abstract—With the growing awareness on the environmental impact of coal-burning, conventional Pulverized Coal-fired (PC) boilers are increasingly being replaced with Circulating Fluidized Bed (CFB) boilers. This shift in technology however, has brought about a new environmental impact – its generation of tons of fly ash that has yet to find utilization. About 7.2 metric tons per year of fly ash is expected to be generated upon completion of the CFB boilers being installed in the country. CFB fly ash, unlike PC fly ash, cannot be directly utilized by the cement and petroleum refining industries due to its unsuitable chemical and physical properties. In order to put value to CFB fly ash, the researchers transformed CFB fly ash into zeolitic materials through fusion with NaOH at elevated temperatures. The synthesized zeolites underwent confirmatory tests such as Fourier Transform Infrared Spectroscopy (FTIR), Scanning Electron Microscopy (SEM) and X-Ray Diffraction (XRD). IR spectra pattern comparison of commercial and synthesized product showed successful transformation of fly ash into element components that are precursors to zeolites. XRD and SEM analysis showed the transformation of fly ash into an amorphous phase material. Its liquid carrying capacity was determined as a measure of zeolite performance as laundry detergent surfactant carrier.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Cattleya Room (Level 2)

Session 4: 11 presentations-Topic: “Chemical Engineering”

Session Chair: Assoc. Prof. Terence P. Tumolva

F0032 Presentation 6 (14:45~15:00)

Design of an Air-Sparged Tubular Photocatalytic Reactor for the Degradation of Methylene Blue: Mass-Transfer Limitation Studies

Patrick Ramoso and Maria Lourdes Dalida

Department of Chemical Engineering, University of the Philippines Diliman, Quezon City, Philippines

Abstract—An alternative process for the removal of organic pollutants in aqueous systems is photocatalysis. The challenges hindering its industrial use are electron-hole recombination and mass-transfer limitations. In order to address these problems, the objective of this study is to introduce air by sparging, and design an air-sparged photocatalytic reactor using titanium dioxide immobilized on borosilicate glass. The performance of the reactor on the removal of the model pollutant, methylene blue (MB), was evaluated and compared against the reactor operated without sparging. The effect of mass-transfer limitations on reactor performance was also investigated by regression using a Langmuir-type model equation. The sparged photocatalytic reactor was able to degrade 57% MB in 2 hours, an improvement of 40% compared to no sparging, and is comparable to similar reactors in literature, but with the advantage of using less expensive materials of construction and simpler immobilization technique. Mass-transfer limitation studies showed a good fitting of the initial reaction rate $r$, with $r = 0.1399Q / (0.6120 + Q)$ for the sparged operation, and $Q$ is the volumetric flowrate of water (L/min). The model also shows that the reactor operates near the reaction-limited regime, and that the extent of mass-transfer limitation effects was reduced by the present reactor.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Cattleya Room (Level 2)

Session 4: 11 presentations-Topic: “Chemical Engineering”

Session Chair: Assoc. Prof. Terence P. Tumolva

F0039 Presentation 7 (15:00~15:15)

Effect of the Bromine-Based Flame Retardant Plastic Pyrolysis of Hydrotalcite

N. Morita, Y. Kawabata, T. Wajima, A. T. Saito, and H. Nakagome

CHIBA UNIVERSITY, Japan

Abstract—In this study, a method is presented to decrease halogen compounds in the product oil from thermolysis of polystyrene and polypropylene mixed plastic spiked with tetrabromobisphenol A. A mixture of hydrotalcite and plastic was pyrolyzed in a glass reactor at 400 °C under a nitrogen atmosphere. Bromine compounds in the residual substances were measured. The yield of product oil increased using hydrotalcite as an additive. The bromine compounds that were the major ingredients in the oil after thermolysis at 400 °C from the mixed plastic, which also included toluene, ethyl benzene, styrene, and 1-methylethyl benzene, were 2-bromohexane, 3-bromo-1-propenyl benzene, 4,5-dibromodecane, 1-bromomethylbenzene, 3-bromophenol, and 4-bromo-2,6-dimethylbenzaniline. However, bromine compounds were not detected in the product oil, residue, or gas when hydrotalcite was added. After the thermolysis of the plastic, bromine compounds in the product oil may decrease because bromine was captured by the added hydrotalcite.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Cattleya Room (Level 2)

Session 4: 11 presentations-Topic: “Chemical Engineering”

Session Chair: Assoc. Prof. Terence P. Tumolva

F0049 Presentation 8 (15:15~15:30)

Phosphate Adsorption on Zirconium-Loaded Activated Carbon, and its Application for Phosphate Recovery from Deep Seawater

Takaaki Wajima

Chiba University, Japan

Abstract—The adsorption of phosphate onto zirconium-loaded activated carbon (Zr-AC) was studied, and phosphate was recovered from deep seawater using the Zr-AC. The Zr-AC complex was prepared by mixing activated carbon with a zirconyl nitrate solution. The amount of phosphate that adsorbed onto the Zr-AC depended on the pH of the solution. Phosphate was adsorbed quantitatively at below pH 8.0, and the amount adsorbed decreased as the pH increased. Zr-AC was found to adsorb phosphate from seawater almost as efficiently as from an aqueous solution made with distilled water. The equilibrium adsorption capacity of the Zr-AC for phosphate in seawater was measured and extrapolated using the Langmuir and Freundlich isotherm models. The Langmuir model fitted the experimental data better than did the Freundlich model, and the calculated maximum adsorption capacity for phosphate was 0.64 mmol/g. Phosphate was recovered from deep seawater using a chromatographic selective recovery process using a packed-bed column. The results showed that phosphate was selectively adsorbed in the adsorption step, and the phosphate could be recovered and concentrated into a NaOH solution in the desorption step. The adsorbent in the column was able to be repeatedly used to recover phosphate from seawater.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Cattleya Room (Level 2)

Session 4: 11 presentations-Topic: “Chemical Engineering”

Session Chair: Assoc. Prof. Terence P. Tumolva

F0051 Presentation 9 (15:30~15:45)

Implementation of Cleaner Production in a Natural Dye Batik Industry SME: A way to Enhance Biodegradability of Batik Wastewater?

Elzavira Felaza and Cindy Rianti Priadi

Environmental Engineering, Faculty of Engineering Universitas Indonesia, Indonesia

Abstract—Utilization of natural dye in batik industry is a preventive solution taken to avoid environmental problems. Natural dyes is used to substitute synthetic dyes, naphtol and indigosol which has COD of 10.000-20.000 mg/L. Although the solution has been taken, the wastewater quality still exceed the limits stated on Regulation of the Ministry of the Environment No.5/2014. The research aim is to generate cleaner production solution, specifically material substitution and process modification to increase biodegradability. The implementation is conducted six times. The research process is pre-assessment of natural dye and batik wastewater, implementation of material substitution in mordanting, washing material and process modification. Natural dyes used has BOD of 203-975 mg/L, COD 1.316-2.453 mg/L and BOD/COD 0,1-0,4. Through statistical analysis with 95% level of confidence, the results show no significant changes to BOD, COD, BOD/COD as well as colour reduction. The results of options implemented is BOD value of 99-450 mg/L, COD 402-1.102 mg/L, TSS 105-540 mg/L, colour 291-2.408 Pt-Co and BOD/COD 0,2-0,4. Hence, wastewater treatment is needed and unit designed for wastewater flow of 0,09 m³/day is anaerobic baffled reactor with the size of 0,6 m x 0,45 m x 0,5 m, HRT of 36,4 hour and SRT of 6 days.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Cattleya Room (Level 2)

Session 4: 11 presentations-Topic: “Chemical Engineering”

Session Chair: Assoc. Prof. Terence P. Tumolva

F3011 Presentation 10 (15:45~16:00)

Photo-physical Properties Investigation of 5,10-diphenylindeno-[2,1-a]-indene (DPI) Derivatives for the D-π-A Type Dye Sensitized Solar Cell (DSSC)

Ken-Hao Chang, Chin-Kuen Tai, and Bo-Cheng Wang

Department of Chemistry, Tamkang University, Tamsui, New Taipei City 25137, Taiwan

Abstract—Various electron-donors (triphenylamine (TPA) and diphenylamine (DPA) derivatives, D) connected with the π- conjugated linker (5,10-diphenyl indeno[2,1-a] indene, DPI) and the identical acceptor/anchoring (cyanoacrylic acid, A) as D-DPI-A, which is the D-π-A type of DSSC molecule. The electronic properties (E\textsubscript{HOMO/LUMO} and ΔE) of these D-DPI-A molecules were calculated by used the DFT/B3LYP/6-31G(d) method based on the optimized structure. The relationship between donating ability of electron-donor (D) and its related calculated HOMO energy in these D-DPI-A derivatives was determined. Then, we investigated the donating effect of these D-DPI-A derivatives with different electron-donor. The photo-physical properties (electron injection driving force, ΔG\textsubscript{inj} and life-time light harvesting efficiency, LHE) were calculated by means of the BHandHLYP/6-31G(d) calculation results. The calculated electron injection driving force (ΔG\textsubscript{inj}) and maximum absorption wavelength (λ\textsubscript{max}) of these derivatives have better performance while increasing the donating ability of electron-donor. In particular, the maximum absorption wavelength (λ\textsubscript{max}) is intra-molecular charge transfer (ICT) band being mainly HOMO to LUMO transition in the present study. The electron density of HOMO is localized at electron-donor and π- conjugated linker (DPI) moiety. The electron density of LUMO is trapped at the π-conjugated linker (DPI) and the electron-withdrawing moiety. In our study, we determined an appropriate relation between the electronic structure and the photo-physical property for these D-DPI-A derivatives and provide more information for the better DSSC molecular design.
F2004 Presentation 11 (16:00~16:15)

Crystal Structures and Gas Sorption Properties of Zn-bpe MOFs with Flexible Ditopic \( \alpha,\omega \)-Alkane(or Alkene) Dicarboxylate Bridging Ligands

Seong Huh, Hyun-Chul Kim, and Youngmee Kim

Hankuk University of Foreign Studies, Republic of Korea

Abstract—Porous metal-organic frameworks (MOFs) are valuable materials for various advanced applications such as gas sorption [1], gas separation [2], heterogeneous catalysis [3], and drug delivery [4]. A wide range of structurally diverse multitopic bridging ligands can be employed as linkers to interconnect metal centers to form various topologically interesting porous frameworks [5, 6]. Herein, a series of new Zn-bpe \((\text{bpe} = 1,2\text{-bis}(4\text{-pyridyl})\text{ethylene})\) MOFs has been prepared using a mixed ligand system in the presence of ditopic \( \alpha,\omega \)-alkane(or alkene) dicarboxylate bridging ligands as shown in Figure 1. The new Zn-bpe MOFs were structurally characterized by single crystal X-ray analysis. Depending on the ditopic carboxylate-based bridging ligands, each MOF formed different porous network. For example, the compound 1 with succinate bridging ligand exhibited a two-dimensional (2D) framework with binodal 5,6-connected net. Compared to 1, other Zn-bpe MOFs have three-dimensional (3D) framework structures. The compound 2 with fumarate bridging ligand displayed a 3-fold interpenetrated 4-connected net with a Schlafli symbol of \( 6^6 \) and the compound 3 with adipate bridging linker revealed a 3-fold interpenetrated 8-connected network topology. The structure of compound 4 with muconate bridging linker was a 4-fold interpenetrated 4-connected net with a Schlafli symbol of \( 6^6 \). Interestingly, solvent-free MOFs 2 and 4 contain large potential void volume. We investigated the gas sorption and adsorptive dye sorption properties of 2 and 4.
Session 5

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Minuet Room (Level 2)

Session 5: 11 presentations-Topic: “Medical Science”

Session Chair: Assoc. Prof. Toru Hosoda

T0005 Presentation 1 (13:30~13:45)

Range Operation Studies of Microbial Fermentation for Biopharmaceutical Applications

Lalintip Hocharoen and Kosin Jittipanyakul

King Mongkut’s University of Technology Thonburi, Thailand

Abstract—The production of biopharmaceutical in lab scale differs from in pilot plant-scale particularly in process control or conditions control aspects. For larger volume of production, there is a chance of having deviation on controlling the operating conditions that is likely to have effects on specifications of biopharmaceuticals. Thus, this work focused on the optimization and robustness study of growth conditions on microbial fermentation using design of experiment methodology (DoE) and statistical analysis approach. Three factors for designing experiment were temperature, pH and % dissolved oxygen (DO). A high-throughput MRT-24 microbioreactor and Pichia pastoris KM71H which expresses Japanese Encephalitis virus envelope protein were used as a model study and the measured output was OD600. After 17 hours of fermentation, the data was analyzed and the conditions where temperature was 28.0 °C, pH was 6.37 and DO was 30% were calculated to be the optimized value. Then the robustness study was carried out in which 5 % loss of the highest yield was set as a criterion. The results predicted that the robust range was temperature of 28°C to 29.5°C and pH of 6.0 to 6.5.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Minuet Room (Level 2)

Session 5: 11 presentations-Topic: “Medical Science”

Session Chair: Assoc. Prof. Toru Hosoda

T0009 Presentation 2 (13:45~14:00)

Wound Healing Property of Carica papaya Stem in Albino Rats

Marzha Ancheta and Liwayway Acero

San Beda College Manila Philippines

Abstract—Carica papaya has been known for its many potential uses. The fruit is a part of the human diet and it is also use in cosmetics and medical field. Almost all parts of the plant was explored for its medicinal property, however the stem which remains in the field after harvest was seemingly neglected, thus this study. Carica papaya stem were dried cut and turned to ointment form. The final product was applied to inflicted wounds of five Albino rats which are assigned in the treatment group (treatment 2). Ten Albino rats served as experimental animals. They are randomly assigned in two groups. The first group, or treatment 1, (5 animals) as the control. Inflicted wounds of Albino rats in treatment 1 was applied by the usual antiseptic (Betadine). The second group, treatment 2 served as the experimental animals where the ointment from papaya stem was applied. Initial wound size and mean size of the wound every two days interval showed no significant result. The final wound size in millimeter after fifteen days showed significant result. The result revealed that the stem of Carica papaya has the wound healing property in Albino Rats. The result of this study attested that even the stem of Carica papaya can be utilized as a source of herbal plant, specifically to heal wounds.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Minuet Room (Level 2)

Session 5: 11 presentations-Topic: “Medical Science”

Session Chair: Assoc. Prof. Toru Hosoda

T0012 Presentation 3 (14:00~14:15)

Micromotion Improvement and Applications for Abutment-Implant System by Uniform Design and Kriging Interpolation

Yung-Chang Cheng, Deng-Huei Lin, and Cho-Pei Jiang

National Kaohsiung First University of Science and Technology, Taiwan

Abstract—This study aimed to analyze the micromotion of the 3i, Branemark and Semados dental implant systems with Zimmer implant model subjected to dynamic chewing loads. Micromotion of the three dental implant systems with basic dimensions was obtained using dynamic finite element analysis. From the results, the best abutment type had been selected. Six parameters of the implant were selected as the control factors to be improved. A uniform design method was employed to construct a set of experimental simulations. Next, for each experimental simulation, the dynamic finite element analysis package ANSYS/LS-DYNA was employed to simulate the behavior of the Zimmer dental implant model subjected to dynamic chewing loads and then determined the maximum micromotion of the cortical and cancellous bones. Finally, the best design of the experimental simulations that caused the smallest amount of micromotion was selected as the improved design version. Compared to the original design, which experienced micromotion of 33.39 μm, the improved version experienced micromotion of 22.22 μm. The rate of improvement was 33.45 %. Finally, the micromotion predicted system in commercial and engineering applications is constructed by Kriging interpolation method.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Minuet Room (Level 2)

Session 5: 11 presentations-Topic: “Medical Science”

Session Chair: Assoc. Prof. Toru Hosoda

T2010 Presentation 4 (14:15~14:30)

Low-Dose tPA Improves Thrombolytic Therapy in a Thromboembolic Stroke Model of Mouse

Ju-Hui Fu

China Medical University, Taiwan

Abstract—Tissue-type plasminogen activator (tPA) is the only therapeutic agent to early treat focal cerebral ischemia with proven efficacy in stroke patients. However, the administration of tPA is limited to a short time window (4.5 hr) after the onset of symptoms because of risks linked to hemorrhagic transformation and neurotoxicity. It becomes urgent to improve tPA stroke therapy or develop new strategies to fight this disease. Our researches showed that n-Butylidenephthalide (BP) enhances tPA-mediated plasmin production in vitro by increasing annexin A2 and tPA expression and inhibiting plasminogen activator inhibitor-1 level. We hypothesize that combining BP with tPA can significantly increase thrombolysis efficacy, thus lower doses of tPA can be used in ischemic stroke to avoid hemorrhagic and neurotoxic complications. In a mouse FeCl3-induced middle cerebral artery (MCA) thromboembolic stroke model, combination treatment with BP and tPA at 20 min post-ischemia reduced the effective dose required for tPA by five-fold and decreased brain infarction. Combining BP with tPA also extended the time window for thrombolysis. Compared with tPA (10 mg/kg) along, the combination of BP (300 mg/kg) plus low-dose tPA (2.0 mg/kg) significantly augmented fibrinolysis, improved brain infarction, hemorrhagic transformation, and mortality, even when treated at 4 h post-ischemia. Combination with BP, the effective thromolytic dose of tPA can be diminished. Our current results offer a promising new approach for ameliorating tPA-based thrombolytic stroke therapy.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Minuet Room (Level 2)

Session 5: 11 presentations-Topic: “Medical Science”

Session Chair: Assoc. Prof. Toru Hosoda

F0028 Presentation 5 (14:30~14:45)

Assessing the Efficacy of Honey in Diabetes Using SD Rats: by Comparing Acacia honey, Manuka honey, and Sugar

Wonsang Gong, Seoyeon Shin, Seongmin Choi, Minjeong Kim, and Hojin Kim
Hankuk Academy of Foreign Studies, Republic of Korea

Abstract—Honey is recently being recognized as a natural substance that lowers blood glucose levels in patients with diabetes [1]. To explain this surprising finding, it is hypothesized that the fructose and oligosaccharides present in honey might in some way contribute to the observed hypoglycemic effect [2], [3]. Honey administration was found to increase serum levels of insulin while it reduced serum concentrations of glucose and fructosamine in diabetic rats [4]. Because patients with diabetes also consume various kinds of saccharides through foods, it has come to attention if honey, which also contains glucose, is as effective as sugar in regulating blood glucose levels and blood lipid levels. Therefore, the research utilized Acacia honey and Manuka honey and observed if there is any discrepancy on their effects on diabetes. Acacia honey is one of the most abundantly provided kinds of honey in South Korea and some other Asian counterparts while Manuka honey is commonly known as a functional food effective for diabetes. Originally designed in order to find out if honey has actual effects on regulating blood glucose levels and blood lipid levels, the experiment did not lead to a statistically significant result when comparing the effects of honey with those of the control group. Excluding the control group, however, the three other groups each demonstrated different changes on regulating the blood glucose levels. Hence the results were analyzed excluding the control group, and it was found that Acacia honey had the most positive effect on diabetes by lowering blood glucose levels among the three other groups: Acacia honey, Manuka honey, and sugar.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Minuet Room (Level 2)

Session 5: 11 presentations-Topic: “Medical Science”

Session Chair: Assoc. Prof. Toru Hosoda

F0038 Presentation 6 (14:45~15:00)

Antimicrobial Activity of Fatty Acid Salts Against Microbial in Koji-Muro

Aya TANAKA, Mariko ERA, Takayoshi KAWAHARA, Takahide KANYAMA, and Hiroshi MORITA

The University of Kitakyusyu, Japan

Abstract—Aspergillus niger and Aspergillus oryzae are used as koji fungi in the spot of the brewing. Since koji-muro (room for making koji) was a low level of airtightness, microbial contamination has long been a concern to the alcoholic beverage production. Therefore, we focused on the fatty acid salt which is the main component of soap. Fatty acid salts have been reported to show some antibacterial and antifungal activity. This study aimed to find the effectiveness of the fatty acid salt in koji-muro. Nine fatty acid salts were tested. The result, C12K was antibacterial effect against B. subtilis. C10K and C12K was antifungal effect against R. oryzae. These results suggest C12K has potential in the field of koji-muro.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Minuet Room (Level 2)

Session 5: 11 presentations-Topic: “Medical Science”

Session Chair: Assoc. Prof. Toru Hosoda

F0045 Presentation 7 (15:00~15:15)

Phytochemical Screening, Total Phenolic Content, Antioxidant Activities and Cytotoxicity of *Dendrobium signatum* Leaves

**Thitiphan Chimsook**

Faculty of Science, Maejo University, Thailand

*Abstract*—In the present work, the leaves of *Dendrobium signatum* were extracted with ethanol by maceration; called M; and by sonication-maceration for 30 and 45 mins; called MS30 and MS45. Some biological activities of extracts were investigated. The results showed that the sonication for 30 mins and then maceration 72 hr gave the highest yield at 7.32%. The phytochemical investigation revealed that the bioactive compound from M, MS30 and MS45 were similar which composed of carbohydrates, coumarins, alkaloids, flavonoids, phenolics, sterols and glycosides, respectively. The total phenolic contents were assessed by Folin – Ciocalteau method using gallic acid as the chemical standards. The results showed that MS30 displayed the highest total phenolic contents at the value of 8.83 gGAE/100 g extract. The antioxidant activity was measured using DPPH assay. The results showed that MS30 had the stronger free radical scavenging activity than M and MS45 and had moderate radical scavenging ability compared to ascorbic acid. The cytotoxicity was performed against human cancer cell lines using MTT assay. The results showed that all ethanol extracts displayed weak anticancer activity against MCF-7 and NCI-H187 cell lines, compared to the standard drug doxorubicin. In addition, they showed no activity against KB cell lines.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Minuet Room (Level 2)

Session 5: 11 presentations-Topic: “Medical Science”

Session Chair: Assoc. Prof. Toru Hosoda

F1002 Presentation 8 (15:15~15:30)

*Blumea balsamifera* (sambong) Tea as a Therapeutic Drink for Calcium Oxalate Stones

Charlimagne M. Montealegre, and Rizalinda L. De Leon

Department of Chemical Engineering, College of Engineering, University of the Philippines

Abstract—Calcium oxalate stones are among the most prevalent type of kidney stones. Methods of treatment range from surgical removal, shockwave lithotripsy, medical and natural treatment. In the Philippines, consuming tea preparation of *Blumea balsamifera* is believed to aid in the treatment of kidney stones. The effect of *Blumea balsamifera* tea in the nucleation of calcium oxalate crystals was studied at 0, 0.5 and 1.0 mg tea preparation per mL of the crystallization solution by UV-Vis spectrophotomery. Induction time decreased with increasing concentration of *Blumea balsamifera* tea. Further analysis showed that this decrease in induction time is due to a decrease in surface free energy from 20.95 mJ/m$^2$ to 19.48 mJ/m$^2$ and 17.22 mJ/m$^2$ at 0.5 and 1.0 mg/mL, respectively. This decrease in induction time correspond to an increased nucleation rate thus, a large number of smaller crystals are formed. This explains the therapeutic benefits of consuming *Blumea balsamifera* tea as stone formers would form smaller stones that are easier to eliminate by urination.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Minuet Room (Level 2)

Session 5: 11 presentations-Topic: “Medical Science”

Session Chair: Assoc. Prof. Toru Hosoda

F1003 Presentation 9 (15:30~15:45)

TCH-1122 Liposome Improves the Anticancer Activity and Water Solubility of TCH-1122

Chiung-Wen Hsu, Stephen Chu-Sung Wu, Hui-Min Cheng, Chih-Hua Tseng, Ming-Hong Yen, and Feng-Lin Yen

Kaohsiung Medical University, Taiwan

Abstract—TCH-1122 is one of natural furonaphthoquinone analogues and which existed in the species of tropical mangrove in the family Acanthaceae such as Avicennia alba. Previous studies indicated TCH-1122 has obvious cytotoxicity in cancer cells and resulting anticancer activity. Water solubility of compounds is presented bad dissolution and bioavailability to decrease its efficacy and limit its clinical application. TCH-1122 had the similar problem to reduce its development in anticancer drug. The aim of study was prepared the lecithin-loaded TCH-1122 liposome (lipo-1122) using thin-film hydration method for improving the water solubility and anticancer activity of TCH-1122. The results demonstrated that lipo-1122 can increase the water solubility of TCH-1122 through particle size nanonization and amorphous transformation. In addition, lipo-1122 has better cytotoxicity in human melanoma cells (A2058) and cell safety in human HaCaT keratinocytes than TCH-1122. In conclusion, lipo-1122 might be an anticancer formulation to treat the skin cancer in further clinical study.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Minuet Room (Level 2)

Session 5: 11 presentations-Topic: “Medical Science”

Session Chair: Assoc. Prof. Toru Hosoda

T0016 Presentation 10 (15:45~16:00)

Effects of Lactic Fermentation on Total Polyphenol Content and Antioxidant Activity of Ginger (Zingiber officinale Roscoe)

Tezar Ramdhan and Anil Kumar Anal

Indonesian Agency for Agricultural Research and development (IAARD), Indonesia

Abstract—Until now the utilization of ginger as an ingredient of probiotic products is still lacking. This experiment was aimed to examine the effect of lactic acid bacteria (LAB) fermentation on total polyphenol content and antioxidant activity of ginger extract. L. plantarum and L. casei were used as LAB fermentation starter. Prior to inoculation, 150 g of ginger was blended with 150 ml sterilized water, then, 90 ml of the juice was inoculated by 3 milliliters of subcultured starter. Then the juice was incubated at 37°C for 24 hours. In order to get powder of fermented samples, freeze-dryer was used (48 hours). The dried sample then was milled using a blender machine then sieved (20 mesh; 850 micrometer; 0.0331 inches). The samples were ready for further experiments. The total polyphenol content was measured using Folin-Denis method, while the antioxidant activity was estimated using the DPPH radical-scavenging activity. The result showed that L. plantarum was better because it could growth well in ginger juice and so it could decrease the pH lower than what L. casei did. As well, L. plantarum could raise the total polyphenol significantly higher than L. casei. The highest content of total polyphenol reached by ginger juice which fermented by L. plantarum for 12 hours, it was around 23~24 mg GAE/100 g. Those values then increased in almost two times in freeze dried fermented ginger powder. The value was 63 mg GAE/100 g. Meanwhile, the highest value of antioxidant activity was 80% in fresh ginger fermented juice and after drying, the value were slightly decreased compared to fresh fermented juice, it was about 69.5%.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Minuet Room (Level 2)

Session 5: 11 presentations-Topic: “Medical Science”

Session Chair: Assoc. Prof. Toru Hosoda

T0019 Presentation 11 (16:00~16:15)

Hypoglycemic Effect of Aloe Vera Instant on the Diabetic Rats

Chatarina Wariyah and Riyanto

Mercu Buana University of Yogyakarta, Indonesia

Abstract—Aloe vera instant contains of phenolic compound which has antioxidative activity. However, this product is hygroscopic and damaged easily during storage. The critical condition of the instant occurs at the moisture content of $12.52 \pm 0.24\%$ (wb). Increasing of the moisture content could accelerate oxidation of the phenolic compounds, thus decrease the antioxidative activity. Previous research showed that the antioxidative activity of aloe vera instant could lower the blood glucose. The purpose of this study was to evaluate the hypoglycemic activity of aloe vera instant during storage until the critical condition. The hypoglycemic effect was determined with the in vivo method using diabetic Wistar rats as experimental animals. The diabetic rats were fed with a standard feed combined with aloe vera instant which has been stored at various storage time i.e. 0, 2, 4, 6, 8 weeks and used normal rats fed without aloe vera instant as a control. The blood glucose was analyzed every week until 4 weeks. The research showed that the diabetic rats fed with standard feed without aloe vera instant had high blood glucose (219.40 mg/dL) after 4 weeks treatment. Otherwise, the blood glucose of diabetic rats fed with aloe vera instant decreased from 214.00 mg/dL to 97.57 mg/dL after 4 weeks.
Session 6

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Afternoon, April 9, 2016 (Saturday)
Time: 13:30~16:15
Venue: Freesia Room (Level 2)
Session 6: 11 presentations-Topic: “Food Technology”
Session Chair: Prof. Chan Jin Park

T0004 Presentation 1 (13:30~13:45)
Quality of Probiotic Fermented Milk Produced Using Lactobacillus Casei Subsp. Casei r-68 with the Variation of Skim Milk and Sucrose
Usman Pato, Yusmarini Yusuf, Evy Rossi, Rianida Yunaira, and Tiara Githasari
Universitas Riau, Indonesia

Abstract—Nowadays, there has been a shift of life style that requires the need not only for tasty and nutritious food, but also the one that is healthy. The functional food in the form of probiotic fermented milk is one of the alternative foods that can be consumed to keep the body fit and healthy. This research aimed to determine the amount of optimal skim milk and sucrose to produce probiotic fermented milk made by using Lactobacillus casei subsp. casei R-68 isolated from dadih, traditional fermented buffalo milk, which meets the quality standard. The research was carried out experimentally using Completely Random Design consisting of two research stages. The first stage was determining the amount of the use of optimal skim milk to produce probiotic fermented skim milk that fulfils the quality standard. The second stage was determining the amount of optimal sucrose in order to produce probiotic fermented milk that meets the quality standard. The collected data was analyzed statistically using Analysis of Variance. When the result of calculated F was bigger or the same as F table, it was continued with DNMRT test at the level of 5%. The findings of the research provided the evidence that the variation of the use of the skim milk or sucrose significantly affected to pH, total lactic acid, number of lactic acid bacteria, total of solid without fat as well as the amount of fat and protein, but did not significantly influence the amount of ash and fat especially for the treatment of sucrose variation. In the case of sensory test, the use of 15% skim milk and the variation of the addition of sucrose significantly
influenced to all parameters namely taste, texture, colour and the panellist acceptance. The best probiotic fermented milk was obtained from the use of 15% skim milk and 5% sucrose that had already met the quality standard in accordance with Indonesia National Standard (SNI No. 2981-2009) and Codex (Codex Stan 243-2003).
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Freesia Room (Level 2)

Session 6: 11 presentations-Topic: “Food Technology”

Session Chair: Prof. Chan Jin Park

T2009 Presentation 2 (13:45~14:00)

Optimizing the Formulation of Instant Baby Porridge Based on Snakehead Fish (*Channa striata*) Flour and Canna Tuber (*Canna edulis*) Flour

Abu Bakar Tawali, Meta Mahendradatta, Amran Laga, and Haryati

Hasanuddin University, Indonesia

Abstract—Indonesia has the most complete of the biological resources accompanied by abundant availability of raw materials. Fishery sector in Indonesia has huge potential in the utilization of fishery products. One of those is snakehead fish (*Channa striata*), a freshwater fish which has high potential, especially when observed from the viewpoint of food and nutrition. Snakehead fish has high protein content up to 25.5 % and the amount of albumin reaches to 6.22%. The use of local commodity as the source of carbohydrate comes from canna tuber (*Canna edulis*) which contains 22.6 – 23.8 % of carbohydrate. The combination of snakehead fish and canna tuber can be processed into the high nutrition instant baby porridge for 6-12 months baby. The aim of this study was to determine the best formulation and nutrient content of instant baby porridge from snakehead fish flour and canna tuber flour. The study was conducted in three steps, there were making of snakehead fish flour, making of canna tuber flour and making of instant baby porridge. The observed parameters were proximate analysis, fiber, beta-carotene, total plate count (TPC) and sensory evaluation with hedonic scale. The data was processed using a completely randomized design (CRD) with two replications. The treatment formulations used in this study consisted of 25% snakehead fish flour: 25% canna tuber flour; 20% snakehead fish flour : 30% canna tuber flour; 15% snakehead fish flour : 35% canna tuber flour. The result showed that the best formulation based on chemical analysis and sensory evaluation was the combination of 25% snakehead fish flour and 25% canna tuber flour. Proximate analysis such as moisture, ash, fat, protein, and carbohydrate content resulted 52.21%, 0.70%,, 0.9%, 10.21%, 34.98%, respectively. Fiber, TPC and beta-carotene content were 1.50%, 157 x 10 cfu and 258.63 µg/g. The product was accepted by the panelist with score >3 from scale 1-5.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Freesia Room (Level 2)

Session 6: 11 presentations-Topic: “Food Technology”

Session Chair: Prof. Chan Jin Park

F0013 Presentation 3 (14:00~14:15)

Bubble Motion along Inclined Superhydrophobic and Superhydrophilic Surfaces

Wen Lin, Cyuan-Jhang Wu, Yu-Jane Sheng, and Heng-Kwong Tsao

Department of Chemical and Materials Engineering, National Central University, Taiwan

Abstract—The removal of undesired bubbles is important in food fermentation, petroleum chemical, and cleaning industry. In general, small bubbles are easy to adhere on the solid surface and their terminal velocities are small in water. Therefore, the removal of them is difficult. According to the theory of wetting phenomena, small bubbles can stay on the solid surface due to contact angle hysteresis. Until the buoyancy is dominant over the capillary force, the bubble moves upward along the solid surface. In this study, the bubble motion on both superhydrophobic and superhydrophilic surfaces are observed. Different from bubbles with significant contact angle hysteresis, small bubbles can slide upward rapidly on both two surfaces. This method can be used for the fast removal of tiny bubbles. The terminal velocity of bubbles beneath the superhydrophobic surface is faster than that of bubbles rising in a liquid column. Eventually, the sliding velocity of bubbles are dominant by the bubble shapes. The shapes of bubble tend to be flat with decreasing tilting angle. The mobility of a flat bubble beneath the superhydrophobic surfaces with the tilting angle 2° is about one-hundred times greater than that of a spheroidal bubble under the tilting angle 55°.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Freesia Room (Level 2)

Session 6: 11 presentations-Topic: “Food Technology”

Session Chair: Prof. Chan Jin Park

F0006 Presentation 4 (14:15~14:30)

The Effect of Computer-Assisted Instruction for Elementary School Students in Food Safety and Sanitation Knowledge

Yi-Horng Lai

Oriental Institute of Technology (Taiwan), New Taipei City, Taiwan

Abstract—The purpose of this study is to introduce the graphic presentation food safety and sanitation learning system with parent participation in element school's health and physical education curriculum. The students were divided into four groups: control group, control group with parent participation, learning system group, and learning system group with parent participation. There were three extra variables in this study: learning system, and parent participation. The research data (three exams scores) was obtained before the course, in the middle of the course, and at the end of the course. The results indicate that, first, the estimate of slope of learning system is significantly correlated with parent participation; second, male elementary school students and female elementary school students were similar in the growth rate between each time points; third, the relationship between the initial exam score and the following two exam scores were not significant. Based on the results, it can be concluded that the use of learning system and parent participation were helpful for elementary school students to acquire food safety and sanitation knowledge in the health and physical education curriculum.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Freesia Room (Level 2)

Session 6: 11 presentations-Topic: “Food Technology”

Session Chair: Prof. Chan Jin Park

F0009 Presentation 5 (14:30~14:45)

The Organic Food Purchase Behaviour: Using ECT to Explore Customers’ Satisfaction

Hui Hsin Huang

Aletheia University, New Taipei City, Taiwan

Abstract—This paper bases on expectation confirmation theory(ECT) to propose a stochastic model of predicting organic food purchase behaviour. In the model, the expectation of pre-purchase and outcome performance of post-purchase are considered as relative variables. We consider these two variables as two different normal distribution and their probability density function(pdf) and cumulative distribution function(cdf) will be demonstrated to display their correlation. Then the joint density can be computed to show the results of positive or negative disconfirmation. This study also conducts an empirical data for parameter estimation and model application. We use the 0.5 as threshold level of probability to test the fitness of real overall satisfaction and the calculation results of probability. The results of chi-square testing show good fitness. Finally, the conclusion is made.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Freesia Room (Level 2)

Session 6: 11 presentations-Topic: “Food Technology”

Session Chair: Prof. Chan Jin Park

F0036 Presentation 6 (14:45~15:00)

The Storage Stability of Anthocyanins in Mao (Antidesma thwaitesianum Müll. Arg.) Juice and Concentrate

Arunya Prommakool and Kriangkrai Phattayakorn

Kasetsart University, Chalermprakiat Sakon Nakhon Province Campus, Thailand

Abstract—Mao or Makmao (Antidesma thwaitesianum Müll. Arg.) is a wild plant found in the northeast of Thailand. Mao fruits are used for juice and concentrate which are consumed for healthy drinks. Determination of the kinetic parameters is essential to predict the quality changes and stability of anthocyanins in Mao juice and concentrate that occur during storage. The purpose of this research was to study the degradation of anthocyanins in Mao juice and concentrate during storage at 5, 30 and 37°C. The degradation kinetic (k), half-life (t_{1/2}), activation energy (E_a) and Q_{10} values for Mao anthocyanins degradation were determined. The results indicated that analysis of kinetic data followed a first-order reaction for the degradation of anthocyanins. An increase storage temperature from 5 to 30 and 37°C increased k value of anthocyanins in Mao juice and concentrate. Increasing storage temperature decreased t_{1/2} value of anthocyanins in both concentrations. At 5, 30 and 37°C, the t_{1/2} of anthocyanins decreased from 35 to 13 and 5 days for Mao juice and 32 to 25 and 21 days for Mao concentrate. The E_a value of the anthocyanins degradation in Mao juice and concentrate were 38.03 and 8.42 kJ/mol, respectively. Q_{10} values of both Mao juice and concentrate at 30-37°C were higher than those were storaged at 5-30°C. Thus higher stability of anthocyanins was achieved by using concentration and storage at lower temperature.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Freesia Room (Level 2)

Session 6: 11 presentations-Topic: “Food Technology”

Session Chair: Prof. Chan Jin Park

F0040 Presentation 7 (15:00~15:15)

Empirical Modeling on Hot Air Drying of Fresh and Pre-treated Pineapples

Yardfon Tanongkankit, Kanjana Narkprasom, and Nukrob Narkprasom

Maejo University in Chiang Mai, Thailand

Abstract—This research was aimed to study drying kinetics and determine empirical model of fresh pineapple and pre-treated pineapple with sucrose solution at different concentrations during drying. 3 mm thick samples were immersed into 30, 40 and 50 Brix of sucrose solution before hot air drying at temperatures of 60, 70 and 80°C. The empirical models to predict the drying kinetics were investigated. The results showed that the moisture content decreased when increasing the drying temperatures and times. Increase in sucrose concentration led to longer drying time. According to the statistical values of the highest coefficients ($R^2$), the lowest least of chi-square ($\chi^2$) and root mean square error (RMSE), Logarithmic model was the best models for describing the drying behavior of soaked samples into 30, 40 and 50 Brix of sucrose solution.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Freesia Room (Level 2)

Session 6: 11 presentations-Topic: “Food Technology”

Session Chair: Prof. Chan JIn Park

F0041 Presentation 8 (15:15~15:30)

Extraction of Coconut Oil from Coconut Milk Foulants Using Enzyme

Phanida Saikhwan, Chanokchat Nuchnet, Wannakarn Wanakayont, and Angkana Suksa-nga
Thammasat University, Thailad

Abstract—Coconut milk manufacturing process encounters problems with foulants formed during pasteurization process. For example, fouling layers reduce heat transfer efficiency of a heat exchanger. As the fouling layers are considered as waste, this research aimed at extracting coconut oil from the foulants to produce a product from the waste. A model coconut milk foulant was used to simulate foulants formed during batch pasteurization process and coconut oil was extracted from the foulant using celloulase enzyme. The extracted oil then was evaluated in terms of fatty acid composition and antioxidant properties (total phenolic and flavonoid contents). The antioxidant activities were evaluated using DPPH (1,1-diphenyl-2-picrylhydrazyl) radical scavenging and FRAP (Ferric reducing antioxidant power) methods. Results showed that the oil extracted from the foulants appeared similar to virgin coconut oil (VCO); the extracted oil appeared as clear viscous liquid with aroma associated with roasted coconut. The oil extracted using enzyme contained all fatty acids found in VCO in lower proportions but large extent of linoleic acid was found. Antioxidant capacity was similar to that of VCO. The foulants after the extraction of fat using enzyme were easier to clean suggesting the possibility to couple cleaning of coconut milk foulants and oil extraction in the same process.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Freesia Room (Level 2)

Session 6: 11 presentations - Topic: “Food Technology”

Session Chair: Prof. Chan Jin Park

F0042 Presentation 9 (15:30~15:45)

Effect of Pre-treatment Methods on the Color Changes during Drying of Red Chilli (Capsicum frutescens L.)

Rattapon Saengrayap, Natthida Boonlap, and Uthumporn Boonsorn

Department of Agro-Industry Technology and Management, Faculty of Agro-Industry, King Mongkut’s University of Technology North Bangkok (KMUTNB) Prachinburi Campus, Prachinburi, Thailand

Abstract—Chilli was dried using conventional tray dryer with 3 different drying conditions, i.e., 60°C, 80°C and 2-stage drying (80°C and 60°C). The effects of pre-treatment methods were evaluated by soaking chilli in pre-treatment solutions prior to drying. In terms of drying characteristics, the drying time found to be shortest at 80°C. It was also found that the drying rate of pre-treated chilli increased compared with non-treated one. The modified Page’s model was suitable for describing drying characteristics at all conditions ($R^2=0.97-0.99$). Furthermore, the color change during drying was investigated using image analysis methods. It was found that the pre-treatment methods prevented the color change. The combined kinetic model was the best model for predicting the change of color during drying ($R^2=0.98-0.99$). A pre-treated chilli soaking in a mixed solution of 0.3% (w/w) Na$_2$S$_2$O$_5$ and 1% (w/w) CaCl$_2$ showed the better quality. In addition, the combined kinetics model could describe the change of $L^*$, $a^*$ and $b^*$ values in all conditions.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Freesia Room (Level 2)

Session 6: 11 presentations-Topic: “Food Technology”

Session Chair: Prof. Chan Jin Park

F0043 Presentation 10 (15:45~16:00)

The Effect of Molecular Sieve Addition on the Thermal Decomposition of Japanese Cedar

M. Nakayasu, N. Morita, Y. Kawabata, T. Wajima, and H. Nakagome

Tokyo Metropolitan Tama Science and Technology High School, Japan

Abstract—The catalysis of Japanese cedar pyrolysis by 13X or 4Å molecular sieves at low temperatures has been investigated. Japanese cedar was placed in a glass reactor and heated to 450 °C under a nitrogen atmosphere to promote thermal decomposition. The flammable gas component, condensed wood vinegar, soluble gas component, and residue were examined. The gases detected included CH₄, C₃H₆, C₃H₈, and CO₂. The amount of combustible gases generated increased when thermal decomposition was undertaken with the addition of 13X molecular sieves. Moreover, tar was not generated when 13X molecular sieves were added.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~16:15

Venue: Freesia Room (Level 2)

Session 6: 11 presentations-Topic: “Food Technology”

Session Chair: Prof. Chan Jin Park

F0044 Presentation 11 (16:00~16:15)

Feasibility Study of Aseptic Homogenization: Affecting Homogenization Steps on Quality of Sterilized Coconut Milk

Chanthima Phungamngoen, Tippunsa Asawajinda, Rujira Santad, and Wanticha Sawedboworn

King Mongkut’s University of Technology North Bangkok, Thailand

Abstract—Coconut milk is one of the most important protein-rich food sources available today. Separation of an emulsion into an aqueous phase and cream phase is commonly occurred and this leads an unacceptably physical defect of either fresh or processed coconut milk. Since homogenization steps are known to affect the stability of coconut milk. This work was aimed to study the effect of homogenization steps on quality of coconut milk. The samples were subject to high speed homogenization in the range of 5000-15000 rpm under sterilize temperatures at 120-140 °C for 15 min. The result showed that emulsion stability increase with increasing speed of homogenization. The lower fat particles were generated and easy to disperse in continuous phase lead to high stability. On the other hand, the stability of coconut milk decreased, fat globule increased, L value decreased and b value increased when the high sterilization temperature was applied. Homogenization after heating led to higher stability than homogenization before heating due to the reduced particle size of coconut milk after aggregation during sterilization process. The results implied that homogenization after sterilization process might play an important role on the quality of the sterilized coconut milk.

16:15-16:30

Coffee Break

- 78 -
Session 7

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Afternoon, April 9, 2016 (Saturday)

Time: 16:30~18:45

Venue: Cattleya Room (Level 2)

Session 7: 9 presentations-Topic: “Chemical Engineering”

Session Chair: Assoc. Prof. Md. Maksudur Rahman Khan

F0010 Presentation 1 (16:30~16:45)

Facile Fabrication of Hysteresis-free Liquid-infused Surfaces with Anti-smudge Performance

Cheng-Chung Chang, Yu-Jane Sheng, and Heng-Kwong Tsao

National Taiwan University, Taiwan

Abstract—Slippery liquid-infused porous surfaces (SLIPS) possess excellent liquid-repellency and have been applied to anti-icing and anti-fouling. Following the concept of SLIPS, the transparent liquid-infused surface is readily fabricated by a stretched polytetrafluoroethylene (PTFE) thread seal tape infused with perfluoropolyether fluorinated lubricant. Owing to the flexibility of the thin PTFE film, this surface can be flexible or curved, depending on the solid substrates. Unlike typical surfaces such as polymethyl methacrylate, the hysteresis loop in the plot of contact angle versus drop volume is absent for both water and hexadecane due to the immiscible liquid-liquid interface. The anti-smudge performance of the surface is examined via the removal of evaporation stains by sliding drops and the wetting competition of a liquid bridge between SLIPS and fluorinated polyvinyl alcohol surface which is lipophobic and superhydrophobic. Almost no liquid is seized by SLIPS after rupture. In order to understand the mechanism of the wetting competition, Surface Evolver simulation is performed and the result is in a good agreement with that of experiment. Our tests indicate that SLIPS exhibits excellent anti-smudge behavior.
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~18:45

Venue: Cattleya Room (Level 2)

Session 7: 9 presentations-Topic: “Chemical Engineering”

Session Chair: Assoc. Prof. Md. Maksudur Rahman Khan

F0011 Presentation 2 (16:45~17:00)

Contact Angle Hysteresis Induced by Surface Roughness: Dissipative Particle Dynamics Simulation

Cheng-Hsin Juan and Heng-Kwong Tsao

National Central University, Taiwan

Abstract—Contact angle hysteresis (CAH) is ubiquitous in our daily lives and industrial processes. The origin of CAH is generally explained by two different mechanisms: hydrophilic defects and adhesion hysteresis. Surface roughness has been shown to affect the wetting behavior significantly. In this study, CAH induced by surface roughness is explored by dissipative particle dynamics simulation. Our simulation outcomes reveal that CAH occurs for large enough surface roughness even when hydrophilic defects and adhesion hysteresis are absent. In addition, the quantitative analysis shows that the capillary force associated with CAH is proportional to \(d(\cos \theta_r - \cos \theta_a)\), where \(d\) represents the diameter of solid-liquid contact circle and \(\theta_a\) and \(\theta_r\) are advancing and receding contact angles, respectively.
Contact Angle Hysteresis on Graphene Surfaces and Hysteresis-free Behavior on Oil-infused Graphite Surfaces

Chuan-Chang Wu, Yu-Jane Sheng, and Heng-Kwong Tsao

Department of Chemical and Materials Engineering, National Central University, Taiwan

Abstract—Contact angle hysteresis (CAH) on graphitic surfaces, including chemical vapor deposition (CVD) graphene, reduced electrophoretic deposition (EPD) graphene, highly oriented pyrolytic graphite (HOPG), and polished graphite sheet, have been investigated. The hysteresis loops of water drops on the first three samples are essentially the same but the receding contact angle is particularly small for the polished graphite sheet. The CVD monolayer graphene can be considered as an ideal surface and thus the presence of CAH is originated from adhesion hysteresis, instead of roughness or defects. The difference of the wetting behavior among those four graphitic samples has been further demonstrated by hexadecane drops. On the surface of HOPG or CVD graphene, the contact line expands continuously with time, indicating total wetting for which the contact angle does not exist and contact line pinning disappears. In contrast, on the surface of reduced EPD graphene, spontaneous spreading is halted by spikes on it and partial wetting with small contact angle ($\theta \approx 4^\circ$) is obtained. On the surface of polished graphite sheet, the superlipophilicity and porous structure are demonstrated by imbibition and capillary rise of hexadecane. Consequently, an oil-infused graphite surface can be fabricated and the ultralow CAH of water ($\Delta \theta \approx 2^\circ$) is achieved.
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~18:45

Venue: Cattleya Room (Level 2)

Session 7: 9 presentations-Topic: “Chemical Engineering”

Session Chair: Assoc. Prof. Md. Maksudur Rahman Khan

F0014 Presentation 4 (17:15~17:30)

Room Temperature Sintering of Nano/Micron Sized Copper Powders

Meng-Ting Su, Chuan-Chang Wu, Yu-Jane Sheng, and Heng-Kwong Tsao

Department of Chemical and Materials Engineering, National Central University, Taiwan

Abstract—Due to the growing demand of soft electronic devices, the hard substrates is generally replaced by polymer-based substrates. However, the traditional sintering process which involves the high temperature treatment is not suitable for polymers with poor thermal stability. As a result, a low temperature sintering process is indispensable. In this work, we show that the nano/micron sized copper powders can be sintered by ascorbic acid at room temperature. The conductive pattern formed on the polyethylene terephthalate (Tg < 100 oC) substrate possesses good flexibility, adhesion, transparency, and electrical conductivity. Therefore, this method may be potentially useful for soft electronic devices. In addition, the adhesion mechanism of ascorbic acid is also studied. The good adhesion may be attributed to the catechin-like structure of oxidized ascorbic acid. The strong attraction due to hydrogen bonds result in the powerful adhesion between copper patterns and polymeric substrates. Its adhesive ability has been analyzed by adhesive single-lap-joint shear strength test, and the bonding strength of ascorbic acid is up to 2.6 MPa between two poly (methyl methacrylate) substrates.
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~18:45

Venue: Cattleya Room (Level 2)

Session 7: 9 presentations-Topic: “Chemical Engineering”

Session Chair: Assoc. Prof. Md. Maksudur Rahman Khan

F0017 Presentation 5 (17:30~17:45)

Total Wetting on a Surface: High Surface Energy of Solid or Low Surface Tension of Liquid

**Yu-Lan Hsu**, Cyuan-Jhang Wu, Yu-Jane Sheng, and Heng-Kwong Tsao

Department of Chemical and Materials Engineering, National Central University, Taiwan

*Abstract*—According to Young’s equation, the total wetting property can be achieved by enhancing the solid-gas interfacial tension or reducing the liquid-gas interfacial tension. In this work, the SBSisurfaceis fabricated by grafting the sulfobetaine silane onto the glass slice. Three types of total wetting can be observed: spread-withdrawal for water, spread-pin for polar organicsolvents, and continuous spread for hexadecane. The SBSisurface is beyond partial wetting and possesses positive spreading coefficient due to high solid-gas surface energy. On the basis of the total wetting behaviors, the contact line of a water drop or an oil drop spreads spontaneously and the contact angle is absent. These spontaneous spreading can be characterized by the power law with the exponent about 0.12 lower than the typical value because of the surface inhomogeneity. In contrast, for the test liquid with ultralow liquid-gas interfacial tension on various substrates, they also exhibit the total wetting behavior and two types of total wetting, including spread-withdrawal and continuous spread, are also seen for perfluororononane and silicone oil respectively. Their exponent of spontaneous spreading (about 0.2) are consistent with the Tanner’s law.
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~18:45

Venue: Cattleya Room (Level 2)

Session 7: 9 presentations-Topic: “Chemical Engineering”

Session Chair: Assoc. Prof. Md. Maksudur Rahman Khan

F0052 Presentation 6 (17:45~18:00)

Water Diffusion Modelling of CFB Fly Ash Thermoset Composite

Ralph P. Villa, Herbie T. Bella, Julian S. De Lara, and Romelando R. Juanatas

Department of Chemical Engineering, University of the Philippines-Diliman, Quezon City 1101 Philippines

Abstract—The shift in coal-fired power plants from pulverized coal (PC) boiler technology into the greener circulating fluidized bed (CFB) boiler technology resulted into a major deviation in the properties of the waste fly ash generated making it less suitable for its previous application as additives for construction materials. A new market for CFB fly ash had to be found for it not to end up as a zero value by-product. Using CFB fly ash as filler for thermoset composites is a new and remarkable application. Only a few studies, however, have been done to characterize the properties of this new material. Further experimentation and analysis may be costly and time-consuming since common procedures are material destructive. A computer-aided modeling of the composite’s water sorption behavior was done. The effect of particle loading, size and shape were considered. These properties were varied and the resulting overall diffusivities were compared to previous experimental studies. The comparison of the model and experimental diffusivity values showed satisfactory results. This model may then provide a cheaper and more time-efficient method for the characterization of the water sorption properties of CFB fly ash thermoset composites. In the future, this may lead to further studies on its application as a green material.
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~18:45

Venue: Cattleya Room (Level 2)

Session 7: 9 presentations-Topic: “Chemical Engineering”

Session Chair: Assoc. Prof. Md. Maksudur Rahman Khan

F1001 Presentation 7 (18:00~18:15)

Improvement of Physicochemical Characteristics, Water Solubility, and Skin Penetration: Eugragit E100-Polyvinyl Alcohol Loaded-7,3′,4′-Trihydroxyisoflavone

Pao-Hsien Huang, Stephen Chu-Sung Hu, Chiang-Wen Lee, Anchi Yeh, Chih-Hua Tseng, and Feng-Lin Yen

Kaohsiung Medical University, Taiwan

Abstract—7,3′,4′-Trihydroxyisoflavone (734THIF) is a secondary metabolite of daidzin, and has been recently found to possess antioxidant, melanin inhibition and skin cancer chemopreventive activities. However, the poor water solubility of 734THIF impedes its absorption and skin penetration and therefore limits its pharmacological effects when applied topically to the skin. This study used the nanoprecipitation method to prepare different ratio of eudragit e100-PVA to load 734THIF nanoparticles (734N) and further determined the physicochemical properties of 734THIF and high ratio 734N (N188) for elucidating the improvement of water solubility, skin penetration of 734THIF. In addition, the present study also performed the in vitro safety and antioxidant activity for evaluating the bioactivity of N188. The present results demonstrated that N188 showed the best drug loading and encapsulation efficiency, and also improved the physicochemical properties of 734THIF, including reduction in particle size, amorphous transformation, photostability, and intermolecular hydrogen bond formation. Moreover, N188 maintained the antioxidant activity without cytotoxicity in HaCaT keratinocytes. In conclusion, 734N may have potential use in the future as a topical delivery formulation for the treatment of skin diseases and skin care cosmetic.
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~18:45

Venue: Cattleya Room (Level 2)

Session 7: 9 presentations-Topic: “Chemical Engineering”

Session Chair: Assoc. Prof. Md. Maksudur Rahman Khan

F1005 Presentation 8 (18:15~18:30)

Green Composites Using Lignocellulosic Waste and Cellulosic Fibers from Corn Husks

Terence P. Tumolva, Danilo S. Enguero Jr, Tracy Joy C. Laus, and Benedict A. Requejo

University of the Philippines Diliman, Quezon City, Philippines

Abstract—This study explores the feasibility of using lignocellulosic waste and cellulosic fibers from corn husks in the production of green composites, with orthophthalic unsaturated polyester (ortho-UP) resin as a matrix. Lignocellulose was extracted from corn husk fibers by alkali treatment using 1M NaOH, and the dried lignocellulose extract was characterized using FTIR spectroscopy. Composites containing varying weight fractions of lignocellulose, treated fibers and ortho-UP were fabricated, and the tensile and flexural strengths and moduli were measured. Based on the results, it was observed that the composite containing 15wt% fiber possesses the highest tensile modulus, while the one with 20wt% lignocellulose showed the highest flexural modulus. The composites were also subjected to scanning electron microscopy to examine the fracture surfaces of the composites. Furthermore, the water sorption behavior of the composites was also studied, and it was observed that all the composites obey Fickian diffusion.
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~18:45

Venue: Cattleya Room (Level 2)

Session 7: 9 presentations-Topic: “Chemical Engineering”

Session Chair: Assoc. Prof. Md. Maksudur Rahman Khan

CA034 Presentation 9 (18:30~18:45)

Evolution of Fracture Aperture Mediated by Dissolution

Batoul Mahmoudzadeh, L. Liu, L. Moreno, and I. Neretnieks

Royal Institute of Technology, KTH, Sweden

Abstract—Fracture apertures may decrease or increase by different mechanical and chemical mechanisms when the fractures are subject to stress and flow. A model is presented to describe evolution of fracture aperture mediated by dissolution and precipitation. The model accounts for the fact that dissolved minerals carried by flowing water along the fracture can not only diffuse into and out of the adjacent rock matrix but also at first diffuse into the stagnant water zone existing in part of the fracture plane and then from there into and out of the rock matrix adjacent to it. This simple model allows us to gain some insights into which processes and mechanisms have the larger impact on the fracture aperture under different circumstances. The analytical solution in Laplace domain is used to study fracture closure/opening rate in a pseudo steady state procedure. It is found that the times involved for any changes in fracture aperture are very much larger than the times needed for concentrations of dissolved minerals to reach steady state in the rock matrix, the stagnant water zone and the flow channel. Moreover, it is shown that diffusion into the rock matrix, which acts as a strong sink or source for dissolved minerals, clearly dominates the rate of concentration change and consequently the rate of evolution of the fracture aperture.
Session 8

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Afternoon, April 9, 2016 (Saturday)

Time: 16:30~19:00

Venue: Minuet Room (Level 2)

Session 8: 10 presentations-Topic: “Chemical Engineering”

Session Chair: To be added

F0033 Presentation 1 (16:30~16:45)

Antioxidant Properties and Functional Characteristics of Radiation-Processed Fungal Chitosan from *Ganoderma tsugae* Residue

Shih-Jeng Huang, Tsun-Hsien Tung, and Shu-Yao Tsai

Asia University, Taiwan

Abstract—The residue of edible and medicinal mushrooms contains many physiologically active substances, including glucosamine, N-acetyl glucosamine, chitin and chitosan, some of the compounds are the major ingredients of health food for the joints. Gamma radiation is known to cause main chain scissions in polysaccharides and molecular weight of the polymers. We determined the antioxidant property and antibacterial activity of chitosan and glucosamine prepared from the residue of *Ganoderma tsugae* by using γ-irradiation technology; in addition, the fat binding ability of chitosan was determined. Based on the results obtained, EC$_{50}$ values of chitosan and glucosamine hydrochloride were 0 and 7.32, 9.26 and 15.16, 2.30 and 2.63, 16.06 and 1.43 mg/mL for antioxidant activity, reducing power, scavenging ability and chelating ability, respectively. Chitosan possessed 8.25~13.5 mm antibacterial ability for *Salmonella typhimurium*, *Staphylococcus aureus*, *Bacillus cereus* and *Bacillus subtilis*. Glucosamine hydrochloride only inhibit the growth of *Listeria monocytogenes*. The fat binding ability of chitosan is 29.95 g/g sample. Based on the results, chitin and glucosamine also have antibacterial and oil adsorption activity, as possible food supplements or ingredients or fur use in the pharmaceutical industry.
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~19:00

Venue: Minuet Room (Level 2)

Session 8: 10 presentations-Topic: “Chemical Engineering”

Session Chair: To be added

F0037 Presentation 2 (16:45~17:00)

Improving the Yield of Glucoamylase and α-amylase in Solid-state Co-culture

Haruka Takefuji, Junko Ninomiya, and Hiroshi Morita

Graduate School of Environmental Engineering, Kitakyushu University
Grad. Sch. Univ. kitakyushu, Japan

Abstract—Steamed rice inoculated with Aspergillus oryzae, called Koji, is an essential ingredient for making amazake or brewing sake. However, A. oryzae usually offers low enzyme yield, especially in case of glucoamylase. Co-culture of Aspergillus and Rhizopus strains in Koji increased glucoamylase and α-amylase activities. The ratio of initial spore counts of A. oryzae and R. oryzae influenced the activity of amylolytic enzymes. When this ratio was 1:1, α-amylase showed maximum activity (573 U/g-substrate, 95 h), and when this ratio was 200:1, glucoamylase showed maximum activity (180 U/g-substrate, 95 h).
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~19:00

Venue: Minuet Room (Level 2)

Session 8: 10 presentations-Topic: “Chemical Engineering”

Session Chair: To be added

F0050 Presentation 3 (17:00~17:15)

Semi-mechanistic Model Applied to the Search for Economically Optimal Conditions and Blending of Gasoline Feedstock for Steam-cracking Process

Adam Karaba, Petr Zámostný, Tomáš Herink, and Vendula Kelbichova

Unipetrol Centre of Research and Education (UniCRE), Areal Chempark, 436 70 Litvinov, Czech Republic

Abstract—Steam-cracking is energetically intensive large-scaled process which transforms a wide range of hydrocarbons feedstock to petrochemical products. The dependence of products yields on feedstock composition and reaction conditions has been successfully described by mathematical models which are very useful tools for the optimization of cracker operation. Remaining problem is to formulate objective function for such an optimization. Quantitative criterion based on the process economy is proposed in this paper. Previously developed and verified industrial steam-cracking semi-mechanistic model is utilized as supporting tool for economic evaluation of selected gasoline feedstock. Economic criterion is established as the difference between value of products obtained by cracking of studied feedstock under given conditions and the value of products obtained by cracking of reference feedstock under reference conditions. As an example of method utilization, optimal reaction conditions were searched for each of selected feedstock. Potential benefit of individual cracking and cracking of grouped feedstocks in the contrast to cracking under the middle of optimums is evaluated and also compared to cracking under usual conditions.
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~19:00

Venue: Minuet Room (Level 2)

Session 8: 10 presentations-Topic: “Chemical Engineering”

Session Chair: To be added

F1004 Presentation 4 (17:15~17:30)

Investigation of Various cyclodextrin-784isoflavone Inclusion Complex

Chih-Yu Hsu, Feng-Lin Yen, Stephen Chu-Sung Hu, Chih-Hua Tseng, and Pao-Hsien Huang
Kaohsiung Medical University, Taiwan

Abstract—The main components of soy isoflavones are genistin and daidzein. 784isoflavone (784IF) is a secondary metabolite from daidzin, and previous studies have found several effects, including tyrosinase inhibition, antioxidant and anti-inflammation. However, 784IF has poor solubility in aqueous system and lead to bad bioavailability for limiting its medicinal and cosmeceutical application. The past literatures indicate that the use of cyclodextrin inclusion complex method can improve drug solubility and stability. Therefore, the purpose of the study is used various cyclodextrins (CD), including alpha-cyclodextrin (α-CD), beta-cyclodextrin (β-CD), gamma-cyclodextrin (γ-CD) and hydroxypropyl-β-cyclodextrin (HBPCD) as a carrier to inclusion 784IF and investigated their improvement mechanism of increasing aqueous solubility. The result indicated that hydroxypropyl-β-cyclodextrin inclusioned 784IF (HBPCD-784IF) presents the best inclusion efficiency and phase solubility than other cyclodextrins through amorphous transformation and hydrogen bonding formation. In conclusion, HPBCD-784IF inclusion complex could be an active ingredient in pharmaceutical, food and cosmeceutical industries.
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~19:00

Venue: Minuet Room (Level 2)

Session 8: 10 presentations-Topic: “Chemical Engineering”

Session Chair: To be added

CA033 Presentation 5 (17:30~17:45)

A Method for Recovery of N-methyl 2-pyrrolidone from Wastes of Solvent Regeneration Unit in 1,3-Butadiene Extraction Plant

H. R. Mortaheb, Akbar Bolhasani, F. Meshkini, F. Ghaemmaghami, K. Tabar Heidar

JAM Petrochemical Company

Abstract—N-methyl 2-pyrrolidone (NMP) is applied as a solvent in 1,3-butadiene (BD) extraction plants. The solvent, which is circulated through the unit, is regenerated in a solvent recovery unit. The wastes of solvent recovery unit contains at least 50 wt% NMP which is generally disposed. The recovery of NMP from this waste for reusing in the BD purification plant was studied in the present research by experimental methods such as dissolution, coagulation, and distillation. A purified NMP with the concentration of 99 wt% could be obtained. In addition, the process was scaled up for manufacturing and installing in the BD extraction plant.
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~19:00

Venue: Minuet Room (Level 2)

Session 8: 10 presentations - Topic: “Chemical Engineering”

Session Chair: To be added

F3004 Presentation 6 (17:45~18:00)

Recycling of Greenhouse Gas and Odor Management in Landfills near Urban Area

Eun Ji Woo, Ji Ye Yoo, and Chan Jin Park

Incheon National University, Republic of Korea

Abstract—This study is to identify the greenhouse gases from landfill facilities and the characteristic of odor emission near urban area by selecting a representative landfill site that conforms with the conditions and by looking into related references, and aimed to seek for measures for conducting further research on the efficient management of landfill gas and odor control. Through the analysis of statistical data of landfill gas in recent years, the trend in generation and collection of landfill gas and current state of odor could be identified. Thus, this paper aims to find the relation between the landfill gas and odor as well as generation characteristic and then to be utilized for the research about efficient management method.
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~19:00

Venue: Minuet Room (Level 2)

Session 8: 10 presentations-Topic: “Chemical Engineering”

Session Chair: To be added

F3005 Presentation 7 (18:00~18:15)

The Optimization of Greenhouse Gas Reduction and Odor Emissions from Wastewater Treatment Plant

Ji Ye Yoo, Eun Ji Woo, and Chan Jin Park

Incheon National University, Republic of Korea

Abstract—Wastewater treatment generates significant amount of greenhouse gases mainly methane and nitrous oxide. Therefore, reducing these emissions from the treatment process and the contribution of the wastewater treatment processes to global warming is a major concern. Also, odors can be generated and released from virtually all phases of wastewater collection, treatment, and disposal. Most odor-producing compounds found in domestic wastewater and in the removed solids result from anaerobic biological activity that consumes organic material, sulfur, and nitrogen found in the wastewater. In this study, estimating greenhouse gas emissions from wastewater treatment plants in urban areas, and it attempted to reduce greenhouse gas emissions and odors.
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~19:00

Venue: Minuet Room (Level 2)

Session 8: 10 presentations-Topic: “Chemical Engineering”

Session Chair: To be added

F3007 Presentation 8 (18:15~18:30)

Synthesis of Molecularly Imprinted Polymer for Sterol Separation

Ratanaporn Yuangsawad, Nuengruthai Chuayrueng, Nattawat Nonthanasin, Krittin Binabdullah, and Duangkamol Na-Ranong

King Mongkut’s Institute of Technology Ladkrabang, Thailand

Abstract—Molecular imprinted polymer (MIP) was prepared by bulk polymerization in acetone using acrylamide as a functional monomer, ethylene glycol dimethacrylate as a crosslinker, stigmasterol as a template and benzoyl peroxide as an initiator. The obtained MIPs were characterized using a scanning electron microscope and a fourier transform infrared spectrophotometer. Performance in sterol adsorption of MIPs prepared under various conditions was investigated using a model solution of phytosterols in heptane, comparing with a nonimprinted polymer (NIP). Statistical analysis revealed that the amounts of crosslinker and template strongly affected the performance of MIP while the amount of solvent slightly affected the performance of MIP. MIP synthesized under the optimal condition had adsorption capacity of 1.28 mgsterols/gads which were 1.13 times of NIP.
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~19:00

Venue: Minuet Room (Level 2)

Session 8: 10 presentations-Topic: “Chemical Engineering”

Session Chair: To be added

F3008 Presentation 9 (18:30~18:45)

Advances in Super-Saturation Measurement and Estimation Methods for Sugar Crystallisation Process

Aniediong M. Umo and Sunday B. Alabi

University of Uyo, Nigeria

Abstract—The super-saturation level of the massecuite is an important quality parameter for sugar crystallisation process, as it determines the seeding point, contributes to the quality of crystals and the cost of production. This paper critically appraises the current measurement and estimation methods for super-saturation level of sugar massecuite. On the one hand, the review shows that the current online hardware sensors lack the necessary accuracy, as the variable to be measured is a multivariable function of many unknowns. Moreover, the sensors require regular maintenance and recalibration to be able to obtain reliable readings. On the other hand, the review shows that soft (model or software-based) sensors are capable of offering solutions to some of the challenges of the online hardware sensors. However, their predictions depend on the hardware sensors for some input data and the available sugar crystallisation models are not in the form suitable for online estimation of super-saturation level of the sugar massecuite. It is concluded that the effective measurement/estimation and control of super-saturation of sugar massecuite is still a challenge in the sugar processing industry. It is therefore recommended that soft sensors should be introduced to complement the online hardware sensors.
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~19:00

Venue: Minuet Room (Level 2)

Session 8: 10 presentations-Topic: “Chemical Engineering”

Session Chair: To be added

F3009 Presentation 10 (18:45~19:00)

Predictive Model for Post-Seeding Super-Saturation of Sugar Massecuite in a Fed-Batch Evaporative Crystalliser

Aniediong M. Umo and Sunday B. Alabi

Abstract—The conflicting reports on the performances of the online probes for super-saturation of sugar massecuite necessitate the application of soft-sensor to complement or replace them. Unfortunately, the available sugar crystallisation models which are theoretical and semi-empirical in nature are not in the form which can be directly utilised as soft sensor for real time estimation of the massecuite super-saturation. Therefore, in this study, easy-to-measure online variables that can be correlated with the super-saturation were identified and used to develop a regression model for online estimation of the super-saturation value of sugar massecuite after seeding. The post-seeding regression model gave coefficient of determination and maximum relative error of 0.994 and 4.7%, respectively. It is therefore concluded that the resulting model has the potential of being used for real time estimation of post-seeding super-saturation of sugar massecuite, as opposed to the existing complex fundamental and semi-empirical sugar crystallisation models.
Session 9

Tips: The schedule for each presentation is for reference only. In case of missing your presentation, we strongly suggest that you attend the whole session.

Afternoon, April 9, 2016 (Saturday)

Time: 16:30~18:15

Venue: Freesia Room (Level 2)

Session 9: 7 presentations-Topic: “Ocean Engineering”

Session Chair: Prof. Hock Lye Koh

C0015 Presentation 1 (16:30~16:45)

Experimental Study on Shape Dependent Wave Force of Offshore Support Structures

Youn-Ju Jeong, Min-Su Park, and Young-Jun You

Korea Institute of Civil Engineering and Building Technology, South Korea

Abstract—In this study, wave force tests were carried out for the four types of offshore support structures and wave forces to the support structure shapes were investigated. As the results of this study, it was found that, as the wave period increased at the normal state, wave force decreased for the most cases. Extreme wave force influenced by impact wave force. Impact wave force of this study significantly effect on Monopile and minutely on Hybrid type. So as to, Hybrid type indicated even lower wave force at the extreme state than the Monopile, although Hybrid type indicated higher wave force at the normal state. In respects of the structural design, since critical loading is extreme wave force, it should be contributed to improve structural safety of offshore support structure. However, since the impact wave force was dependent on the support structure shape, wave height, and wave period, more research is needed to access the impact wave force for other shapes and wave conditions.
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~18:15

Venue: Freesia Room (Level 2)

Session 9: 7 presentations-Topic: “Ocean Engineering”

Session Chair: Prof. Hock Lye Koh

C0018 Presentation 2 (16:45~17:00)

An Experimental Method for Evaluating the Overturn Moment of Submerged Structures

Young-Jun You, Youn-Jun Jeong, and Min-Su Park

Korea Institute of Civil Engineering and Building Technology, Republic of Korea

Abstract—Experiments are a good method to evaluate the capacity and performance of a structure, and a numerical analysis tool is a good back-up tool for making the experiment results more reliable in predicting the performance of the structure with various parameters. However, designers sometimes face practical problems such as experiment constraints, expenses, or realization of a real situation with scaled down models. This paper focuses on how to easily quantify the resistant capacity against overturning of submerged structures by experiment. The overturning resistance of a submerged structure in the experiment was acquired by an opposite concept in which a specimen was not placed on the bottom but dangled from the top. A numerical analysis was used to complement evaluation of the overturning moment. Overturning resistant capacity of submerged structures by waves was acquired easily from this method.
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~18:15

Venue: Freesia Room (Level 2)

Session 9: 7 presentations-Topic: “Ocean Engineering”

Session Chair: Prof. Hock Lye Koh

C0019 Presentation 3 (17:00~17:15)

Observations of Acoustic Propagation due to Subaqueous Sand Dunes in the South China Sea

Linus Y. S. Chiu, Andrea Y. Y. Chang, and Davis B. Reeder

National Sun Yat-sen University, Taiwan

Abstract—The large subaqueous sand dunes are expected to affect underwater acoustic propagation. Very large subaqueous sand dunes on the upper continental slope of the northern SCS were discovered, in water depths of 160 m to 600 m, with amplitudes exceeding 16 m and crest-to-crest wavelengths exceeding 350 m, and composed of fine to medium sand. The dunes' apparent formation mechanism is the internal solitary waves which generate from tidal forcing on the Luzon Ridge on the east side of the SCS, propagate west across the deep basin with amplitudes regularly exceeding 100 m, and dissipate very large amounts of energy via turbulent interaction with the continental slope, which suspends and redistributes the bottom sediment. In this talk, the criterion of adiabatic invariance is extended to the case of a waveguide possessing bedforms to study the acoustic propagation effects due to the subaqueous sand dunes. And underwater acoustic experiments conducted by Taiwan and United States in the South China Sea during intensive observation period from 2012-2014 are also overviewed. Results demonstrate that subaqueous sand dune bedforms increase mode coupling strength such that the criterion for adiabatic propagation is exceeded for waveguides with small bedform amplitude to water depth ratios; increasing bedform amplitude enhances mode coupling. Numerical simulations confirm the extended criterion parameterization and the experimental data also present the sand dune bedforms affects acoustic channel characteristics. [This work is supported by the Ministry of Science and Technology, R.O.C.]
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~18:15

Venue: Freesia Room (Level 2)

Session 9: 7 presentations-Topic: “Ocean Engineering”

Session Chair: Prof. Hock Lye Koh

C1002 Presentation 4 (17:15~17:30)

An Experimental Study of Wave Runup: Cylinder Fixed in Waves versus Cylinder Surging in Still Water

**Deping Cao, Edmond Lo Yat-Man, Wei Jian, and Zhenhua Huang**

Nanyang Technological University, Singapore

_**Abstract**—Many previous studies have been reported for the wave runup on fixed cylinders but few has been done on surging cylinders. Physically, there is conversion of the kinetic energy of water particles into potential energy during the runup on a fixed cylinder. Several formulas have been reported to correlate the runup with the velocity head. Whether this holds for a surging cylinder or not remains unknown. In the present study, experiments are conducted to investigate the relationship between runup on a cylinder and the relative velocity between the cylinder and the water particles around it. Both runup on a fixed cylinder due to an incident wave and that on surging cylinders due to the surge motion are studied. The results show that for both cases an increase in velocity head leads to an increase in runup._
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~18:15

Venue: Freesia Room (Level 2)

Session 9: 7 presentations-Topic: “Ocean Engineering”

Session Chair: Prof. Hock Lye Koh

C1003 Presentation 5 (17:30~17:45)

Onshore and Offshore Wind Speed Distributions at the Western Waters in Taiwan

Jui-Fang Tsai, Hsien-Kuo Chang, Jin-Cheng Liou, and Lian-Sheng Ho

Civil Engineering in National Chiao Tung University, Taiwan

Abstract—Wind speed data for 2010 at eight stations located in three coastal areas of Taiwan were used to fit three kinds of Weibull distributions in this study. Bimodal Gamma-Weibull distribution is examined the best among three distributions for all wind speed data comparing three tests for goodness-of-fit. Key indicators for a bimodal distribution are the weighting parameter approaching 0.5, variation of peak speeds of monthly distribution and peak speed ratio. Topographical effect of high central mountains of Taiwan on offshore wind speeds at southern Taiwan is stronger than at northern Taiwan. It explains that the distribution of offshore wind speeds is bimodal at northern Taiwan and unimodal at southern Taiwan.
Afternoon, April 9, 2016 (Saturday)

Time: 16:30~18:15

Venue: Freesia Room (Level 2)

Session 9: 7 presentations-Topic: “Ocean Engineering”

Session Chair: Prof. Hock Lye Koh

C3001 Presentation 6 (17:45~18:00)

Investigation of Mangrove Biomass Potential in Indragiri Hilir Wetlands, Indonesia

Ari Sandhyavitri, Fajar Restuhadi, Rudianda Sulaiman, Sigit Sutikno, and Koichi Yamamoto

University of Riau, Indonesia

Abstract—This study investigated the distribution of mangrove vegetation in the wetland area of Indragiri Hilir, Indonesia; and calculated the potential of the mangrove biomass through satellite image interpretation data, using Geographic Information System (GIS), combined with the field survey investigation (ground truth). It was identified that the mangrove area within this wetland was 118.747 ha with the biomass potential was approximately 41,648,651 ton. The majority of vegetation were Bakau (Rhizophora apiculata) 38%, Nyirih (Xylocarpus granatum) 19%, and Tumu (Bruguiera sexangula) 13%. The degradation of the mangrove area was approximately at the rate of 5,000 ha/year (2010-2013). Hence, there is a need to conserve mangrove vegetation as natural defenses/green belts in order to protect coastal area and to adapt to the climate change.
Shoreline Change Analysis of Peat Soil Beach in Bengkalis Island Based on GIS and RS

Sigit Sutikno, Ari Sandhyavitri, Muhammad Haidar, and Koichi Yamamoto

University of Riau, Indonesia

Abstract—This paper presents an application of RS (remote sensing) and GIS (Geographic Information System) to analyze the spatial changes as well as quantify the shoreline change of Peat Soil Beach in Bengkalis Island, Riau Province, Indonesia. The area of Bengkalis Island is about 900 km², of which 665 km² is covered by peat more than 1 m thick. Landsat satellite images were used with a combination of histogram thresholding and band ratio method for shoreline change detection for last 26 years from 1988 to 2014. The statistical method called as LRR (Linear Regression Rate) and EPR (End Point Rate) in DSAS (Digital Shoreline Analysis System) was used to estimate the erosion and deposition rates. The shoreline of Bengkalis Island is dynamically changed over a time because abrasion rate is very high due to land use change in peat swamp forest. The maximum abrasion was 32.75 m/year and 32.53 m/year based on EPR and LRR methods respectively. Generally, either using EPR method or LRR method did not show a significant difference, although the LRR method tends to slightly underestimate.
T2007 Presentation 1

Viral Diversity in Patients with Dengue Infection

**PATCHARAWAN SUJAYANONT**, Kwanrutai Chin-inmanu, Teo Yik Ying, Prida Malasit, and Prapat Suriyaphol

Mahasarakham University, Thailand

Abstract—Over 50 million of global population are infected by dengue virus every year and some develop symptoms of dengue hemorrhagic fever, yet pathogenesis of the disease is still unclear. In this study, next generation sequencing technology was used to investigate dynamics of viral diversity and characterizes complexity of viral population over the course of infection. Samples from Songkhla province, Thailand were selected from plasma collection of our dengue cohort using the following criteria – 1) samples must be collected within the same epidemic season with same serotype 2) there are at least 2 consecutive sample collections during admission. The whole genome of dengue virus in each sample was amplified and subsequently sequenced by Illumina HiSeq platform. Threshold for inclusion criteria of variation was at least 0.5% minor allele frequency with coverage depth of at least 1,000X. Minor allele frequency, phylogenetic tree and the ratio between synonymous and non-synonymous amino acid were analyzed for each sample. The results showed no difference in number of variation in viral population collected from patients with different severity, suggesting number of variation might not directly influence severity of the disease, instead, pattern of changes might provide more impact on disease progression as number and extent of variation were increased. Although no significantly difference have found between the viral populations collected from patients with different severity, phylogenetic tree showed detachment of one patient might be due to infection by traveling or transmission of virus by
human from different area. In this study, changes in viral population during the course of infection were demonstrated. The changes is the outcome of interaction between the pathogen and human immune response, further investigation is required to elucidate detailed mechanisms.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~18:45

Venue: Minuet Room (Level 2)

Poster Session: 10 presentations-Topic: “Chemical Engineering”

F0015 Presentation 2

Ion-exchange Resin Based on Phenyl Functionalized Polystyrene-butadienerandomcopolymer

Wu Bin Ying, Sat Byeol Park, Ji Uk Jang, Jin Yong Seol, and Bum Jae Lee

Department of Fine Chemical Engineering and Applied Chemistry, Chungnam National University

Abstract—This investigation is focus on the synthesis and characterization of the sulfonated phenyl functionalized polystyrene-butadiene random copolymer. Polystyrene-butadiene random copolymer with medium and low vinyl contents were synthesized via anionic polymerization with or without polar additive (TMEDA). The phenyl functionalized polystyrene-butadiene random copolymer with various phenyl contents were synthesized from polystyrene-butadiene random copolymer with medium and low vinyl contents via thiol-ene reaction. The phenyl functionalized polystyrene-butadiene random copolymers were sulfonated by the addition of 95% H2SO4 and acetic anhydride at R.T. in diethyl chloride. The sample films of sulfonated polymer PSB7-T-S with 8mol% to 15mol% sulfonation degree were checked by conductivity test, and the area resistances. This investigation further relates to the process for the reaction condition, chemical addition mode and sulfonation degree. The sulfonation degrees were various from 7.3mol% to 24.3mol% determined by elemental analysis (EA) with great ion exchange capacity(0.60 ~ 2.26 meq/g), electrical conductivity(5.74 ~ 74.30 Ω·cm2) and lower water uptake (5.1~12.8wt%).
Poster Session: 10 presentations-Topic: “Chemical Engineering”

F3006 Presentation 3

Three-dimensional Co-DpyDtolP-MOF with Hexagonally Oriented Micropores

**Youngmee Kim**, Hyun-Chul Kim, and Seong Huh

Ewha Womans University, Republic of Korea

*Abstract*—Recently, the MOFs containing porphyrin-bridging ligands are attracting much interest due to their advantages over more commonly employed aromatic polycarboxylate-bridging ligands [1]. The porphyrin-based MOFs could be utilized for a wide range of advanced applications including selective catalysis, photosensitization, and photovoltaics. A new porphyrin-based Co-MOF, [Co(DpyDtolP)]_{6}·12H_{2}O (I) composed of DpyDtolP (5,15-di(4-pyridyl)-10,20-di(4-methylphenyl)porphyrin) was prepared in a high yield and structurally characterized (Fig. 1). DpyDtolP is a ditopic N-donor ligand with a large space or gap between the two pyridyl groups at the 5- and 15-positions of the porphyrin backbone. Although the 4-tolyl groups in DpyDtolP could not be involved in coordination toward the metal ion, the presence of these two 4-tolyl groups led to a new infinite three-dimensional framework: I with exceptionally high thermal stability at elevated temperature, and the single crystals of I maintained their crystallinity even after vacuum drying at 250 °C. The robust framework of I contained micropores that were periodically arranged in a hexagonal symmetry. While the evacuated I moderately sorbed N_{2} at 77 K, it sorbed 142.8 cm^{3} g^{-1} (6.37 mmol g^{-1}) of CO_{2} at 196 K. The CO_{2} sorption isotherms exhibited a very clear step in both the adsorption and desorption branches [2].
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~18:45

Venue: Minuet Room (Level 2)

Poster Session: 10 presentations-Topic: “Chemical Engineering”

F3010 Presentation 4

Pretreatment of Corn Stover Using Hot-water for Sugar Recovery and Fermentable Sugars Production

Tae Hyun Kim, Jun Seok Kim, and Kyeong Keun Oh

Kongju National University, Republic of Korea

Abstract—Corn stover, herbaceous lignocellulosic biomass, can be considered as an abundant source of fermentable sugars if near complete fractionation can be achieved in the biorefinery facility. In this study, non-structural sugar-rich corn stover was treated using hot-water. A two-stage percolation process was investigated to recover both non-structural sugars and xylooligomer. In this reaction, hot-water was pumped into the packed-bed flow-through column reactor; and temperature was gradually increased in order to solubilize extractives and xylooligomer consecutively. Non-structural sugars such as sucrose, glucose, and fructose, (~20% by weight) were recovered using hot-water in the first stage at mild temperature (50-140°C), which is followed by the recovery of xylooligomer using hot-water at higher temperature (160-210°C) in the second stage. Optimal temperature of two-stage hot-water processing were selected and tested for fractionation effect on corn stover. Various reaction conditions (1) for effective fractionation of extractives and xylooligomer and (2) for effective pretreatment of remaining solids using flow-through column reactor system using hot-water were explored. Chemical compositions and enzymatic digestibility of treated biomass are discussed.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~18:45

Venue: Minuet Room (Level 2)

Poster Session: 10 presentations-Topic: “Chemical Engineering”

F0007 Presentation 5

Efficient Production of Mastoparan B, a Cationic Venom Peptide, Via the Artificial Oil Body-cyanogen Bromide Purification Platform

Feng-Chia Hsieh and Tzuy-Rong Jinn

China Medical University, Taiwan

Abstract—Mastoparan B (MPB), a cationic venom peptide found in Vespa basalis, belongs to an evolutionarily conserved component of the innate immune response against microbes. MPB possesses significant biological potency, especially in the anti-microbial activity, and pore-forming ability. These properties make MPB extremely attractive for further studies and applications. However, this cationic MPB is difficult to obtain and production. In the present study, we successfully to develop a new and reliable recombinant oleosin-based fusion expression procedure in Escherichia coli and coupled with the artificial oil bodies (AOB)-cyanogen bromide purification platform to produce bioactive MPB. This procedure could yield ~2.0 mg of MPB from 1L of cultured cell pellet. And, enhanced the yield by >2-fold of purified MPB compared to reported previously. Take together, this study provides a new insight into the over-production of active MPB, which will facilitate studies and applications of this peptide in the future.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~18:45

Venue: Minuet Room (Level 2)

Poster Session: 10 presentations-Topic: “Chemical Engineering”

F0056 Presentation 6

Optimization of Processing Technology of Compound Dandelion Wine

Jixuan Wu, Guangren Sun, Xiuli Cao, Yuting Han, Xuesong Sun, Huan Zhang, Lei Zhang, and Ataer Dang

Department of Food Science & Engineering, Beihua University, China

Abstract—Exploring dandelion food has been the concern in fields of the food processing and pharmaceutical industry for playing exact curative effect on high-fat-diet induced hepatic steatosis and diuretic activity. Few dandelion foods including drinks and microencapsulation were explored and unilateral dandelion wine were less carried out for its bitter flavour. In this paper, to optimize the processing technologies of fermented compound wine from dandelion root, the orthogonal experiment design method was used to composite dandelion root powder with glutinous rice and schisandra fruit and optimize the fermenting parameters. Four factors with dandelion content, schisandra content, acidity and sugar content were discussed. The acidity factor was firstly confirmed as 7.0 g/L. The other three factors were confirmed by a series experiments as dandelion 0.55%, schisandra 0.5%, sugar 22%. With nine step processing of mixing substrate, stirring with water, cooking rice, amylase saccharification, pectinase hydrolysis, adjusting juice, fermenting with yeast, filtering, aging, sterilization, a light yellow wine with the special taste with flavour of dandelion, schisandra and rice and less bitter, few index were determined as 14.7% alcohol, 6.85 g/L acidity. A dandelion fermented compound wine with suitable flavour and sanitarian function was developed for enriching the dandelion food.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~18:45

Venue: Minuet Room (Level 2)

Poster Session: 10 presentations-Topic: “Chemical Engineering”

F2001 Presentation 7

Research on Catalytic Oxidation Pretreatment of Organic Pesticide Wastewater with High Concentration

Jing Jiang

Department of architectural and environmental Engineering, Chengdu Technological University, China

Abstract—Pesticide wastewater has the characteristics of high organic pollutant, high concentration, deep color and high toxicity, which has become difficult to treat the organic wastewater with high concentration at home and abroad. This article uses three methods of US(ultrasonic), Fenton(Fe$^{2+}$&H$_2$O$_2$) and combination of US&Fenton were used in the comparative research on the treatment of organic pesticide wastewater with high concentration. Experimental conditions: time of 130 min, ultrasonic power of 280W, frequency of 418kHz, pH value of 3.5, H$_2$O$_2$ concentration of 0.3mol/l; dosing mode: two thirds was added at 0 min, the rest one third was added at 65 min. The results showed that the treatment effect of the combination of US&Fenton was significantly better than that of independent US and independent Fenton; after the treatment on the organic pesticide wastewater with high concentration, the degradation rate of COD reached 85%, the chromaticity degradation rate reached 99%; the ratio of COD/BOD was about 1.4, with better biodegradability, which has provided a good condition for the subsequent biochemical treatment. Solved the problem of pesticide wastewater was difficult and expensive to degradation.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~18:45

Venue: Minuet Room (Level 2)

Poster Session: 10 presentations- Topic: “Chemical Engineering”

F2002 Presentation 8

Study on the Varying Patterns of Total Phospholipids, Selenium, Phosphorus, Reducing Sugar and Total Sugar, Hydrolyzed Amino Acids in the Velvet Antler of Northeast Sika Deer in Growth Period

Shu-li Wang and Yan-mei Wang

Jilin Agriculture University, Changchun, China

Abstract—In this study, the varying patterns of total phospholipids, selenium, phosphorus, reducing sugar and total sugar, hydrolyzed amino acids in the velvet antler of Northeast sika deer in growth period were evaluated. Eighteen Northeast sika deer were allocated into 6 groups according to the antler shedding time. Results indicated that there was significant difference of the selenium content between any two of the six groups (P<0.05) except that of Group 1 and Group 2 or Group 5 and Group 6. About the phosphorus there was significant difference between any two of the six groups (P<0.05) except that of Group 4 and Group 5 or Group 2 and Group 3 or Group 1 and Group 2. Group 6 had the lowest total Phospholipids content. Both of the reducing sugar and total sugar showed an increasing pattern initially and then decrease gradually.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~18:45

Venue: Minuet Room (Level 2)

Poster Session: 10 presentations-Topic: “Chemical Engineering”

F3001 Presentation 9

The Research on Analytical Method of Diquat Dibromide in Diquat Technical Concentrates

Bing Gu and HuiMing Xiao

Pesticides Test Laboratory, ShenYang Research Institute of Chemical Industry, China

Abstract—The technical concentrates(TK) is prepared by technical material (TC), the content is lower than TC, it can be used for the preparation of pesticide formulations. Diquat TK is generally brown or dark brown liquid. In recent years, it develops rapidly as herbicides. This paper mainly introduces the research on analyses of the effective components in diquat TK.
Afternoon, April 9, 2016 (Saturday)

Time: 13:30~18:45

Venue: Minuet Room (Level 2)

Poster Session: 10 presentations-Topic: “Chemical Engineering”

F3003 Presentation 10

Purification of Food-grade Magnesium Chloride

Lianmin Ji, Zhiqi Liu, Lijuan Li, Xuexue Song, Zhongmin Zeng, and Feng Nie

Qinghai Institute of Salt Lakes, Chinese Academy of Sciences, China

Abstract—The application of the varying weights of bischofite dissolved in the distilled water was investigated. The effects of the temperature on the rate of evaporation and the thermal precipitation time on the purity of the crystal products were fully investigated. Two validation tests including magnifying tests and recycling residue were also studied. Our results demonstrate that the contents of NaCl, KCl and CaSO₄ in the filtrate reached a minimum value after the pretreatment of 350 g bischofite dissolved in 100 ml distilled water. In the crystal products from the second evaporating stage of the validation tests, the contents of MgCl₂·6H₂O, SO₄ and NaCl+KCl are 99%, ≤0.1±0.01% and ≤0.8±0.04%, respectively. The content of magnesium chloride in the solution was increased to a greater extent, and the impurities reduced correspondingly through the dissolution pretreatments of bischofite. This could decrease energy consumption for the impurity removing stage, evaporation and crystallization process, and thus reduce costs for the industrial production of food-grade magnesium chloride.

Dinner

19:00 | Hotel Restaurant
Conference Venue
HOTEL SUNROUTE PLAZA SHINJUKU

http://en.sunrouteplazashinjuku.jp/

Hotel Sunroute Plaza Shinjuku is a chic hotel located in the busy Shinjuku business district of Tokyo, Japan. Newly renovated in 2007 with sleek lines and modern accents, this Tokyo Shinjuku hotel's guestrooms are both contemporary and inviting for business and leisure travelers. Spacious and considerate, Hotel Sunroute offers guests competitive prices with special discounts and deals and the choice of a variety of guestrooms to meet each party's specifications.

CONTACT: 2-3-1 Yoyogi, Shibuya-ku, 151-0053 Tokyo - Japan
Tel: +81-3-3375-3211 Fax: +81-3-5365-4110
plaza-shinjuku@sunroute.jp
## Feedback Information

(Please fill this form and return it to conference specialist during the conference days.)

### Personal Information

<table>
<thead>
<tr>
<th>Conference Name and Paper ID</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Full Name</td>
<td></td>
</tr>
<tr>
<td>E-mail Address</td>
<td></td>
</tr>
<tr>
<td>Area of Research</td>
<td></td>
</tr>
<tr>
<td>Affiliation</td>
<td></td>
</tr>
</tbody>
</table>

### Please indicate your overall satisfaction with this conference with “✓”

<table>
<thead>
<tr>
<th>Conference Content</th>
<th>Very Satisfied</th>
<th>Somewhat Satisfied</th>
<th>Neutral</th>
<th>Somewhat Dissatisfied</th>
<th>Very Dissatisfied</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentation and Paper Value</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Registration Process</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Venue</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Food and Beverage</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
</tbody>
</table>

### Are You A Member of APCBEES

Yes □ No □  
(If “No”, you may apply membership from http://www.cbees.org/member.htm)

### Do You Willing to Receive APCBEES Future Conferences Information Via E-mail

Yes □ No □

### Where did you get the conference information?

### Would you please specify the main reason for attending this conference?
2016 APCBEES TOKYO CONFERENCES

<table>
<thead>
<tr>
<th>Did the conference fulfill your reason for attending?</th>
<th>Yes– Absolutely ☐ Yes- But not to my full extent ☐ No ☐ (If “No”, please tell us the main reason)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Would you please list the top 3 to 5 universities in your city?</td>
<td></td>
</tr>
<tr>
<td>Other Field of Interest</td>
<td></td>
</tr>
<tr>
<td>Any Other Suggestions/Comments</td>
<td></td>
</tr>
</tbody>
</table>

Thank you for taking time to participate in this conference evaluation. Your comments will enable us to execute future conferences better and tailor them to your needs!