

CONFERENCE ABSTRACT

**2017 2nd Asia Conference on Environment and
Sustainable Development**

(ACESD 2017)

**2017 2nd International Conference on New
Energy and Applications**

(ICNEA 2017)

November 2-4, 2017

Tokyo, Japan

Co-organized and Sponsored by



Table of Contents

Welcome Message from Organizing Committee	2
Conference Location and Directions	3
Instructions for Oral & Poster Presentations	4
Daily Schedule	5
Keynote Speakers	6
Plenary Speakers	9
Invited Speaker	11
Contents of Sessions	13
Oral Presentation Abstracts	17
Poster Presentation Abstract.....	47
Listeners.....	48
Author Index	50
One-Day Tour	52

Welcome Message from Organizing Committee

It is our great pleasure to invite you to join our international conferences - 2017 2nd Asia Conference on Environment and Sustainable Development (ACESD 2017) & 2017 2nd International Conference on New Energy and Applications (ICNEA 2017). This event will provide a unique opportunity for editors and authors to get together and share their latest research findings and results. We look forward to welcoming you at Tokyo, Japan.

We're confident that over the two days you'll get the theoretical grounding, practical knowledge, and personal contacts that will help you build long-term, profitable and sustainable communication among researchers and practitioners working in a wide variety of scientific areas with a common interest in environment and sustainable development & new energy and applications.

On behalf of all the conference committees, I would like to thank all the authors as well as the technical program committee members and reviewers. Their high competence, their enthusiasm, their time and expertise knowledge, enabled us to prepare the high-quality final program and helped to make the conference become a successful event.

I truly hope you'll enjoy the conference and get what you expect from the conference.

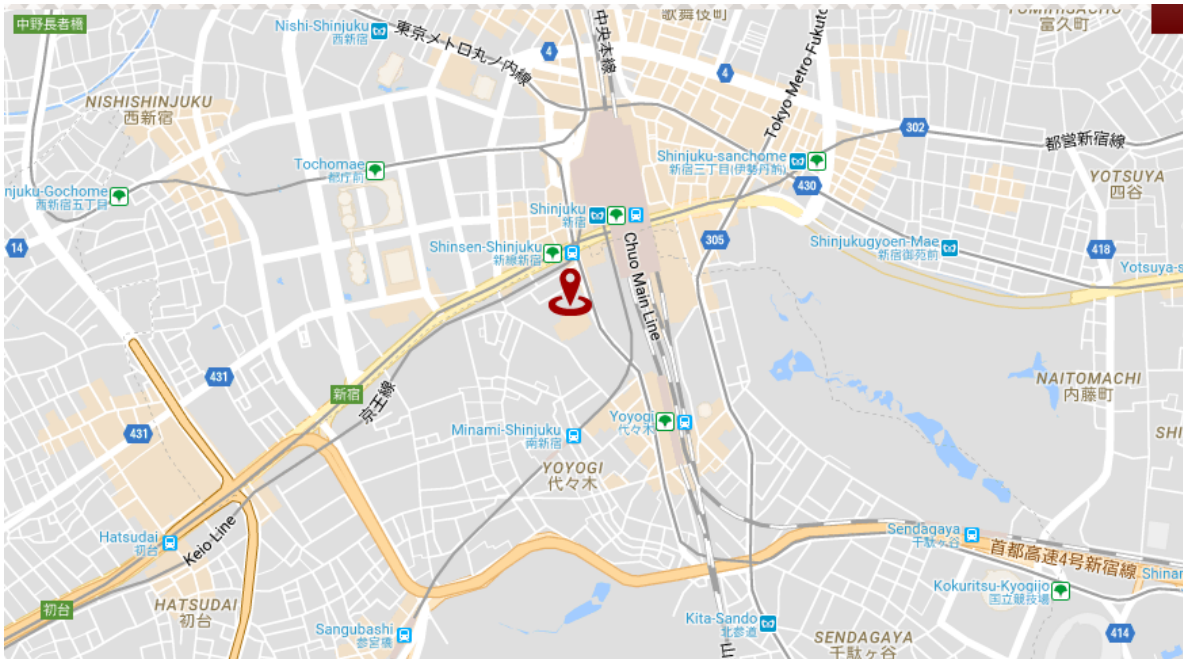
Organizing Committee
October 23, 2017

Conference Location and Directions

Hotel Sunroute Plaza Shinjuku

<http://en.sunrouteplazashinjuku.jp/>

Add: 2-3-1 Yoyogi, Shibuya-ku 151-0053 Tokyo, Japan
Tel: +81-3-3375-3211 | Email: plaza-shinjuku@sunroute.jp



Instructions for Oral & Poster Presentations

Oral Presentations

- **Time:** a maximum of 15 minutes in total, including speaking time and discussion. Please make sure your presentation is well timed. Please keep in mind that the program is full and that the speaker after you would like their allocated time available to them.
- You can use CD or USB flash drive (memory stick), make sure you scanned viruses in your own computer. Each speaker is required to meet her / his session chair in the corresponding session rooms 10 minutes before the session starts and copy the slide file (PPT or PDF) to the computer.
- It is suggested that you email a copy of your presentation to your personal in box as a backup. If for some reason the files can't be accessed from your flash drive, you will be able to download them to the computer from your email.
- Please note that each session room will be equipped with a LCD projector, screen, point device, microphone, and a laptop with general presentation software such as Microsoft Power Point and Adobe Reader. Please make sure that your files are compatible and readable with our operation system by using commonly used fronts and symbols. If you plan to use your own computer, please try the connection and make sure it works before your presentation.
- **Movies:** If your Power Point files contain movies please make sure that they are well formatted and connected to the main files.

Poster Presentations

- Maximum poster size is 36 inches wide by 48 inches high (3ft.x4ft.)
- Posters are required to be condensed and attractive. The characters should be large enough so that they are visible from 1 meter apart.
- Please note that during your poster session, the author should stay by your poster paper to explain and discuss your paper with visiting delegates.

Dress Code

- Please wear formal clothes or national characteristics of clothing.

Daily Schedule

November 2, 2017 (9:00am-5:30pm)		
9:00am-5:30pm	Arrival and Registration	Venue: Outside Kaze
1:30pm-1:40pm	Opening Remarks: Prof. Guohong Wu, Dept. of Electrical & Electronic Engineering, Tohoku Gakuin University, Japan	Venue: Beni & Kaze
1:40pm-2:20pm	Keynote Speech I: Prof. Mitsuo Yoshida, Japan International Cooperation Agency (JICA), Japan	
2:20pm-3:00pm	Keynote Speech II: Prof. Guohong Wu, Dept. of Electrical & Electronic Engineering, Tohoku Gakuin University, Japan	
3:00pm-3:30pm	Coffee Break & Group Photo	
3:30pm-5:45pm	Session One: Environmental Pollution and Protection	Venue: Beni
3:30pm-5:30pm	Session Two: Renewable Energy and Clean Energy	Venue: Kaze
November 3, 2017 (9:00am-8:00pm)		
9:00am-10:00am	Plenary Speech I: Prof. Takehiko Murayama, School of Environment and Society, Tokyo Institute of Technology, Japan	Venue: Beni & Kaze
10:00am-10:45am	Plenary Speech II: Assoc. Prof. P. W. T. Pong, The University of Hong Kong, Hong Kong	
10:45am-11:15am	Coffee Break & Group Photo	
11:15am-12:00am	Invited Speech I: Prof. Kyoko Kuwajima, Aoyama Gakuin University, Japan	
12:00am-1:00pm	Lunch	
1:00pm-3:15pm	Session Three: Urban Planning and Environmental Management	Venue: Beni
	Session Four: Power Electronic Technology	Venue: Kaze
3:15pm-3:45pm	Coffee Break	Venue: Beni & Kaze
3:45pm-5:45pm	Session Five: Resource Management and Sustainable Development	Venue: Beni
	Session Six: Thermal Energy and Chemical Engineering	Venue: Kaze
5:45pm-6:15pm	Closing Session	Venue: Mai
6:15pm-8:00pm	Dinner	
November 4, 2017 (7:30am-6:30pm)		
7:30am-6:30pm	One-Day Tour	

Tips: Please arrive at the conference room around 10 minutes before the session begins to copy your PPT into the conference laptop.

Keynote Speakers



Prof. Mitsuo Yoshida

**Director, International Network for Environmental & Humanitarian Cooperation (iNEHC)
Technical Advisor, Global Environment Department, Japan International Cooperation
Agency (JICA), Japan**

Professor Mitsuo Yoshida is now a senior advisor in environmental management at Japan International Cooperation Agency (JICA), and also the director of International Network for Environmental & Humanitarian Cooperation (iNEHC). His specialties are in environmental management engineering, solid waste management, environmental geology. In 2001, he was a research fellow in environmental geology, Imperial College London, London, UK; In 1982, he got the PhD degree in geology and mineralogy from Graduate School of Science, Hokkaido University, Sapporo, Japan; the MSc degree in geology and mineralogy, Graduate School of Science, Hokkaido University, Sapporo, Japan and in 1975, he got the BSc degree in geology, Faculty of Science, Shinshu University, Matsumoto, Japan.

He is a member of Japan Environmental Council (JEC); Japan Scientist Association (JSA); Japan Association on the Environmental Studies (JAES); Japanese Association for Water Resources and Environment (JAWRE); Japan Society of Material Cycles and Waste Management (JSMCWM), etc.

Speech Title: "Capacity Development in Solid Waste Management"

Abstract: Solid wastes are unavoidably generated in places where people live or in industrial activities, but particularly in developing countries, they are imperfectly collected, improperly disposed, and non-renewable resources contained are wasted, which cause public health problems and inhibit their sustainable development.

As widely known, the United Nations decided the "Millennium Development Goals (MDGs)" in 2000 as the international development goals were set for the target year of 2015. However, although targets for environmental conservation and public health are included at that time, waste management issue was not mentioned. As a successor to the MDGs, the "Sustainable Development Goals (SDGs)" was decided in 2016 as international development goals for the target year of 2030, where, targets and indicators were defined from the field of solid waste

management, which means solid waste management has been recognized as a major issue in considering the sustainable development. Thus, it is the time for the entire world to cooperate and work on solid waste management.

From a global perspective, the progress of urbanization and the population growth in developing countries are increasingly accelerating today, as the results, the total amount of waste generated has increased rapidly and the waste problem is becoming more serious; where we often find a weak capacity to cope with the huge amount of waste generated, insufficient controls to various environmental burdens, and difficulties to coordinate about socio-economic issues. Combatting to the problems, various efforts are required for the countries by themselves and international donors such as ODA (official development assistance) agencies, NGOs, and private sector. There is a strong need for comprehensive approach under the long-term prospect for enhancing the capacity in solid waste management to cope with waste problems under given conditions of each city in each country.

In this presentation, I would like to discuss about a phased development model of solid waste management and the strategy for supporting capacity development in solid waste management, based on the experience of development cooperation practices in Asia and Africa.



Prof. Guohong Wu

Dept. of Electrical & Electronic Engineering, Tohoku Gakuin University, Japan

Professor Guohong Wu is working as a tenured professor and director of the Advance Power Engineering Lab. and Renewable Energy and Hybrid Microgrid Lab. at Dept. of Electrical & Electronic Engineering, Tohoku Gakuin Univ. Japan. He received his B.S. and M.S. degrees in electrical engineering from Tianjin Univ. China in 1989 and 1994, respectively, and a joint-supervised Ph.D. degree from the Univ. of Tokyo, Japan and Tianjin Univ. in 1998. He was with the Univ. of Tokyo and Tohoku Univ. Japan from 1995 to 2005. Since 2005, he has been working with the Tohoku Gakuin Univ. From April 2014 to Mar. 2015, He was a visiting researcher at UCLA, USA.

Professor Wu's research interests include renewable power generation system, microgrid/smart grid, FACTS devices, HVDC systems, power system stability analysis, superconductivity application to power systems, etc. He is the author of 4 books and 157 technical papers, and has been representatives of tens of research projects and assigned as

many academic and social committee members related electrical engineering field in Japan. Professor Wu is also guest professor of 2 universities in China. He is both the Senior Members of IEEE and IEEJ.

Speech Title: "An Overview of the Current Research and Development of Renewable Power Generation and Microgrid Technologies in Japan"

Abstract: With the increasing concerns of the global warming, fossil source depletion and environmental pollution problems, the renewable power generations have been increasingly developed over the last decades. However, the main challenge for utilizing renewable resources is associated with the unpredictability and fluctuation of the power generated from these natural resources. Microgrid potentially has the ability of power management to mitigate the power fluctuation as well as contribute to the stabilization of the integrated power grid, it is therefore considered as a prospective way to facilitate the expanded use of distributed renewable resources. Japan is one of the countries that is importing most of the energy sources in the world and the major proposer of Kyoto Protocol, which is the first important international agreement related to dealing with the global warming problems. This speech will give an overview of the research works in Japan for the development of renewable power generations and microgrid/smart grid technologies, and provide a basic understand of the current researches on this area in Japan.

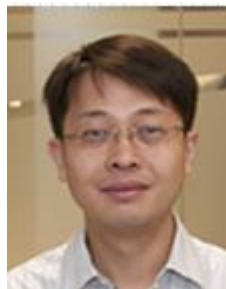
Plenary Speakers



Prof. Takehiko Murayama

School of Environment and Society, Tokyo Institute of Technology, Japan

Professor, School of Environment and Society, Tokyo Institute of Technology. He specializes in environmental planning and policy such as environmental impact assessment, risk assessment, management and communication as well as consensus building with stakeholders. Since 2004, he is a chair of JICA advisory committee on environmental and social consideration for relatively large-scale projects. Currently, he is also a member of the committee on EIA of the Central Environment Council and a co-chair of policy dialogue on chemicals and the environment, Ministry of the Environment. Since 2008, he is a member of International Advisory Board of a Journal, Environmental Impact Assessment Review (Elsevier), and has contributed to the activities of the Society for Risk Analysis, Japan as a secretary-general since 2010. In addition, he has been involved in activities relevant to recovery and reconstruction in Fukushima region where was damaged by the nuclear disasters in 2011. In 2016, He also contributed into the annual meeting of International Association for Impact Assessment (IAIA) held in Nagoya City as a co-chair.



Assoc. Prof. P. W. T. Pong

The University of Hong Kong, Hong Kong

Philip W. T. Pong is a chartered physicist, a chartered electrical engineer, and a chartered energy engineer. He is a registered professional engineer in electrical, electronics, and energy.

He is working on spintronic magnetic field sensors, smart grid, and nano-bio at the Department of Electrical and Electronic Engineering (EEE), the University of Hong Kong (HKU). He received a PhD in engineering from the University of Cambridge in 2005. After working as a postdoctoral researcher at the Magnetic Materials Group at the National Institute of Standards and Technology (NIST) in the United States for three years, he joined the HKU Faculty of Engineering where he is now an associate professor working on development and applications of spintronic sensors and magnetic nanoparticle technologies in smart grid and smart living. He is a Senior Member of IEEE and Corporate Member of HKIE in Electrical, Electronics, and Energy Divisions. He is an associate editor for two SCI journals, and he serves on the editorial review board of the IEEE Magnetics Letters. He published over 200 technical papers. He is a Fellow of the Institute of Materials, Minerals and Mining and also a Fellow of the NANOSMAT Society.

Speech Title: "Make Better "Sense" of Smart Grid for Energy Stability and Efficiency via the New Sensing Capabilities offered by Magnetic Sensors"

Abstract: The recent flourishing development of spintronic magnetic sensors has stimulated the versatile utilization of magnetic sensors in various areas such as biomedical engineering, consumer gadgets, homeland security, automobiles, aerospace, and robotics. In particular, it galvanizes the novel application of magnetic sensors in smart grid because of their superb current sensing capability, compact-in-size, mass-manufacturability, broad bandwidth, low power consumption, and signal compatibility with conventional electronics. The market of smart grid sensors is expected to reach US\$39 billion in 2019. Besides current measurement, our research demonstrates magnetic sensors can unprecedentedly offer many advanced sensing capabilities critically needed to enable smart grid. We can now make better "sense" of the power grids. These new sensing capabilities can enable dynamic line rating and provide extra capacity for the existing power grids to integrate renewable energy. The situational awareness of the power grids is greatly enhanced that is conducive to the stability and efficiency of the power system. These new sensing capabilities will enable the collection of information that are vital for achieving self-healing and resilient operation in smart grid. Essentially, magnetic sensors can provide innovative solutions to many problems in today's electric grid infrastructure, from generation to transmission and distribution to end-use. They are going to bring salient impacts on asset monitoring, outage management, demand response, and building energy management to name a few in this age of new energy.

Invited Speaker



Prof. Kyoko Kuwajima
Aoyama Gakuin University, Japan

Kyoko Kuwajima was born in Hyogo, Japan. She obtained her bachelor's degree on Chinese Literature and Language from Kyoto University (Kyoto, Japan) in 1980. During 1990-92, she studied political dynamics of China and the discipline of political science and policy studies at the Graduate School of Arts and Sciences, Harvard University (Massachusetts, US). She received her master's degree on regional studies on East Asia in 1992.

She joined Japan International Cooperation Agency, which was mandated with the official development assistance (ODA) of the Japanese Government in 1980. After starting her career as a program officer of the aid programs for China both in Tokyo and Beijing, she has served as a researcher and Chief Researcher for development study programs and Managers and Directors mainly for programs of industrial development and governance until 2015. She currently works for the School of Global Studies and Collaboration, Aoyama Gakuin University (Kanagawa, Japan) as a professor on international development.

Her current research interests are on capacity development for improving public service delivery in developing countries and the historical review of the Japanese ODA.

Speech Title: "What Can We Learn from the Research on "Pockets of Effectiveness" : Exceptionally Well-Functioning Public Institutions in Poor Governance - A Case of the Phnom Penh Water Supply Authority, Cambodia"

Abstract: Efforts for developing sustainable capacity for the public sector in low-income countries still encounter difficulties due to the adverse political environments and weak governance. While a huge amount of research tends to focus on distilling cross-country lessons from failures in macro-level strategies for improving public services performance, the cumulative research on "pockets of effectiveness" sheds unique light on exceptionally well-functioning public institutions in countries that have otherwise poor governance and weak public sectors. With the analytical lenses of "pockets of effectiveness" this study intends to

analyze the case of Phnom Penh Water Supply Authority (PPWSA), which had transformed into a world-known well-performing water utility in the difficult environments, to investigate factors leading to its success. The foregoing research suggests unorthodox successful factors that are different from those stressed in standardized reform menus such as methodologies of “new public management.” Identified factors include the prominence of functional attributes of organizations; tactful skill of executive leaders to cope with political situations; and management style and positive organizational culture such as a sense of mission, professional values, and skill- and performance-orientation. In addition to the above factors, the case of PPWSA presents unique features in its process of improving relationships with service users and of establishing substantial organizational autonomy and the role of international aid that had steadily facilitated the transformation. The author argues that not only posing “effective reform menus” or formal institutional arrangements, development donors should make better use of technical cooperation and infrastructure development for supporting local leadership so that leaders can cultivate informal “organizational culture” based on rule-based and result-oriented management. In conclusion, catalytic roles of international aid would be worth further exploring so that it can help local leaders to protect their organizations flexibly in order to cope with difficult situations.

Contents of Sessions

Session 1: Environmental Pollution and Protection

Paper ID	Authors	Title	Page No.
D01	Lucas B. McCullum	Tracking Air Pollution in the City of Baltimore, Maryland Utilizing Light Detection and Ranging (LiDAR)	17
D24	Naofumi Sato , Takeshi Saito, Hiroyasu Satoh, Norio Tanaka, and Ken Kawamoto	Coconut-Fibre Biofilm Wastewater Treatment System in Sri Lanka: Microcosm Experiments for Evaluating Wastewater Treatment Efficiencies and Oxygen Consumption	17
D38	Sutthikiat Meesrisom, Kankan Rattanaboonta, Jakkapop Phanthasri, Suttikorn Suwannatrai, Visanu Tanboonchuy	Dye Removal by Modified Activated Carbon Using Response Surface Method	18
D51	Amal Abdelhaleem , Wei Chu	The Novel Application of N-doped TiO ₂ Nanoparticles for Degradation of Chlorinated Herbicide under Commercial Visible LED	18
D39	Masami Tsuji	Compliance with Environmental Safeguard Policy of Projects Financed by Asian Development Bank	19
D16	Masato Kawanishi and Ryo Fujikura	Incentives for Sustainable National Greenhouse Gas Inventory in Developing Countries	19
D07	Jun Du , Zhibin He and Longfei Chen	Age-Mediation of Tree Growth Responses to Experimental Warming in the Northeastern Tibetan Plateau	20
D02	K. Somprasong	Monitoring of Potential Overland Sediment from Significant Land Use Types, Using Integrated GIS and Remote Sensing Technique for the Remote Contaminated Area of the Mae Tao Basin, Thailand: 15 Years Monitoring Period	20
D35	Hsing-Wang Li , Po-Jen Huang, Ming-Sheng Hsu	Mercury Removal by a Pilot of Wet Flue Gas Desulfurization	21

Session 2: Renewable Energy and Clean Energy

Paper ID	Authors	Title	Page No.
EA0004-A	Haydar Demirhan and Furkan Baser	A Fuzzy Regression Approach to the Estimation of Horizontal Global Solar Radiation	22
EA0028	En-Chih Chang , Yow-Chyi Liu	Robust Finite-Time Tracking Control Design with Application to Clean Energy Systems	22
EA0026	Khairul Azly Zahan and Manabu Kano	Biodiesel Production from Palm Oil, Its Co-products, and Mill Effluent: A Review	23
EA0031	Cherry Lyn V. Chao , Rowena B. Carpio, Kristian July R. Yap, Rizalinda L. de Leon	Influence of Potassium Carbonate (K ₂ CO ₃) as Catalyst on Biocrude Oil Yield and Properties via Hydrothermal Liquefaction of Spirulina	23

EA0034	Mikael Adriane Ochiai, Salvador Marrod Cruz , Louiellyn Oporto, Rizalinda de Leon	Direct Solvothermal Liquefaction of Lignocellulosic Pennisetum Purpureum Biomass to Produce Bio-Crude Using Ethanol Solvent	24
EA0049	Theresa Banta and Rizalinda de Leon	Parametric Study of Rice Husk Torrefaction for the Development of Sustainable Solid Fuel	25
EA0025-A	Qingbin Cui	Optimization of Offtake Strategy for Renewable Energy Projects	25
EA0041	Muhammad Mujiya Ulkhaq , Abel K. Widodo, M. Faisal Afa Yulianto, Widhiyaningrum Widhiyaningrum, Anita Mustikasari and Pradita Y. Akshint	A Logistic Regression Approach to Model the Willingness of Consumers to Adopt Renewable Energy Sources	26

Session 3: Urban Planning and Environmental Management

Paper ID	Authors	Title	Page No.
D26	Marione Deanna Comboy	Reconfiguring Urban Metabolism through Sustainable Parametric Landscape Design Development in San Mateo, Rizal	27
D40	Mitsuo Yoshida	Waste Problem and Medical Waste Management Strategy in Gaza Strip, Palestine	27
D46	Alizara Juangbhanich	How and Why do Private Developers Engage in Green Building Practice? The Case of Bangkok, Thailand	28
D65	Noriaki Murase and Seiji Takashima	Quantitative Analysis of Impact of Awareness-Raising Activities on Organic Solid Waste Separation Behavior in Palembang City, Indonesia	29
D13	Jinghua Dai , Dian Zhou	Construction of “Community-oriented” Residential Facilities for the Aged with the Combination of Medical Nursing and Elderly Support—A Case Study of Lanting Senile Apartment in Hangzhou	29
D03	Bonnie K. L. Mak , C. Y. Jim	Urban Park Planning and Management Informed by Visitor Pattern and Behavior	30
D54	Hoda Karimipour , Vivian W. Y. Tam, Helen Burnie, Khoa N. Le	Vehicle Routing Optimization for Improving Fleet Fuel Efficiency: A Case Study in Sydney, Australia	30
D23	Arnoldo Lima , Fabiano Toni	Energy Landscapes and Environmentality: Boundaries between Discourses and Practices in Energy Governance	31
D37	Shiu-Wan Hung , Han-Chung Chou, Wen-Min Lu	Green Driving: Fuel Efficiency of Various Automobile Types	31

Session 4: Power Electronic Technology

Paper ID	Authors	Title	Page No.
EA0007	Jianwei Zhai, Lin Xiaoming , Yongjun Zhang	Reactive Power and Voltage Control Strategy based on Dynamic and Adaptive Segment for DG Inverter	33

EA0008	Wu Wang , Wei Huang, Yongjun Zhang	A Method of Dynamic Extended Reactive Power Optimization in Distribution Network Containing	33
EA0009	Dominik Halstrup, Marlene Schriever	The Role of Industrial Energy Storage Solutions in a Distributed Energy System: Empirical Findings and Implications on Cooperative ties	34
EA0012	Kazutaka Itako, Naoaki Iiduka , Tsugutomo Kudoh, Keishin Koh	Study on Real Time Abnormal Diagnostic System for PV Generation System	34
EA0016	Kazutaka Itako, Masataka Ochiai , Shuai Yang	Proposal of New Plug-in Operation Point Correction System for PV Generation	35
EA0029	J. C. Teo, Rodney H. G. Tan , V. H. Mok, Vigna K. Ramachandaramurthy, C. K. Tan	Effects of Bypass Diode Configurations to the Maximum Power of Photovoltaic Module	35
EA0043	Bancha Sreewirote, Atthapol Ngaopitakkul	Analysis on Behaviour of Wavelet Coefficient during Fault Occurrence in Transformer	35
EA0045	Yow-Chyi Liu , En-Chih Chang, Yu-Liang Lin, Chen-You Lin	A Novel Online Insulation Fault Detection Circuit for DC Power Supply Systems	36
EA0046	Kei Eguchi , Haruka Fujisaki, Sanjeevikumar Padmanaban and Ichirou Oota	Design of a Cross-Connected Charge Pump for Energy Harvesting Systems	36

Session 5: Resource Management and Sustainable Development

Paper ID	Authors	Title	Page No.
D41	Nini Sopian , Jonathan Chenoweth, and Richard Murphy	Assessing the Impact of Demand-Side Management an Existing Water Supply System: A Case Study of Three Reservoirs in Selangor, Malaysia	38
D44	Carol Y. Y. Pau , Jimmy J. J. Jiao	Effect of Underground Drainage Tunnel System on Groundwater Flow System	39
D58	Nan-Ching Yeh , Yao-Chung Chuang	Estimation of Meiyu Rainfall in Taiwan by GSMaP	39
D06	Long-Fei Chen	Responses of Soil Organic Carbon, Soil Respiration, and Associated Soil Properties to Long-Term Thinning in a Semi-arid Picea Crassifolia Plantation in Northwestern China	39
D56	Kuo Hsing-Fu	Assessment the Sustainable Efficiency for Mountain Communities Tourism Development	40
D103	Jay Whitehead	The Influence of Distributive Justice on Agricultural Environmental Sustainability	40
D10	Md. Abdul Hannan , Papia Haque, S M Fijul Kabir and Mohammed Mizanur Rahman	Scope of Sustainable Pretreatment of Cotton Knit Fabric without Using Chemicals – An Environmental Friendly Approach	41
D25	Ma Yufang , Sha Jinghua, Yan Jingjing	Exploration of a Comprehensive Policy for Improving Atmospheric Environment Based on Dynamic Simulation in Tangshan City, China	42

Session 6: Thermal Energy and Chemical Engineering

Paper ID	Authors	Title	Page No.
EA0022	Varesa Chuwattanakul , Kesmanee Banthumporn, Pongjet Promvonge and Smith Eiamsa-Ard	Drying Peppercorn Characteristics in Fluidized Bed Dryer Equipped with Baffle Vortex Generators	43
EA0018	Zewen An, Jiaquan Liu, Fengyin Wang and Cuiping Wang	Investigation on Thermal Environment Improvement by Waste Heat Recovery in the Underground Station in Qingdao Metro	43
EA0027	Kengkla Kunnarak, Varesa Chuwattanakul , Prachya Samruaisin and Smith Eiamsa-Ard	Impingement Cooling by Round Jet with Longitudinal Swirling Strip	44
EA0044	Kyoung Hoon Kim	Exergetic Analysis of Regenerative Rankine Cycle with Partial Evaporation Using Zeotropic Mixture as Working Fluid	44
EA0048	Jes Tanchuling , Rizalinda De Leon	Solid Fuel Characterization of Torrefied Coconut Shells in an Oxidative Environment	44
EA0035	Alvin Palanca and Rizalinda De Leon	Torrefied Cogon Grass: Effects of Torrefaction on Fuel Properties of Solid and Condensate Products	45
EA0038	Weene Villaver , Rowena Carpio, Kristian July Yap and Rizalinda de Leon	Effects of Temperature and Reaction Time on Yield and Properties of Biocrude Oil Produced by Hydrothermal Liquefaction of <i>Spirulina platensis</i>	45
EA0036	Rowena Carpio , Yuanhui Zhang, Lance Charles Schideman, Chih-Ting Kuo and Rizalinda de Leon	Hydrothermal Liquefaction of Demineralized Wastewater Algae Biomass	46

Oral Presentation Abstracts

<p>Session 1: Environmental Pollution and Protection</p> <p>Venue: Beni Chair: Prof. Mitsuo Yoshida Japan International Cooperation Agency (JICA), Japan Time: 3:30pm-5:45pm November 2, 2017</p>
<p>Note:</p> <ul style="list-style-type: none"> * Session photo will be taken at the end of the session. * Copy PPT/PDF on conference laptop 10 minutes earlier before each session starts. * For the best presentation of each session, it's encouraged to award it to student author prior. * The certification of Oral/Poster presentation, listeners, will be awarded at the end of each session. * To show respect to other authors, especially to encourage the student authors, we strongly suggest you attend the whole session, and the scheduled time for presentations might be changed due to unexpected situations, please come as early as you could.

<p>D01</p> <p>Time: 3:30pm-3:45pm</p>	<p>Tracking Air Pollution in the City of Baltimore, Maryland Utilizing Light Detection and Ranging (LiDAR)</p> <p>Lucas B. McCullum</p> <p><i>University of Maryland, Baltimore</i></p>
--	--

Abstract: The Chesapeake Bay watershed is one of the most expansive bodies of water in the United States, extending from the southernmost tip of Virginia gradually reducing its reach into upstate New York. The airshed of the Chesapeake Bay, however, is influenced by nearly the entire Eastern and Midwestern United States, consequently necessitating recurrent monitoring of air contamination levels. Currently, there are limited practical methods available to keep a record of the true levels of pollution in the atmosphere. A simple approach to alleviate this limitation is the use of light detection and ranging, or lidar, by means of stationary emplacements located near major toxic hotspot zones. The efficacy of this system can be attributed to the particulates in the atmosphere that can be detected as a result of pollution deriving from different sources. Furthermore, the level of air pollution has been shown to be directly correlated to the atmospheric temperature, subsequently allowing relationships to be established between the atmospheric temperature and various forms of lidar data. Implications of a significant correlation being discovered between atmospheric temperature and any form of lidar data collected would provide insight on the effectiveness of lidar towards detecting and monitoring air pollution. In a broader sense, results from this investigation may be utilized to improve the atmospheric health and quality around the Chesapeake Bay and subsequently, the world.

<p>D24</p> <p>Time: 3:45pm-4:00pm</p>	<p>Coconut-Fibre Biofilm Wastewater Treatment System in Sri Lanka: Microcosm Experiments for Evaluating Wastewater Treatment Efficiencies and Oxygen Consumption</p>
--	--

	<p>Naofumi Sato, Takeshi Saito, Hiroyasu Satoh, Norio Tanaka, and Ken Kawamoto</p> <p><i>EX Research Institute Ltd., Japan</i></p>
--	---

Abstract: This study evaluated the performance of a coconut-fibre biofilm wastewater treatment system (COTS) by utilizing microcosm experiments in the laboratory. In the microcosm experiments, two types of wastewater, synthetic sewage and leachate, with different pollutant loads were used. Three coconut-fibre conditions, a single bundle (low fibre density), two bundles (high fibre density), and no coconut fibre (blank) were set in the experiments. Water quality parameters (pH, DO, EC, BOD, COD, TC, TOC, TN and TP) of effluents were measured at one-week intervals, and removal % of BOD, COD, TC, TN and TP was evaluated. There was a clear increase in the oxygen consumption for the synthetic leachate with increasing the coconut fibre density. Besides, the removal % of pollutants was highly dependent on the load conditions, implying that the proper control of pollutant loads is effective to enhance the treatment efficiencies in COTS.

<p>D38</p> <p>Time: 4:00pm-4:15pm</p>	<p>Dye Removal by Modified Activated Carbon Using Response Surface Method</p> <p>Sutthikiat Meesrisom, Kankan Rattanaboonta, Jakkapop Phanthasri, Suttikorn Suwannatrai, Visanu Tanboonchuy</p> <p><i>Khon Kaen University, Thailand</i></p>
--	--

Abstract: This research studied reactive red 159 (RR-159) dye removal by granular activated carbon (GAC) and GAC modified by 2-normal sodium hydroxide (GAC 2N NaOH). The results showed that adsorption capacity of GAC modified by 2N NaOH was higher than GAC and the maximum adsorption capacity was 185.19 mg dye/g GAC. Effect of operating conditions, such as pH (3-10), initial concentrations of RR-159 (50-200 mg/L), and amount of GAC (0.1-0.75 g), during 60 minute contact time by box-behnken design were also studied. The results indicated that adsorption efficiency increased as amount of GAC increase. However, increase of pH and RR-159 concentration caused adsorption efficiency decline. An optimum conditions that resulted in maximum adsorption efficiency were at pH 3, concentrations of RR-159 of 20 mg/L, and 0.75 g of GAC.

<p>D51</p> <p>Time: 4:15pm-4:30pm</p>	<p>The Novel Application of N-doped TiO₂ Nanoparticles for Degradation of Chlorinated Herbicide under Commercial Visible LED</p> <p>Amal Abdelhaleem, Wei Chu</p> <p><i>The Hong Kong Polytechnic University, Hong Kong</i></p>
--	--

Abstract: N-doped TiO₂ nanoparticles were employed for degradation of 4-chlorophenoxyacetic acid under commercial visible light emitting diode (Visible LED) as a new illumination source in photocatalysis applications. The synergistic effect of N-doped TiO₂/Visible LED hybrid process was systematically investigated by exploring the influence of several reaction parameters such as N-doped TiO₂ loading, the initial concentration of probe compound, initial solution pH, and inorganic anions. In addition, the mineralization capability of N-doped TiO₂/Visible LED process was investigated. It

was found that this process is capable of achieving 73% mineralization of probe compound and its intermediates. Moreover, the reusability mechanism of the N-doped TiO₂ based on this process was discussed in detail. Surprisingly, the degradation rate of 4-chlorophenoxyacetic acid increased after successive usage of the recycled catalyst. The mechanism of N-doped TiO₂ reusability was verified by XPS and FT-IR analyses. It was found that the incorporation of hydroxyl groups into the surface of N-doped TiO₂ after each reuse is the rationale reason for the rate enhancement. These hydroxyl groups can provoke the formation of hydrogen bonding between the N-doped TiO₂ and the carboxyl group of 4-chlorophenoxyacetic acid, thereby accelerating the decay rate. This work may provide some useful and interesting information to the community of photocatalytic research, which may be helpful in applying this process for degradation of various herbicides under such kind of commercial visible LED lamps.

<p>D39</p> <p>Time: 4:30pm-4:45pm</p>	<p>Compliance with Environmental Safeguard Policy of Projects financed by Asian Development Bank</p> <p>Masami Tsuji</p> <p><i>Japan International Cooperation Agency, Japan</i></p>
--	--

Abstract: To identify common issues on environmental safeguard in infrastructure projects, a comparative analysis was undertaken for five projects which were financed by Asian Development Bank (ADB) and subject to environmental compliance review. Various elements were identified for successfully carrying out projects without causing environmental problems. Among those, the following were found in most of the studied projects and thus considered crucial: collecting baseline data, ensuring proper coverage of environmental assessment, appropriately assessing adverse impacts, and sufficiently carrying out public consultation and information disclosure. Whereas it is not widely noticed, changes in project scope sometimes occur and they trigger additional actions for safeguard compliance. In the recently established Environmental and Social Policy, the World Bank and Asian Infrastructure Investment Bank (AIIB) introduced a new concept of “adaptive management.” Intensive attention should be paid to proper implementation of this aspect.

<p>D16</p> <p>Time: 4:45pm-5:00pm</p>	<p>Incentives for Sustainable National Greenhouse Gas Inventory in Developing Countries</p> <p>Masato Kawanishi and Ryo Fujikura</p> <p><i>Japan International Cooperation Agency, Japan</i></p>
--	--

Abstract: The present study aims to identify factors that differentiate developing countries in terms of their sustainable national greenhouse gas (GHG) inventories. To this end, we evaluated the inventory systems of 10 non-Annex I countries in Eastern Europe and Central Asia by scoring their submitted national communications against eight criteria. We find that the range of assigned scores widened with time among these countries due to the EU accession process, which has created a strong incentive for the countries concerned to establish sustainable national GHG inventory systems. This finding has implications for designing development assistance as part of a broader strategy to engage developing countries in climate actions, which should merit further elaboration.

<p>D07</p> <p>Time: 5:00pm-5:15pm</p>	<p>Age-Mediation of Tree Growth Responses to Experimental Warming in the Northeastern Tibetan Plateau</p> <p>Jun Du, Zhibin He and Longfei Chen</p> <p><i>Chinese Academy of Science, China</i></p>
--	---

Abstract: The trajectory of tree-growth response to climate warming may be related to attributes like tree age. However, age-mediation of temperature sensitivity of tree growth has received little attention. This study aimed to determine how age affects tree growth in a future warmer world. In a 2-year ecosystem warming experiment in the northeastern Tibetan Plateau of China, we explored the response of Qinghai spruce (*Picea crassifolia*) saplings at two life stages to two projected warming levels. Our results indicated that a temperature increase beyond the annual variability generally altered spring phenological niches and shoot growth rate, and that sapling age mediated growth in response to experimental warming. Specifically, experimental warming of approximately 1.0 oC accelerated the average onset of shoot growth by 2.7 days, delayed the cessation of shoot growth by up to 7.4 days, and increased the final shoot length to a maximum of 104%. Contrary to our expectations, old saplings exhibited higher temperature sensitivity than young saplings, perhaps due to the increased water use efficiency over the course of the experiment. Old saplings growing in situ normally have a deeper root system than younger saplings, allowing them the access to soil water at greater soil depths; instead, phenological development of the younger trees, as a shallow-rooted population, was often constrained by water availability in the topsoil. Therefore, we concluded that age differentiation in this forest type was accelerated with warming. Uneven-aged structure is generally conducive to an increased stability of a forest community. Our conclusion highlights the need for additional research on the effects of further climate anomalies on tree species during their ontogenetic processes.

<p>D02</p> <p>Time: 5:15pm-5:30pm</p>	<p>Monitoring of Potential Overland Sediment from Significant Land Use Types, Using Integrated GIS and Remote Sensing Technique for the Remote Contaminated Area of the Mae Tao Basin, Thailand: 15 Years Monitoring Period</p> <p>K. Somprasong</p> <p><i>Faculty of Engineering Chiang Mai University, Thailand</i></p>
--	---

Abstract: The Mae Tao Basin in Mae Sot district, Thailand, is a cadmium contaminated area, where the transcendent media transporter of the contaminant is sediment leached from various surface runoff. The Revised Universal Soil Loss Equation (RUSLE) incorporated with remote sensing and geographic information system (GIS) software were applied to conduct a long-term monitoring of the potential erosion that can be leached out of the significant land use of the Mae Tao Basin from 2002 to 2016. The erosion potential was calculated based on the secondary data from both government and private sectors. The spatial analysis results indicate that high level of potential erosion occurred in the mining production as well as the deciduous forest area of the Mae Tao Basin. In addition, the correlation between the overland sediment and the contamination level in the water system of the

basin demonstrates that the sediments from mining production area have the highest correlation to the contamination in the water system of the Mae Tao Basin.

<p>D35</p> <p>Time: 5:30pm-5:45pm</p>	<p>Mercury Removal by a Pilot of Wet Flue Gas Desulfurization</p> <p>Hsing-Wang Li, Po-Jen Huang, Ming-Sheng Hsu</p> <p><i>New Materials R & D Department, China Steel Corporation (CSC), Kaohsiung 81233, Taiwan</i></p>
--	---

Abstract: Mercury is regarded as the hazardous air pollutant and mainly emits from the coal-fired power plants. Mercury may be present in flue gas as particle-bound mercury (Hg^p), elemental mercury (Hg^0) and oxidized mercury (Hg^{2+}). This study aims to evaluate the reduction of Hg emission by a pilot of wet flue gas desulfurization (FGD).

The results showed that the dominant species was Hg^{2+} that ranged from 72 to 83% in flue gas. In addition, Hg^{2+} removal in the wet-FGD was 76% which was slightly higher than a 55% reduction of total Hg. Because the Hg^{2+} captured by the wet-FGD can be chemically reduced and then re-emitted back to the chimney as Hg^0 . A pilot of wet-FGD reactor was developed to control the re-emission of Hg^0 . Initially, the removal Hg was -26% when the liquid to gas ratio was 4.2, while the Hg^0 emission was reduced to -3% by adding 0.03% oxidant. Further, mixing 0.03% oxidant and increasing the liquid to gas ratio (5.6) not only suppressed the re-emission of Hg^0 , but also reduced Hg^0 emission by 6%. In summary, flue gas Hg increase across the wet-FGD can be reduced by adding oxidant and increasing the liquid to gas ratio.

Session 2: Renewable Energy and Clean Energy

Venue: Kaze

Chair: Prof. Guohong Wu

Dept. of Electrical & Electronic Engineering, Tohoku Gakuin University, Japan

Time: 3:30pm-5:30pm | November 2, 2017

Note:

- * Session photo will be taken at the end of the session.
- * Copy PPT/PDF on conference laptop 10 minutes earlier before each session starts.
- * For the best presentation of each session, it's encouraged to award it to student author prior.
- * The certification of Oral/Poster presentation, listeners, will be awarded at the end of each session.
- * To show respect to other authors, especially to encourage the student authors, we strongly suggest you attend the whole session, and the scheduled time for presentations might be changed due to unexpected situations, please come as early as you could.

EA0004-A

Time:
3:30pm-3:45pm

A Fuzzy Regression Approach to the Estimation of Horizontal Global Solar Radiation

Haydar Demirhan and Furkan Baser

RMIT University, School of Science, Mathematical Sciences, Melbourne, Australia

Abstract: Use of unsustainable fossil carbon fuel to satisfy the increasing energy demand is one of the main causes of the global warming problem. Clean and sustainable energy sources such as solar radiation, wind, and hydropower are counted as renewable alternatives to the fossil carbon sources; hence, there is a shift towards use of these clean sources to generate energy nowadays. In terms of solar radiation, it is very important to specify an optimal place for solar farms in terms of the factors affecting the generation of electricity from the solar source. Due to the cost of directly measuring solar radiation for a particular field, available meteorological measurements and terrestrial, and extra-terrestrial variables are used to estimate the amount of solar radiation. However, complex relationships between solar radiation and these independent variables make the modelling task challenging. In addition to accuracy of the modelling approaches, other properties such as robustness to outlier observations, which are frequently seen in meteorological measurement, and over-fitting are of high importance for the performance of the approaches. In this study, we focus on the use of fuzzy regression functions with support vector machines (FRF-SVM) to estimate the amount of yearly mean daily horizontal global solar radiation reaching to a particular field. The FRF-SVM approach is more robust to outlier observations than its counterparts in the literature and it does not suffer from the over-fitting problem. We apply our modelling strategy over a dataset collected in Turkey and compare the accuracy of our approach to an adaptive neuro-fuzzy system and a coplot supported-genetic programming approach, which are found promising in terms of estimation accuracy in the literature. The FRF-SVM approach is not affected by both outliers and over-fitting and gives the most accurate estimates of horizontal global solar radiation among the compared approaches.

EA0028

Time:
3:45pm-4:00pm

Robust Finite-Time Tracking Control Design with Application to Clean Energy Systems

Time: 3:45pm-4:00pm	En-Chih Chang, Yow-Chyi Liu <i>Department of Electrical Engineering, I-Shou University, No.1, Sec. 1, Syuecheng Rd., Dashu District, Kaohsiung City 84001, Taiwan, R.O.C.</i>
------------------------	---

Abstract: In this paper, a robust finite-time tracking for clean energy systems is developed to maintain low total harmonic distortion (THD) output voltage and fast dynamic response under various loading. The proposed control combines the properties of fast-converging sliding mode control (FCSMC) and glowworm swarm optimization (GSO). The FCSMC has finite system state convergence time unlike infinite-time exponential convergence of classic sliding mode control, but the chattering still occur under a highly uncertain disturbance. The chattering will lead to high voltage harmonic distortion in clean energy system output. To effectively remove the chattering, the control gains of the FCSMC can be optimally tuned through the GSO. Experimental results on a clean energy system controlled by a digital signal processing (DSP)-based algorithm are given to conform that the proposed controller can lead to high-quality AC output voltage. Because the proposed controller is easier to implement than prior technologies and has higher tracking precision and quicker convergence speed, this paper will be of interest to designer of related clean energy applications.

EA0026 Time: 4:00pm-4:15pm	Biodiesel Production from Palm Oil, Its Co-Products, and Mill Effluent: A Review Khairul Azly Zahan and Manabu Kano <i>Department of Systems Science, Graduate School of Informatics, Kyoto University, Yoshida-Honmachi, Sakyo-ku, 606-8501 Kyoto, Japan</i>
---	---

Abstract: Recently, the sustainability of petroleum-based energy and fuel supply have gained numerous attention by the global community due to the increasing demand and usage in various sectors as well as depletion of petroleum resources and uncertain prices in the oil market. Additionally, environmental problems have also arisen especially due to the increasing emission of harmful pollutants and greenhouse gases. To solve these problems, the use of cleaner energy source such as biodiesel is crucial. Biodiesel is mainly produced through transesterification process by chemically reacting oils and fats with an alcohol in the presence of catalyst. Biodiesel presents numerous advantages over petroleum diesel, for example, non-toxic, biodegradable, lesser air pollutants per net energy, lower sulfur and aromatic content, and more safety. Moreover, biodiesel can be produced from unlimited natural resources in shorter time. This review focuses on the production of biodiesel from palm oil, its co-products, and mill effluent. Palm oil is known as a good feedstock for biodiesel production because biodiesel has the same properties of the regular petroleum-based diesel. But, due to the debate on the usage of palm oil as food versus fuel, an extensive research has been conducted to utilize the palm oil co-products and mill effluent as a raw material, including palm fatty acid distillate, palm stearin, palm kernel, spent bleaching earth, sludge, and liquid waste. This review also covers the progress on process design and technology, the biodiesel properties, and comparison with other biodiesel sources. Finally, the feasibility of palm oil as a feedstock for biodiesel production is reviewed to determine its potential, benefit, and drawbacks for future alternative energy compared to other biodiesel sources and petroleum-based diesel.

EA0031 Time: 4:15pm-4:30pm	Influence of Potassium Carbonate (K₂CO₃) as Catalyst on Biocrude Oil Yield and Properties via Hydrothermal Liquefaction of Spirulina
---	---

	<p>Cherry Lyn V. Chao, Rowena B. Carpio, Kristian July R. Yap, Rizalinda L. de Leon</p> <p><i>University of the Philippines Diliman, Quezon City 1101, Philippines</i></p>
--	---

Abstract: This study is relevant to developing biomass, specifically microalgae, as a source for biofuel production through hydrothermal liquefaction (HTL). Hydrothermal liquefaction (HTL) is a thermochemical conversion that requires no drying of the feedstock because the whole microalgae biomass is decomposed and converted in hot compressed water. A biocrude oil is obtained as the main product, along with gaseous, aqueous and solid by-products. It was observed in different studies that catalysts, particularly alkali catalysts, improve liquefaction efficiency. This study investigated the effects of potassium carbonate (K₂CO₃) on the yield and properties of biocrude oil. Different amounts of catalysts used were 5, 7.5, and 10 wt. %, respectively. Biocrude oil was produced from hydrothermal liquefaction of *Arthrospira platensis* (formerly referred to as *Spirulina platensis*) in a micro-reactor at 280 and 350 degrees Celsius for two levels of residence time, 15 and 45 minutes. The biocrude produced under these different conditions were analyzed for C, H, O, and N content. Biocrude oil yield and its calorific value were also determined. The highest biocrude oil yield with catalyst (32.18 wt. %) was obtained at 280 °C with 15 minutes residence time and 5 wt. % K₂CO₃. Highest HHV of 39.17 MJ/kg was obtained with the addition of 10 wt. % K₂CO₃ at 280 °C and 45 minutes residence time. Biocrude oil obtained from the experiment runs had almost similar H/C, and O/C values to that of biodiesel and plant oil and was better than biomass pyrolysis oil. The N/C ratios of the biocrude oil ranged between 0.03 to 0.09 with a starting N/C ratio of 0.17.

<p>EA0034</p> <p>Time: 4:30pm-4:45pm</p>	<p>Direct Solvothermal Liquefaction of Lignocellulosic Pennisetum purpureum Biomass to Produce Bio-crude Using Ethanol Solvent</p> <p>Mikael Adriane Ochiai, Salvador Marrod Cruz, Louiellyn Oporto, Rizalinda de Leon</p> <p><i>Department of Chemical Engineering University of the Philippines Diliman Quezon City, Philippines</i></p>
---	--

Abstract: Direct solvothermal liquefaction was used in converting the lignocellulosic biomass, *Pennisetum purpureum* or Napier grass using ethanol as solvent. Liquefaction of Napier grass resulted in a dark and viscous bio-crude product and exhibited promising yields (34.6377% to 48.6267%). It was determined that the effects of temperature and residence time were statistically significant with the residence time having the greatest positive effect on yield. High yields of bio-crude from Napier grass seem to occur when solvothermal temperature, residence time increased and as solids ratio decreased. However, elemental analysis showed that the bio-crude produced needs to undergo deoxygenation (O: 14.25 – 49.42%) before mixing with petroleum. For the higher heating value (HHV), the parameters observed in the study were statistically insignificant, however, temperature was determined to have the greatest positive effect on HHV. It was observed that high HHV bio-crude were produced at high temperatures, low solids ratio, and low residence times. The acquired averages for the HHV (20.0333 MJ/kg to 29.7744 MJ/kg) were all higher than the HHV of the Napier grass sample used in the study (12.9394 MJ/kg). It was observed in the study, that even though solids ratio has the least effect on both responses, the choice of solids ratio is dependent on its interaction effects with the other parameters as its effects contribute to the observed responses.

<p>EA0049</p> <p>Time: 4:45pm-5:00pm</p>	<p>Parametric Study of Rice Husk Torrefaction for the Development of Sustainable Solid Fuel</p> <p>Theresa Banta and Rizalinda de Leon</p> <p><i>University of the Philippines, Diliman, Quezon City 1101, Philippines</i></p>
---	--

Abstract: Torrefaction is the thermal treatment of lignocellulosic biomass at temperatures between 200 °C to 300 °C under inert or low oxygen environment. This process produces a dark brown, brittle substance that is hydrophobic, has high energy density, and less prone to biological degradation. The removal of oxygen-containing compounds is the primary purpose of torrefaction. Oxygen to carbon ratio is highly correlated to the biomass heating value. An increase in oxygen to carbon ratio from 0.1 to 0.7, results to a 60% reduction in higher heating value of the biomass. Removal of oxygen-containing compounds lowers the oxygen to carbon ratio thus increasing the higher heating value of torrefied biomass. These improved properties are significant for thermochemical conversion processes such as combustion and gasification particularly for power generation purposes. This study examines the impact of residence time, temperature, and particle size on torrefied rice husk, using a bench-scale batch reactor. Simultaneous variation of temperature between 240 °C and 295 °C; residence time between 30 minutes and 60 minutes; and particle size between 1.19mm and 2.38mm were done. The results showed significant improvement in higher heating value of rice husk which increased by up to 25% from 13.4MJ/kg to 16.8MJ/kg. The fixed carbon increased up to 107% from 12.8 to 26.6 weight percent in dry basis. Analysis of results show that process temperature significantly affects the fuel properties of torrefied rice husk compared to residence time, particle size, and the interaction of these factors.

<p>EA0025-A</p> <p>Time: 5:00pm-5:15pm</p>	<p>Optimization of Offtake Strategy for Renewable Energy Projects</p> <p>Qingbin Cui</p> <p><i>University of Maryland, USA</i></p>
---	--

Abstract: With the rapid development of renewable energy, it becomes increasingly critical for renewable energy producers to design efficient offtake strategies while participating in the electricity market. The problem is challenging, considering the market and production uncertainties involved in the decision making process. This paper presents a multi-objective stochastic programming model to address this challenge. The model has its merit over the traditional deterministic model by incorporating risk-based profitability. In particular, the paper introduces Conditional Value at Risk (CVaR) to model volatility for optimal strategy. By transforming to a linear expression, the paper presents a solvable algorithm for optimal strategy. The proposed strategy is specifically built according to the two-settlement market, and is expected to help renewable energy producers in the U.S. eastern power market to find a trade-off between profitability and risk control. Finally, an out-of-sample analysis based on actual data is conducted for the case study of the Cape Wind Project proposed in Massachusetts. Detailed performance of the proposed strategy is discussed and compared with other traditional strategies.

<p>EA0041</p> <p>Time: 5:15pm-5:30pm</p>	<p>A Logistic Regression Approach to Model the Willingness of Consumers to Adopt Renewable Energy Sources</p>
---	--

	<p>Muhammad Mujiya Ulkhaq, Abel K. Widodo, M. Faisal Afa Yulianto, Widhiyaningrum Widhiyaningrum, Anita Mustikasari and Pradita Y. Akshinta</p> <p><i>Department of Industrial Engineering Diponegoro University Semarang, Indonesia</i></p>
--	---

Abstract: The implementation of renewable energy in this globalization era is inevitable since the non-renewable energy leads to climate change and global warming; hence, it does harm the environment and human life. However, in the developing countries, such as Indonesia, the implementation of the renewable energy sources does face technical and social problems. For the latter, renewable energy sources implementation is only effective if the public is aware of its benefits. This research tried to identify the determinants that influence consumers' intention in adopting renewable energy sources. In addition, this research also tried to predict the consumers who are willing to apply the renewable energy sources in their houses using a logistic regression approach. A case study was conducted in Semarang, Indonesia. The result showed that only eight variables (from fifteen) that are significant statistically, i.e., educational background, employment status, income per month, average electricity cost per month, certainty about the efficiency of renewable energy project, relatives' influence to adopt the renewable energy sources, energy tax deduction, and the condition of the price of the non-renewable energy sources. The finding of this study could be used as a basis for the government to set up a policy towards an implementation of the renewable energy sources.

Session 3: Urban Planning and Environmental Management

Venue: Beni
Chair: Prof. Kyoko Kuwajima
Aoyama Gakuin University, Japan
Time: 1:00pm-3:15pm | November 3, 2017

Note:

- * Session photo will be taken at the end of the session.
- * Copy PPT/PDF on conference laptop 10 minutes earlier before each session starts.
- * For the best presentation of each session, it's encouraged to award it to student author prior.
- * The certification of Oral/Poster presentation, listeners, will be awarded at the end of each session.
- * To show respect to other authors, especially to encourage the student authors, we strongly suggest you attend the whole session, and the scheduled time for presentations might be changed due to unexpected situations, please come as early as you could.

<p>D26</p> <p>Time: 1:00pm-1:15pm</p>	<p style="text-align: center;">Reconfiguring Urban Metabolism through Sustainable Parametric Landscape Design Development in San Mateo, Rizal</p> <p>Marione Deanna Comboy</p> <p><i>University of the Philippines Diliman, Philippines</i></p>
--	---

Abstract: The sprawl of Metro Manila cities' urbanity to San Mateo, Rizal has deliberately affected anthropological movements and ecological dynamics adversely. These issues deject ecosystem stability and quality of living which are prompted as vital considerations with the increasing development of San Mateo, Rizal towards urbanity. The study explores comprehensive and sustainable parametric design solutions applied on the urban fringe in mitigating the negative anthropogenic inflictions on ecosystems focusing on an array of landscape architectural facets: spatial efficiency, biodiversity, and its subsets on transportation, built environment and social environment. The design process includes integration of sustainable parametric design in green structure technology, as the study focuses on developing future urban system that is less damaging to the environment by making its function more efficient in terms of energy, material flows and cycles, waste management and the effectiveness of related infrastructure. This proposal advances the idea that in order to reconfigure San Mateo, Rizal's existing urban metabolism condition, parametric landscape architectural interventions are recommended to address problems concerning mechanisms on urban growth.

<p>D40</p> <p>Time: 1:15pm-1:30pm</p>	<p style="text-align: center;">Waste Problem and Medical Waste Management Strategy in Gaza Strip, Palestine</p> <p>Mitsuo Yoshida</p> <p><i>Japan International Cooperation Agency, Japan</i></p>
--	---

Abstract: The Gaza Strip of Palestine has a population of 1.8 million people or more, and it is one of the most densely populated areas in the world. But free entry and exit of the border are restricted for a long time, and logistics are strictly regulated. Under such conditions, solid waste management within Gaza must be under many constraints. Municipal solid waste management services in Gaza are provided by two Joint Service Councils (JSCs) in the north and south Gaza. Two sanitary landfills were constructed with the support of the international donors, and the basic waste management flows, waste collection – transportation – final disposal, have been almost established. However, medical waste has not been properly processed so far and are comingled with other municipal solid waste and directly disposed to landfills without any treatment. Under such situation, public health risks including possible outbreak of infectious disease are seriously concerned. In order to establish medical waste management system for avoiding public health risk, a capacity development program on medical waste management has been planned by the JSCs, Ministry of Public Health (MoPH), Ministry of Local Government (MoLG), and Environmental Quality Authority (EQA), and JICA. In the program, firstly stakeholder analysis and problem analysis were made. Secondly, exact situation of medical waste in Gaza Strip, its generation, composition and waste stream were surveyed. According to the results of waste generation survey, there are total 182 medical institutes in Gaza Strip, and more than 7.1 ton/day of medical waste are generated from them. However, waste composition indicates that infectious waste is approximately 1.0 ton/day. Then, thirdly, two pilot projects: (i) three categories waste separation at source in medical institutes, and (ii) off-site autoclave treatment of infectious waste and final disposal, were launched.

<p>D46</p> <p>Time: 1:30pm-1:45pm</p>	<p>How and Why do Private Developers Engage in Green Building Practice? The Case of Bangkok, Thailand</p> <p>Alizara Juangbhanich</p> <p><i>Bartlett School of Planning, University College London (UCL), London, UK</i></p>
--	--

Abstract: Sustainable building design and construction has been increasingly adopted as a means to alleviate growing environmental concerns with particular emphasis on green building practice. This study contends that there is limited understanding of the mechanisms behind the behaviour of developers and their responses to green building practice that is found in existing literature, particularly in the context of developing cities. Factors in the contextual environment (i.e. economic, technological, social, and political) are often identified as key barriers that constrain green building efforts. We argue that this belief is an oversimplification of the factors involved therein; developer response to green building practice may be far more complex than the amalgamation of contextual factors. Developers – as organisations – are susceptible to the influence of ‘softer’ organisational and psychological constructs that lie beyond issues of practicality. Drawing on organisational behaviour theory and literature on property development, the study readdresses the understanding of factors involved in developer decisions and the extent in which organizational and psychological constructs shape responses to green building practice with Bangkok as a case study. A qualitative approach was taken to conduct document analysis on 43 developer organisations registered in Bangkok followed by 22 semi-structured interviews with professionals and top managers. Findings reveal that organizational profile and the environmental outlook of top managers can have extensive influences on green building efforts, providing implications for policy and further research. Green building practice in Bangkok is implemented as a top-down approach with significant drives from top management. Residential, commercial, and industrial sectors are found to respond differently to green

building practice. Long-term visions and philanthropic aims of top managers are seen as key constructs that contribute to notions of feasibility and engagement in green building projects.

<p>D65</p> <p>Time: 1:45pm-2:00pm</p>	<p>Quantitative Analysis of Impact of Awareness-Raising Activities on Organic Solid Waste Separation Behavior in Palembang City, Indonesia</p> <p>Noriaki Murase and Seiji Takashima</p> <p><i>Japan International Cooperation Agency, Japan</i></p>
--	--

Abstract: Many cities in Indonesia are under pressure to reduce solid waste (SW) and dispose of it properly. In response to this pressure, the Japan International Cooperation Agency (JICA) and the Indonesian government have implemented a SW separation and collection project to reduce SW in the target area (1642 households) of Palembang City. We used a cluster randomized controlled trial method to measure the impact of awareness-raising activities that were introduced by the project on residents' behavior for organic SW separation. 16 neighborhood community associations (Rukun Tetangga, RT) in the target area were randomly assigned into two groups: eight RTs in area where environmental volunteers (EVs) implemented awareness-raising activities and eight RTs in area where no awareness-raising activities were undertaken. Awareness-raising activities conducted in the treatment group were: (1) door-to-door monitoring visits to the households by EVs; (2) feedback meetings between EVs and municipal officers to share the results of the door-to-door visits; and (3) consultation meetings between EVs and residents of each RT to discuss the issues based on the findings of the feedback meetings. As the result, the level of properly separated organic SW increased in the group that awareness-raising activities were conducted. Meanwhile, the level was much the same as the beginning in the group that the similar activities were not conducted. A comparison among RTs in the target area confirmed that awareness-raising activities had a marked improvement on organic SW separation. High frequency of door-to-door visits by EVs had a positive effect on organic SW separation. The awareness-raising activities introduced by the project led to a significant impact in the separation of organic SW.

<p>D13</p> <p>Time: 2:00pm-2:15pm</p>	<p>Construction of “Community-oriented” Residential Facilities for the Aged with the Combination of Medical Nursing and Elderly Support—A Case Study of Lanting Senile Apartment in Hangzhou</p> <p>Jinghua Dai, Dian Zhou</p> <p><i>Xi'an Jiaotong University, China</i></p>
--	---

Abstract: To construct the community-oriented residential facilities for the aged with the combination of medical nursing and elderly support is not only in accord with the fundamental policy of elderly support, relying on urban community, but also an effective approach and inexorable trend in solving the current development predicament of old-age care institutions as well as meeting the elderly's special demands. Taking Lanting senile apartment in Hangzhou as an example, this paper deeply analyzes the design

features in the aspects of facility location, functional configuration, and community environment, suitable space for the aged, humanistic service. It is generally aimed at defining how to realize the dynamic integration of medical nursing and elderly support, and how to achieve the communitization of residential facilities for the aged, so as to provide reference basis for constructing the diversified and compound facilities for the aged in the future.

<p>D03</p> <p>Time: 2:15pm-2:30pm</p>	<p>Urban Park Planning and Management Informed by Visitor Pattern and Behavior</p> <p>Bonnie K. L. Mak, C. Y. Jim</p> <p><i>The University of Hong Kong, Hong Kong</i></p>
--	--

Abstract: Urban-park user characteristics and their visit-related activities and behaviors, related to park planning and management, are seldom gleaned and analyzed systematically. This study evaluates the two fundamental factors and their associations in Hong Kong: firstly, to establish socio-demographic profiles of park users; secondly, to evaluate their visit-related preferences; thirdly, to examine the effect of socio-demographic variables on visit-related preferences; and fourthly, to apply the findings to improve park planning and management. A questionnaire survey covered 872 users in eight urban parks in four districts. Non-Chinese respondents, married with children and less educated visited parks more often. They are mainly residents of the district, usually visiting at least once per week, in all four seasons, and preferably in good weather. Three habitual companions were family or relatives, friends, and partner or boy or girlfriend. A factor importance index (FII) was computed to indicate relative contributions of individual factors. Six of the 15 socio-demographic variables were significantly associated with visit-related characteristics, including in order of FII score: economic activity status, age, number of children, ethnicity, educational attainment, and marital status. Seven of the ten visit-related preference were significantly associated with socio-demographic characteristics, including habitual companion, residential years, park-visiting frequency, and familiarity with other park users. The findings were used to formulate a precision, socially-relevant and community-sensitive planning strategy to improve park planning and management. Applicability of the findings highlighted the pertinence of objective research data to match parks with the leisure and recreational needs of urban residents.

<p>D54</p> <p>Time: 2:30pm-2:45pm</p>	<p>Vehicle Routing Optimization for Improving Fleet Fuel Efficiency: A Case Study in Sydney, Australia</p> <p>Hoda Karimipour, Vivian W. Y. Tam, Helen Burnie, Khoa N. Le</p> <p><i>Western Sydney University, Australia</i></p>
--	--

Abstract: Vehicle Routing Problem (VRP) is a classic combinatorial optimization problem involved in many applications VRP is even a big concern when the vehicle is a garbage truck, which travels approximately 100 km/day with the average consumption of 1 litre/km. For this reason, a small improvement in collection activities may result in significant savings in overall cost, fuel and therefore greenhouse-gas emissions. The primary goal of this research is to find ways to reduce overall travel distance for collection and transport of municipal solid waste from residential homes within the Blacktown City Area in order to reduce the fuel consumption and therefore greenhouse-gas emissions.

Esri's ArcGIS 10.3 Network Analyst extension has been used in this study. To calculate optimal routes for solid waste collection, several inputs to the ArcGIS Network Analyst solver has been used including: Collection points represented the depot start point, the home rooftops where the garbage is collected and the unload point. The results of this study show that: Using optimized route instead of regular route can reduce the total travelled distance by 8 km/day on the pilot site. Optimized route will reduce that individual truck's emissions by 5.5 kg CO₂ per day for that collection area. This represents a reduction of about 8% for that particular collection.

<p>D23</p> <p>Time: 2:45pm-3:00pm</p>	<p>Energy Landscapes and Environmentalty: Boundaries between Discourses and Practices in Energy Governance</p> <p>Arnoldo Lima, Fabiano Toni</p> <p><i>Universidade De Bras LIA (CDS/UnB), Brazil</i></p>
--	---

Abstract: Energy resources are critical to the development of mankind. Different forms of energy governance can promote innovative environmental subjectivities, but eventually become the stage of constructed rationalities that legitimate the predatory use of natural resources. Thus, the concept of environmentalty is used as a theoretical frame to analyze how discourses are used to legitimate the pace, use, and forms of energy production. Primary data were collected in two energy landscapes: Gauch Biodiesel Pole in Brazil, and Eagle Ford Shale in the United States. Despite distinctive materiality and different governance structures the results pointed to a common timely environmentalism, based on an empty rhetoric.

<p>D37</p> <p>Time: 3:00pm-3:15pm</p>	<p>Green Driving: Fuel Efficiency of Various Automobile Types</p> <p>Shiu-Wan Hung, Han-Chung Chou, Wen-Min Lu</p> <p><i>National Central University; National Central University; National Defense University, Taiwan</i></p>
--	--

Abstract: Environmental protection, energy saving, and safety are currently the three major topics of interest in the field of automobile technology. To ensure sustainable development, large automobile manufacturers are committed to environmental policies formulated by governments as well as to international conventions. Price-performance ratios and eco-friendly vehicles with low, emissions, noise, and fuel consumption are factors attracting consumers. This study employed data envelopment analysis to investigate the vehicle efficiency of auto by collecting 2016 data from Consumer Report. The research results are as follows: (1) Cars exhibited the best performance in terms of price, costs, and mileage; luxury cars had the most favorable road test performance; sports utility vehicles (SUVs) scored highest regarding predicted reliability; and sports cars scored relatively higher in owner satisfaction. (2) Metafrontier efficiency was its highest for cars, which could be due to the highest prevalence of this auto type; hence, the technical applications were well-developed, the corresponding efficiency was relatively high, and the fuel consumption was relatively low. (3) Cars had the best performance in terms of miles-per-gallon (MPG). Not only were SUVs found to be expensive, their MPG performance was also the

worst, indicating that this auto type requires further improvements regarding functional performance and environmental efficacy. The management implications of this study are as follows. Governments should formulate more stringent laws related to environmental protection, energy saving, and safety, and automobile manufacturers should comply with such regulations and enhance the quality of low-end auto models. Additionally, the application of smart and green technology in various auto types should be accelerated and conform to global trends. The conclusions can provide manufacturers with direction regarding their future product designs, methods to mitigate technology gaps, and benchmark strategies for improving inefficient brands.

Session 4: Power Electronic Technology

Venue: Kaze

Chair: Assoc. Prof. P. W. T. Pong

The University of Hong Kong, Hong Kong

Time: 1:00pm-3:15pm | November 3, 2017

Note:

- * Session photo will be taken at the end of the session.
- * Copy PPT/PDF on conference laptop 10 minutes earlier before each session starts.
- * For the best presentation of each session, it's encouraged to award it to student author prior.
- * The certification of Oral/Poster presentation, listeners, will be awarded at the end of each session.
- * To show respect to other authors, especially to encourage the student authors, we strongly suggest you attend the whole session, and the scheduled time for presentations might be changed due to unexpected situations, please come as early as you could.

<p>EA0007</p> <p>Time: 1:00pm-1:15pm</p>	<p style="text-align: center;">Reactive Power and Voltage Control Strategy Based on Dynamic and Adaptive Segment for DG Inverter</p> <p>Jianwei Zhai, Lin Xiaoming, Yongjun Zhang</p> <p style="text-align: center;"><i>School of Electrical Power, South China University of Technology, Guangzhou, China</i></p>
---	--

Abstract: The inverter of distributed generation (DG) can support reactive power to help solve the problem of out-of-limit voltage in active distribution network (ADN). Therefore, a reactive voltage control strategy based on dynamic and adaptive segment for DG inverter is put forward to actively control voltage in this paper. The proposed strategy adjusts the segmented voltage threshold of Q(U) droop curve dynamically and adaptively according to the voltage of grid-connected point and the power direction of adjacent downstream line. And then the reactive power reference of DG inverter can be got through modified Q(U) control strategy. The reactive power of inverter is controlled to trace the reference value. The proposed control strategy can not only control the local voltage of grid-connected point but also help to maintain voltage within qualified range considering the terminal voltage of distribution feeder and the reactive support for adjacent downstream DG. The scheme using the proposed strategy is compared with the scheme without the reactive support of DG inverter and the scheme using the Q(U) control strategy with constant segmented voltage threshold. The simulation results suggest that the proposed method has a significant improvement on solving the problem of out-of-limit voltage, restraining voltage variation and voltage quality.

<p>EA0008</p> <p>Time: 1:15pm-1:30pm</p>	<p style="text-align: center;">A Method of Dynamic Extended Reactive Power Optimization in Distribution Network Containing</p> <p>Wu Wang, Wei Huang, Yongjun Zhang</p> <p style="text-align: center;"><i>School of Electrical Power South China University of Technology Guangzhou, China</i></p>
---	--

Abstract: The grid-integration of Photovoltaic-Storage System brings some undefined factors to the

network. In order to make full use of the adjusting ability of Photovoltaic-Storage System (PSS), this paper puts forward a reactive power optimization model, which are used to construct the objective function based on power loss and the device adjusting cost, including energy storage adjusting cost. By using Cataclysmic Genetic Algorithm to solve this optimization problem, and comparing with other optimization method, the result proved that: the method of dynamic extended reactive power optimization this article puts forward, can enhance the effect of reactive power optimization, including reducing power loss and device adjusting cost, meanwhile, it gives consideration to the safety of voltage.

<p>EA0009</p> <p>Time: 1:30pm-1:45pm</p>	<p>The role of industrial Energy Storage Solutions in a Distributed Energy System: Empirical Findings and Implications on Cooperative Ties</p> <p>Dominik Halstrup, Marlene Schriever</p> <p><i>University of Applied Sciences Osnabrueck, Caprivistrasse 30A, 49076 Osnabrueck, Germany</i></p>
---	--

Abstract: Current Renewable Energy sources are mainly fluctuating by nature, which is why one of the main interests in an energy system with high Renewable Energy contribution is the flexibilization of supply and demand. One measure of flexibilization can be Energy Storage Solutions. Whereas the residential use of Energy Storage Solutions has been a subject of interest to researchers, the organizational perspective has been neglected in certain areas. Even though, especially the industry, as one of the main energy consumer, is of critical importance along the way of transforming the energy system to Renewable Energies. Especially the distributed character of the Energy Transition in Germany demands for further flexibility being introduced to the grid. This study therefore examines the acceptance of electric Energy Storage Solutions among the German manufacturing industry. Based on quantitative data from a sample of 101 German manufacturing companies, the article analyzes the general awareness about Energy Storage Solutions, possible acceptance factors and perspectives on new possible areas of cooperation. The results show that organizations in the sample display general knowledge about Energy Storage solutions but do not have in-depth knowledge about modes of deployment. The organizations in question agree on the fact that future cooperation is necessary in order to guarantee supply security and quality of electric energy.

<p>EA0012</p> <p>Time: 1:45pm-2:00pm</p>	<p>Study on Real Time Abnormal Diagnostic System for PV Generation System</p> <p>Kazutaka Itako, Naoaki Iiduka, Tsugutomo Kudoh, Keishin Koh</p> <p><i>Department of Electrical & Electronics Engineering, Kanagawa Institute of Technology, Atsugi, Japan</i></p>
---	--

Abstract: Currently, the production and the number of installations of photovoltaic (PV) modules have been increasing rapidly because of a feed-in tariff in Japan. Accordingly, the number of failures has also increased. Many failures are a result of the Hot-Spot phenomenon in which defective cell becomes hot when shadow occurs on the cell. Correspondence is required rapidly because of occurring abnormality. Conventional PV system monitors generated power, however detection of occurring shadow and the Hot-Spot detection are difficult by monitoring generated power. Previously, the authors performed

operating analysis of the PV module with Hot-Spot. Moreover we proposed novel abnormal diagnostic method that detects occurring shadow and Hot-Spot with PV string. This paper proposes the abnormal diagnostic system in real time using slope of I-V (Current-Voltage) characteristics, and confirms effectiveness of the system. Applying this system to PV system, abnormal condition (e.g. shading and the Hot-Spot) can be easily detected in real time.

<p>EA0016</p> <p>Time: 2:00pm-2:15pm</p>	<p>Proposal of New Plug-in Operation Point Correction System for PV Generation</p> <p>Kazutaka Itako, Masataka Ochiai, Shuai Yang</p> <p><i>Electrical & Electronics Engineering Department Kanagawa Institute of Technology 1030 Shimo-Ogino, Atsugi, Kanagawa, Japan</i></p>
---	--

Abstract: The maximum power point of photovoltaic (PV) generation moves depending on weather conditions and load. Therefore, it is significant to make sure that the panels can work at the maximum power point under MPPT control (MPPT: Maximum Power Point Tracking). However, it has the problems of low efficiency and unstable operation when panels are covered by the partial shadow. The result is that the output power may be substantially decreased. To overcome this issue, the authors propose a new plug-in operation point correction system. This system is put between PV panels and PCS in the existing PV generation system. In this paper, the effect of partial shadow is investigated. The experimental results describe that the output electric energy increases approximately 1.4 times as compared with the conventional system when the proposed correction system is inserted.

<p>EA0029</p> <p>Time: 2:15pm-2:30pm</p>	<p>Effects of Bypass Diode Configurations to the Maximum Power of Photovoltaic Module</p> <p>J. C. Teo, Rodney H. G. Tan, V. H. Mok, Vigna K. Ramachandaramurthy, C. K. Tan</p> <p><i>UCSI University, No.1, Jalan Menara Gading, Kuala Lumpur 56000, Malaysia</i></p>
---	--

Abstract: Effects of bypass diode configurations to the maximum power of photovoltaic module are presented. The impacts of one, two and three bypass diodes configurations to the photovoltaic module are investigated using simulation approach. Simulink models are developed to perform all the simulations in this investigation. In the investigation, various shading patterns are applied to one, two and three bypass diodes configurations to investigate the impact of bypass diode configuration to the maximum power of photovoltaic module. Simulation results show that the bypass diode configurations doesn't affect the maximum power of the photovoltaic module under certain shading conditions. The comparison study among one, two and three bypass diodes configurations show a greater quantity of bypass diode in a photovoltaic module doesn't guarantee better performance during partial shading conditions.

<p>EA0043</p> <p>Time:</p>	<p>Analysis on Behaviour of Wavelet Coefficient during Fault Occurance in Tansformer</p>
-----------------------------------	---

2:30pm-2:45pm	<p>Bancha Sreewirote, Atthapol Ngaopitakkul</p> <p><i>Faculty of Engineering, King Mongkut's Institute of Technology Ladkrabang, Bangkok, Thailand</i></p>
---------------	---

Abstract: The protection system for transformer has play significant role in avoiding severe damage to equipment when disturbance occur and ensure overall system reliability. One of the methodology that widely used in protection scheme and algorithm is discrete wavelet transform. However, characteristic of coefficient under fault condition must be analyzed to ensure its effectiveness. So, this paper proposed study and analysis on wavelet coefficient characteristic when fault occur in transformer in both high- and low-frequency component from discrete wavelet transform. The effect of internal and external fault on wavelet coefficient of both fault and normal phase has been taken into consideration. The fault signal has been simulate using transmission connected to transformer experimental setup on laboratory level that modelled after actual system. The result in term of wavelet coefficient shown a clearly differentiate between wavelet characteristic in both high and low frequency component that can be used to further design and improve detection and classification algorithm that based on discrete wavelet transform methodology in the future.

<p>EA0045</p> <p>Time: 2:45pm-3:00pm</p>	<p>A Novel Online Insulation Fault Detection Circuit for DC Power Supply Systems</p> <p>Yow-Chyi Liu, En-Chih Chang, Yu-Liang Lin, Chen-You Lin</p> <p><i>Kao Yuan University/Department of Electrical Engineering, Kaohsiung, Taiwan, R.O.C</i></p>
---	--

Abstract: This paper proposes a novel online insulation fault detection circuit to overcome the shortcomings of ungrounded DC power supply system for being unable to provide high sensitivity leakage current detection. A DC power supply insulation fault detection circuit includes a leakage current detector located in each branch circuit, and a positive voltage transient compensator and a negative voltage transient compensator respectively bridging the positive terminal and negative terminal of the power supply system. The positive and negative voltage transient compensators respectively include a charge circuit to allow an energy storage circuit to be charged. When grounding insulation deterioration takes place at the positive or negative terminal of the leakage current detector, a leakage current loop is formed so that energy storage elements discharge and the leakage current detector detects current variations on the positive and negative terminals, and issue an alarm signal or control cutoff of the circuit breaking elements. The experiment result demonstrates that this novel method is able to detect 1 mA/50 kΩ insulation fault to achieve the high sensitivity detection goal.

<p>EA0046</p> <p>Time: 3:00pm-3:15pm</p>	<p>Design of a Cross-Connected Charge Pump for Energy Harvesting Systems</p> <p>Kei Eguchi, Haruka Fujisaki, Sanjeevikumar Padmanaban and Ichirou Oota</p> <p><i>Department of Information Electronics, Fukuoka Institute of Technology, Fukuoka, Japan</i></p>
---	---

Abstract: For energy harvesting systems, a novel charge pump with cross-connected structure is proposed in this paper. Owing to the cross-connected structure, the proposed charge pump can offer the output voltage to the output load at every phase. Furthermore, the proposed charge pump can reduce the number of circuit stages from the conventional charge pump. For above-mentioned reasons, the proposed charge pump can realize not only smaller internal resistance but also smaller output capacitance than the conventional charge pump. The theoretical analysis and simulation program with integrated circuit emphasis (SPICE) simulation demonstrate that the proposed charge pump outperforms the conventional charge pump in the point of power efficiency and circuit speed.

Session 5: Resource Management and Sustainable Development

Venue: Beni
Chair: Prof. Mitsuo Yoshida
Japan International Cooperation Agency (JICA), Japan
Time: 3:45pm-5:45pm | November 3, 2017

Note:

- * Session photo will be taken at the end of the session.
- * Copy PPT/PDF on conference laptop 10 minutes earlier before each session starts.
- * For the best presentation of each session, it's encouraged to award it to student author prior.
- * The certification of Oral/Poster presentation, listeners, will be awarded at the end of each session.
- * To show respect to other authors, especially to encourage the student authors, we strongly suggest you attend the whole session, and the scheduled time for presentations might be changed due to unexpected situations, please come as early as you could.

<p>D41</p> <p>Time: 3:45pm-4:00pm</p>	<p style="text-align: center;">Assessing the Impact of Demand-Side Management an Existing Water Supply System: A Case Study of Three Reservoirs in Selangor, Malaysia</p> <p>Nini Sopian, Jonathan Chenoweth, and Richard Murphy</p> <p style="text-align: center;"><i>University of Surrey, United Kingdom</i></p>
--	---

Abstract: Increasing vulnerability of an existing water supply system (WSS) has been known to lead to an increase in the likelihood of non-satisfactory (NS) events for potable water users. In order to overcome this, demand-side management (DSM) strategies had been advocated over the supply-side management (SSM) due to its ability to prolong high financial investment, as well as to mitigate negative environmental and social costs. In order to assess the effectiveness of DSS implementation on an existing WSS, a baseline study of three reservoirs vulnerability in Selangor – namely Semenyih, Langat, and Klang Gates (KGD) dam – was done by adapting a methodology developed by Mehran et al. (2015) through estimation of system's reliability via calculations of inflow-demand reliability index (IDR), and resilience via calculation of water supply resilience index (WSR).

Calculation of both IDR and WSR for each reservoir had indicated an increase in system vulnerability, where values of both IDR and WSR had been found to decrease in the recent history (2013 – 2016) as compared to historical scenarios. Benchmarking the current timeframe with that of the 1998 event, it was discovered that, for both KGD and Langat dam, there were several other occurrences of low reliability (IDR) and low resilience (WSR) which mimics the conditions of the 1998 event. For Semenyih dam, there were no other timeframes which fall into the low reliability/low resilience cluster, indicating the system's low vulnerability against NS events; however, long-term patterns of both indicators suggest that the system is approaching conditions of system failure, possibly leading to increase system vulnerability if no changes are made to the current water management. As such, it can be concluded that a combination of SSM-based and DSM-based strategies are needed to decrease KGD and Langat dam's vulnerability, while an implementation of effective DSM strategy for Semenyih dam should be adequate.

<p>D44</p> <p>Time: 4:00pm-4:15pm</p>	<p>Effect of Underground Drainage Tunnel System on Groundwater Flow System</p> <p>Carol Y. Y. Pau, Jimmy J.J. Jiao</p> <p><i>The University of Hong Kong, Hong Kong</i></p>
--	---

Abstract: The Po Shan Drainage Tunnel System in Hong Kong consists of two 3-metre diameter drainage tunnels built in 2007 to improve slope stability. A series of subvertical spider drains emanates from the tunnel to intercept water at different locations within the slope. The opening and closing of these drains are controlled by manually-operated valves.

The effect of the drainage tunnel was assessed based on analysis of time series of hydrological data in the forms of rainfall, tunnel flow rates, subvertical drain pressures and piezometric levels collected in the vicinity. Some piezometers were found to display faster rates of drop in piezometric level after a rainstorm than that before tunnel construction, while a few other piezometers displayed an increasing trend. Certain piezometers appeared to be unresponsive to the opening of the valves of the spider drains near them, while some piezometers only appeared responsive to the manual discharge at deeper depths. An effort was made to consolidate and explain the findings using both analytical and statistical methods.

<p>D58</p> <p>Time: 4:15pm-4:30pm</p>	<p>Estimation of Meiyu Rainfall in Taiwan by GSMaP</p> <p>Nan-Ching Yeh, Yao-Chung Chuang</p> <p><i>Chang Jung Christian University/ Graduate School of Business and Operations Management, Taiwan</i></p>
--	--

Abstract: In this study, the use of the Global Satellite Mapping of Precipitation (GSMaP) products estimated Mei-yu rainfall intensity in Taiwan. The data were used includes GSMaP satellite data, the Central Weather Bureau (CWB) automatic station rainfall data and surface weather charts.

Yamamoto et al. (2015) used the algorithm to improve the GSMaP products in the Asian region, and it showed that the use GSMaP products were needed to be properly corrected by the region. In this case studying, it distinguished the height of the terrain to analyze the difference between the rainfall data of the GSMaP and the actual observed rainfall of CWB during the Mei-yu in Taiwan, and try to find out the systematic error of GSMaP products applied in Taiwan.

Preliminary analysis results showed, the GSMaP estimates rainfall in Taiwan is closely related to height of the terrain, the best classifications of terrain were altitudes below 50 meters, 50 to 100 meters and more than 100 meters, the correlation coefficients of GSMaP and CWB actual rainfall are 0.73, 0.69 and 0.48 respectively. It showed that result of the GSMaP products in ground (below 50 meters) is better than in the mountains. The preliminary results of this study, in the average of bias improvement 17 mm, and the average of Root Mean Squared Error is improved 9.3 mm, it is shown that this method can effectively improve the rainfall estimation of GSMaP products in Taiwan.

<p>D06</p> <p>Time: 4:30pm-4:45pm</p>	<p>Responses of Soil Organic Carbon, Soil Respiration, and Associated Soil Properties to Long-Term Thinning in a Semi-arid Picea Crassifolia Plantation in Northwestern China</p>
--	--

	<p>Long-Fei Chen</p> <p><i>Northwest Institute of Eco-Environment and Resources, Chinese Academy of Sciences, China</i></p>
--	--

Abstract: To relieve water deficits and increase stem-level productivity, stand thinning using whole-tree harvesting (WTH) has been a major form of forest management for *Picea crassifolia* plantation in the Qilian Mountains of China. However, ecological consequences of this practice in these stands are poorly known. We investigated the effects of three thinning levels on long-term soil carbon storage, soil respiration, and soil properties. Our results showed that soil carbon stocks decreased significantly with increasing thinning intensity at a soil depth of 0-70 cm, while soil water storage increased, especially in the deep soil layers (30-70 cm). Mean soil respiration rates during the growing season increased significantly with increasing thinning intensity, and the dynamics of soil respiration coincided with that of soil temperature. Generally, 65 to 73% of the variation in soil respiration rates in three thinning levels was explained by the changes in soil temperature. WTH resulted in a significant increase in soil bulk density at the 0-30 cm and in soil pH at the 0-20 cm depths, and in a significant decrease in soil total nitrogen and C:N ratio in the 0-20 cm layers; overall, these impacts increased with thinning intensity. As no effect of treatment intensity was detected on fine root biomass, we attributed the increase in soil respiration to accelerated decomposition of organic matter as a result of elevated soil temperature and substrate quality. The results of this study demonstrate the potential for WTH to relieve water deficits in semi-arid spruce plantation at the expense of carbon sequestration.

<p>D56</p> <p>Time: 4:45pm-5:00pm</p>	<p>Assessment the Sustainable Efficiency for Mountain Communities Tourism Development</p> <p>Kuo Hsing-Fu</p> <p><i>Department of Urban Planning and Landscape, National Quemoy University, Taiwan</i></p>
--	--

Abstract: The unique environment of mountain communities in natural environment, economy and society may confront more severe challenges under the influence of climate change. The sustainable tourism development is considered to be the core direction for mountain communities toward sustainable development. However, there is still lack of assessment method for the efficiency and sustainability of mountain communities tourism development. This paper use the DPSIP model and integrate geographical information system (GIS), data envelopment analysis (DEA) and local indicators of spatial association (LISA) for assessing the environmental efficiency and spatial distribution in mountain communities tourism development, based on community sustainable development and the theory of efficiency evaluation. We took 38 communities of the Alishan National Scenic Area in Chiayi Country in Taiwan as study area and assess the relative efficiency of decision-making units from the perspective of sustainable development. Alishan is blessed with bountiful natural resources, such as sun rise views, a sea of clouds and old forests. By assessing and comparing the spatial characteristics of the environmental efficiency of mountain communities tourism development, we combine spatial and tourism development policies with spatial structure characteristics to proceed the correlativity analysis and propose establishing the plans of sustainable tourism development in the future.

<p>D103</p> <p>Time:</p>	<p>The Influence of Distributive Justice on Agricultural Environmental Sustainability</p>
---------------------------------	--

5:00pm-5:15pm	<p>Jay Whitehead</p> <p><i>Agribusiness and Economics Research Unit – Lincoln University, New Zealand</i></p>
---------------	--

Abstract: While there is a growing trend towards trying to improve agricultural sustainability, the implementation and uptake of sustainability initiatives will benefit from any burdens imposed on those expected to participate being perceived as fair. The financial structures that underpin the policies and programs designed to enhance sustainability are tightly bound to a set of ethical and moral issues. These issues are amplified when attempts are made to determine how the burden for paying for these policies and programs should be distributed, and what constitutes a fair distribution of this burden among relevant agents. The research sought to understand how New Zealand (NZ) horticultural enterprises conceptualize fairness, equity, and distributive justice concerns surrounding environmental mitigation. A vignette survey of horticultural enterprises was used to elicit views on fairness under different distributive justice scenarios. It was found that the majority of NZ horticulturalists preferred to sacrifice some overall industry efficiency in the interest of promoting a more egalitarian distribution of burdens amongst growers. Respondent's also demonstrated a strong tendency to absorb the costs of on-farm environmental mitigation, and supported the 'polluter pays' principle. The research suggests that fairness concerns may have a significant influence over how growers' would like a sustainability assessment initiative to function.

<p>D10</p> <p>Time: 5:15pm-5:30pm</p>	<p>Scope of Sustainable Pretreatment of Cotton Knit Fabric without Using Chemicals – An Environmental Friendly Approach</p> <p>Md. Abdul Hannan, Papia Haque, S M Fijul Kabir and Mohammed Mizanur Rahman</p> <p><i>Dhaka University of Engineering & Technology, Bangladesh</i></p>
--	--

Abstract: During cotton pretreatment, commonly used NaOH and H₂O₂ are responsible for adverse impact on environment because of their ample level of toxicity, huge washing cycles and subsequent peroxide killing and neutralizing steps. In this work, single jersey single lacoste knit fabrics were pretreated without using the aforementioned chemicals, rather with only sequestering agent only for the removal of water hardness. Process comparison at a glance:

The variable temperatures applied were 1050C, 1200C and 1300C for 60 min, 40 min and 20 min. All the pretreated samples were dyed at deep (1.5%) shade, medium (1%) shade and light (0.5%) shade with combination of red. Yellow and blue color at a fixed proportion. The absorbency test results affirmed average spreading out of liquid on the surfaces of the samples only at high temperature of 1200C and 1300C. The deep shades and medium shades of the dyed samples passed (CMC DE ≤ 1) during pretreatment at 1050C for 20min, whereas light (0.5%) shades required 1200C and even 1300C temperature along with 20min duration. CIE L*,a*,b*,c* and h0 values as well as spectral data validated the uniformity in combination dyeing performance. K/S values of the pretreated samples were 4.9 and 1.79 for 1.5% and 0.5% shade dyeing respectively. Maximum whiteness index value achieved was 16.18. FTIR data affirmed the removal of dominating pectin substances and coloring pigments from the samples. Visual assessment of dyed samples, SEM image for surface topography and fastness properties of the pretreated samples were studied at justified manner.

<p>D25</p> <p>Time: 5:30pm-5:45pm</p>	<p>Exploration of a Comprehensive Policy for Improving Atmospheric Environment Based on Dynamic Simulation in Tangshan City, China</p> <p>Ma Yufang, Sha Jinghua, Yan Jingjing</p> <p><i>School of Humanities and Economic Management, China University of Geosciences, Beijing</i></p>
--	---

Abstract: Tangshan City is an important resource-based city in Jingjinji Area, China. Serious air pollution has occurred during the process of development in Tangshan City which also affects the atmospheric environment in Jingjinji Area. Therefore, what policies should be adopted to realize the improvement of atmospheric environment and the sustainable development of society and economy under the constraint of atmospheric environment in Tangshan City are urgent problems to be solved. In this paper, we develop a dynamic optimization model by input-output analysis including three sub models: the socio-economic model, atmospheric environment model and energy model. The model is applied to Tangshan City to conduct 13 terms of dynamic simulation from 2013 to 2025 based on 2012 with GRP as objective function. The realistic basis for the operation of the model is to improve the atmospheric environment under the constraint of a clear level of atmospheric pollutant emission through introducing clean energy, air pollution reduction policies and industrial restructuring, while achieving the optimal economic development in Tangshan City. The three sub models balance each other, different policy combinations are set by whether introducing clean energy and emission reduction policies and assuming different emission reductions to conduct simulations. We adopt the optimal policy combination to achieve the goal of improving the atmospheric environment and sustainable development of social economy in Tangshan City by coordinating the relationship among economic development, atmospheric environmental protection and energy consumption.

Session 6: Thermal Energy and Chemical Engineering

Venue: Kaze

Chair: TBA

Time: 3:45pm-5:45pm | November 3, 2017

Note:

- * Session photo will be taken at the end of the session.
- * Copy PPT/PDF on conference laptop 10 minutes earlier before each session starts.
- * For the best presentation of each session, it's encouraged to award it to student author prior.
- * The certification of Oral/Poster presentation, listeners, will be awarded at the end of each session.
- * To show respect to other authors, especially to encourage the student authors, we strongly suggest you attend the whole session, and the scheduled time for presentations might be changed due to unexpected situations, please come as early as you could.

<p>EA0022</p> <p>Time: 3:45pm-4:00pm</p>	<p>Drying Peppercorn Characteristics in Fluidized Bed Dryer Equipped with Baffle Vortex Generators</p> <p>Varesa Chuwattanakul, Kesmanee Banthumporn, Pongjet Promvonge and Smith Eiamsa-Ard</p> <p><i>Landscape Architecture Department, Adnan Menderes University, Turkey</i></p>
---	---

Abstract: The paper deals with the characteristic study of drying peppercorn using fluidized-bed dryer fitted with baffle vortex generators. The experiments were operated at three different superficial air velocities of 1.5, 1.7 and 1.9 m/s. The experiment took several hours for drying peppercorn from the initial to final moisture contents of about 19% (dry basis), and the peppercorns were sampling every 15 minutes, for moisture analysis. A typical fluidized-bed dryer was also tested under similar operating conditions for the assessment. The results indicate that the influence of superficial air velocity on drying peppercorn characteristic in the fluidized-bed dryer fitted with baffle vortex generators is more significant than that in the typical fluidized-bed dryer. It is observed that fluidized-bed dryer fitted with baffle vortex generators shows better performance in reducing moisture content with faster drying rate than the typical fluidized bed dryer especially at high superficial air velocity due to the strong longitudinal vortex which helps in improving the fluid mixing, heat and mass transfer rates.

<p>EA0018</p> <p>Time: 4:00pm-4:15pm</p>	<p>Investigation on Thermal Environment Improvement by Waste Heat Recovery in the Underground Station in Qingdao Metro</p> <p>Zewen An, Jiaquan Liu, Fengyin Wang and Cuiping Wang</p> <p><i>Energy Engineering Institute, Qingdao University, Shandong Province, China</i></p>
---	---

Abstract: The thermal environment parameters, like the temperature and air velocity, are measured to investigate the heat comfort status of metro staff working area in winter in Qingdao. The temperature is effected obviously by the piston wind though the train and waiting hall is in the lower of Hall, and the temperature is not satisfied with the least heat comfort temperature of 16 °C. At the same time, the heat

produced by the equipments is brought by the cooling air to atmosphere. Utilizing the water-circulating heat pump, it is feasible to transfer the emission heat to the staff working area to improve the thermal environment. Analyzed from the technique and economy using the heat pump, the water-circulating heat pump could be the best way to realize the waste heat recovery and the heat comfort in winter in the underground station in north China metro.

<p>EA0027</p> <p>Time: 4:15pm-4:30pm</p>	<p>Impingement Cooling by Round Jet with Longitudinal Swirling Strip</p> <p>Kengkla Kunarak, Varesa Chuwattanakul, Prachya Samruaisin and Smith Eiamsa-Ard</p> <p><i>Faculty of Engineering King Mongkut's Institute of Technology Ladkrabang Bangkok, Thailand</i></p>
---	---

Abstract: The objective of this research is to study the effect of swirling impinging jet on the heat transfer in the impinged plated by using thermochromic liquid crystal (TLC) sheet. In the experiments, the nozzle having a diameter of 20 mm (D) was installed with four-channel twisted tape as a longitudinal swirling strip. The jet impingement was performed at jet-to-plate distances (L/D) of 2, 3, 4, 5, 6 and 7, and constant Reynolds number (Re) of 5000. The experimental results showed that the swirling jet induced by the four-channel twisted tape gave higher heat transfer rates than the conventional jet at the same operating conditions. The highest average heat transfer rate was obtained at the jet-to-plate distance (L/D) of 2.

<p>EA0044</p> <p>Time: 4:30pm-4:45pm</p>	<p>Exergetic Analysis of Regenerative Rankine Cycle with Partial Evaporation Using Zeotropic Mixture as Working Fluid</p> <p>Kyoung Hoon Kim</p> <p><i>Department of Mechanical Engineering, Kumoh National Institute of Technokogy Daehakro 61, Gumi, Gyeongbuk 39177, Korea</i></p>
---	---

Abstract: The power generation cycle using zeotropic mixture as working fluid has several advantages for recovery of low-grade finite heat sources. In this paper an exergetic analysis is carried out for regenerative partial-evaporation Rankine cycle with ammonia-water mixture. Based on the first and second laws of thermodynamics, the effects of the important system parameters on the exergetical performance of the system were theoretically investigated. The results showed that the second law efficiency has an optimum value with respect to the fluid quality at expander inlet as well as the ammonia mass fraction.

<p>EA0048</p> <p>Time: 4:45pm-5:00pm</p>	<p>Solid fuel characterization of torrefied coconut shells in an oxidative environment</p> <p>Jes Tanchuling, Rizalinda De Leon</p> <p><i>University of the Philippines Diliman, Quezon City, 1101, Philippines</i></p>
---	---

Abstract: Torrefaction is a thermo-chemical treatment to address problems in use of biomass as a fuel especially for combustion; it is usually done between 200-300 °C in an inert or low oxygen environment. This study investigated the properties of local Coconut Shell chips that were torrefied using a batch reactor in an oxidative environment at torrefaction temperatures of 250 °C and 300 °C, and torrefaction time of 30 minutes and 60 minutes. Analysis of solid products included Thermogravimetric Analysis (TGA), Fourier Transform Infrared Spectroscopy (FTIR), Proximate Analysis, Higher Heating Value (HHV) determination, and Equilibrium Moisture Content (EMC). Overall, the results in the solid product showed changes in composition and on the thermal degradation curve; also improvement of fuel properties in terms of HHV, Fixed Carbon Content, and EMC. Among the settings, the 300 °C and 30 minutes setting is recommended with significant improvement of the solid fuel.

<p>EA0035</p> <p>Time: 5:00pm-5:15pm</p>	<p>Torrefied Cogon Grass: Effects of Torrefaction on Fuel Properties of Solid and Condensate Products</p> <p>Alvin Palanca and Rizalinda De Leon</p> <p><i>College of Engineering University of the Philippines Diliman, Melchor Hall Rocess St. Diliman, Quezon City 1101, Philippines</i></p>
---	---

Abstract: Torrefaction is a thermal pretreatment process of producing solid fuel by heating biomass below 300 °C under anoxic condition. This pretreatment process improves the fuel characteristics of Cogon grass and its energy density were comparable to that of a subbituminous class B and C coals. Sun-dried Cogon grass were torrefied in a fabricated batch torrefaction reactor and their solid and organic condensate products were analyzed. A response surface methodology is used to examine the effects of torrefaction reaction temperature, feed size, reaction time, and Cogon grass parts on energy density, mass yield, and energy yield of the solid products as well as the effects of reaction temperature and reaction time on energy density and mass yield of the organic condensate. Mass yield decreases as reaction temperature is increased and increases as feed shift from leaves to nodes, from 54% at 250 °C to 43% at 285 °C and 39% using leaves to 60% using nodes. Also energy yield increase from 50% to 82% as feed shift from leaves to nodes. This is however compensated by an increase of 34% on its energy density. In addition, energy density of the condensed gas products can be predicted using the four process parameters as an input variable on the surface response model for energy density of condensed organic volatiles.

<p>EA0038</p> <p>Time: 5:15pm-5:30pm</p>	<p>Effects of Temperature and Reaction Time on Yield and Properties of Biocrude Oil Produced by Hydrothermal Liquefaction of Spirulina platensis</p> <p>Weene Villaver, Rowena Carpio, Kristian July Yap and Rizalinda de Leon</p> <p><i>University of the Philippines - Diliman, Quezon City 1100, Philippines</i></p>
---	---

Abstract: Hydrothermal liquefaction (HTL) is a process technology suited for converting wet biomass, like microalgae, into biocrude oil. This study investigates the effects of temperature and reaction time on the mass yield and the properties of HTL biocrude oil such as higher heating value (HHV) and composition. *Spirulina platensis*, a microalgae species, is used as feedstock. Slurry prepared at 30% dry weight is processed in 5-mL mini-reactors. Temperatures are set at 2800C, 3200C, and 3500C using a temperature-controlled sandbath. Reaction times are varied at 15 mins, 30 mins, and 45 mins. Biocrude oil is produced and separated using dichloromethane (DCM) as solvent. The mass yield of biocrude oil

varies depending on temperature and reaction time ranging from 29.6% to 44.8% by mass, dry ash free basis (daf). Higher mass yield is observed at the lowest temperature setting of 2800C. The HHV is measured using bomb calorimeter and calculated using Dulong's Formula. The HHV ranges from 31.5 MJ/kg to 37 MJ/kg. Highest HHV is obtained for biocrude oil at 3500C and 45 mins reaction time. The highest energy yield is 76.8%, which is attained at 2800C and 45 mins. Elemental analysis and GC-MS analysis are conducted to analyze the composition of biocrude oil produced. The N/C and O/C ratios of HTL biocrude oil are reduced in all experimental conditions. Nitrogen content is lowest at 3500C and 30 mins to 45 mins reaction time.

<p>EA0036</p> <p>Time: 5:30pm-5:45pm</p>	<p>Hydrothermal liquefaction of demineralized wastewater algae biomass</p> <p>Rowena Carpio, Yuanhui Zhang, Lance Charles Schideman, Chih-Ting Kuo and Rizalinda de Leon</p> <p><i>Department of Agricultural and Biological Engineering, University of Illinois at Urbana-Champaign, Urbana, IL 61801, USA</i></p>
---	---

Abstract: The use of high-ash containing biomass for energy application leads to serious problems during the conversion process and affects the quality of the resulting fuel products. In this study, the effect of demineralization treatments on the hydrothermal liquefaction (HTL) of wastewater algae biomass (WAB) was investigated. Three different acid-treatments were selected for the study: acetic acid (AA), formic acid (FA), and sulfuric acid (SA). The HTL products distribution, the quality and chemical composition of biocrude oil from treated and untreated biomass (UBM) were compared. The HTL experiments were conducted using a 40ml tubular reactor at a reaction temperature of 300oC, retention time of 60 minutes, and 100 psi initial headspace pressure with pure N₂ as the process gas. Results revealed that demineralization treatments significantly improved the biocrude oil yield from 17 %daf (dry, ash-free weight) up to 25 %daf, and the aqueous phase products from 50 %daf up to 61 %daf, while there was no significant effect on the yield of gaseous products (6 – 7 %daf). The solid residue yield was all lower in treated biomass (7 – 15 %daf) compared to that from UBM (26% daf). The highest biocrude oil yield (25% daf) was obtained from AA and FA. However, the highest biocrude oil energy recovery (ER) of 41.83 ± 1.87% was obtained from the FA, which is about 52% higher than that from UBM. The ultimate, GC-MS and thermogravimetric (TG) analyses showed the biocrude oil obtained from demineralized biomass are comparable in quality and did not vary much from the biocrude oil obtained from UBM.

Poster Presentation Abstract

Venue: Kaze

Note:

- * Session photo will be taken at the end of the session.
- * Copy PPT/PDF on conference laptop 10 minutes earlier before each session starts.
- * For the best presentation of each session, it's encouraged to award it to student author prior.
- * The certification of Oral/Poster presentation, listeners, will be awarded at the end of each session.
- * To show respect to other authors, especially to encourage the student authors, we strongly suggest you attend the whole session, and the scheduled time for presentations might be changed due to unexpected situations, please come as early as you could.

EA0032 Time: 18:30pm-18:45pm	Research on the Operation Control Strategy of the Cooling Ceiling Combined with Fresh Air System Tao Huang and Hao Li <i>Institute of Building Environment and Energy, China Academy of Building Research, Beijing, China</i>
---	---

Abstract: The cooling ceiling combined with independent fresh air system was built by TRNSYS. And the cooling effects of the air conditioning system of an office in Beijing in a summer typical day were simulated. Based on the "variable temperature" control strategy, the operation strategy of "variable air volume auxiliary adjustment" was put forward. By simulating the stability of indoor temperature, the purpose of reducing the energy consumption of the system was achieved under the condition that the condensation on the surface of the cooling ceiling doesn't occur and the indoor thermal comfort is satisfied.

Listeners

Note:

- * Session photo will be taken at the end of the session.
- * The certification of Oral/Poster presentation, listeners, will be awarded at the end of each session.
- * To show respect to other authors, especially to encourage the student authors, we strongly suggest you attend the whole session, and the scheduled time for presentations might be changed due to unexpected situations, please come as early as you could.

Listener 1	Liu Fei Southern University of Science and Technology, China
Listener 2	Wang Ziyi Southern University of Science and Technology, China
Listener 3	M. Ashraf Sabry Hof University, Germany
Listener 4	Pai Hui-Fen Environmental Protection Administration, Executive Yuan, Taiwan
Listener 5	Fang Jing Chinese Academy of Sciences, China
Listener 6	He Zhibin Chinese Academy of Sciences, China
Listener 7	Liu Bing Chinese Academy of Sciences, China
Listener 8	Wen Shiuan Chou Environmental Protection Administration, Executive Yuan, Taiwan
Listener 9	Hu Wei-Hsing AX Group, Taiwan
Listener 10	Chang Jia-Ming Hsinchu Science Park Bureau, Ministry of Science and Technology, Taiwan

Listener 11	Tun-Jen Cheng Hsinchu Science Park Bureau, Ministry of Science and Technology, Taiwan
Listener 12	Daladi Awuni Youth Employment Agency, Ghana
Listener 13	Yang-Cheng Kuo Food Industry Research and Development Institute, Taiwan
Listener 14	Fayolle Marine Panasonic Corporation, Japan

Author Index

Name	Paper ID	Session	Page
Alizara Juangbhanich	D46	S3	28
Alvin Palanca	EA0035	S6	45
Amal Abdelhaleem	D51	S1	18
Arnoldo Lima	D23	S3	31
Atthapol Ngaopitakkul	EA0043	S4	35
Bonnie K. L. Mak	D03	S3	30
Carol Y. Y. Pau	D44	S5	39
Cherry Lyn V. Chao	EA0031	S2	23
Cuiping Wang	EA0018	S6	43
En-Chih Chang	EA0028	S2	22
Haydar Demirhan	EA0004-A	S2	22
Hoda Karimipour	D54	S3	30
Hsing-Wang Li	D35	S1	21
Jay Whitehead	D103	S5	40
Jes Tanchuling	EA0048	S6	44
Jinghua Dai	D13	S3	29
Jun Du	D07	S1	20
K. Somprasong	D02	S1	20
Kei Eguchi	EA0046	S4	36
Khairul Azly Zahan	EA0026	S2	23
Kuo Hsing-Fu	D56	S5	40
Kyoung Hoon Kim	EA0044	S6	44
Lin Xiaoming	EA0007	S4	33
Long-Fei Chen	D06	S5	39
Lucas B. McCullum	D01	S1	17
Ma Yufang	D25	S5	42
Marione Deanna Comboy	D26	S3	27
Marlene Schriever	EA0009	S4	34
Masami Tsuji	D39	S1	19
Masataka Ochiai	EA0016	S4	35
Masato Kawanishi	D16	S1	19
Md. Abdul Hannan	D10	S5	41
Mitsuo Yoshida	D40	S3	27
Muhammad Mujiya Ulkhaq	EA0041	S2	26
Nan-Ching Yeh	D58	S5	39
Naoaki Iiduka	EA0012	S4	34
Naofumi Sato	D24	S1	17
Nini Sopian	D41	S5	38
Noriaki Murase	D65	S3	29
Qingbin Cui	EA0025-A	S2	25
Rodney H. G. Tan	EA0029	S4	35
Rowena Carpio	EA0036	S6	46

2017 the Annual Meeting of IJESD & SGCE Editorial Board

Salvador Marrod Cruz	EA0034	S2	24
Shiu-Wan Hung	D37	S3	31
Theresa Banta	EA0049	S2	25
Varesa Chuwattanakul	EA0022	S6	43
Varesa Chuwattanakul	EA0027	S6	44
Visanu Tanboonchuy	D38	S1	18
Weene Villaver	EA0038	S6	45
Wu Wang	EA0008	S4	33
Yow-Chyi Liu	EA0045	S4	36

One Day Tour

Tokyo is Japan's capital and the world's most populous metropolis. It is also one of Japan's 47 prefectures, consisting of 23 central city wards and multiple cities, towns and villages west of the city center.

Today, Tokyo offers a seemingly unlimited choice of shopping, entertainment, culture and dining to its visitors. The city's history can be appreciated in districts such as Asakusa, and in many excellent museums, historic temples and gardens. Contrary to common perception, Tokyo also offers a number of attractive green spaces in the city center and within relatively short train rides at its outskirts.

Tentative itinerary:

07:30-10:00	Assembling at Hotel Gracery Shinjuku or Shinjuku Washington Hotel in Shinjuku Tokyo, no Pick-up service
10:00-11:00	Odawara Castle Park
11:00-13:00	Lunch at MINOYA (Seafood)
13:00-14:00	Getting aboard on Pirate ship
14:00-16:30	SKY WALK
16:30-18:30	Return back to Shinjuku



Japan is abundant with all sorts of seafood. You should not miss the chance to enjoy the seafood at MINOYA.



The pirate ship cruises over Reedlake. From the lake, the magnificent scenery of Hakone could be overlooked. There is also grocery and souvenir shop on the ship, people could pick the seats as they want to view the natural scenery.



The great suspension bridge was built in 2015, and become one of the popular spot in the district of Shizuoka. The total length is four hundred meters, and people can overlook the view of Fujiyama on the bridge.

