2019
Japan / Taiwan / Korea
Chemical Engineering Conference

November 13 - 15, 2019
Housensou, Beppu, Japan

2019 Japan/Taiwan/Korea Chemical Engineering Conference

November 13 – 15, 2019
Housensou, Beppu, Japan

Organized by
Kyushu Branch, Society of Chemical Engineers, Japan
Taiwan Institute of Chemical Engineers
Busan-Gyeongnam Branch, The Korean Institute of Chemical Engineers

Preface

On behalf of the Organizing Committee Members, we are greatly honored and pleased to welcome all the participants to 2019 JTK Conference (2019 Japan/Taiwan/Korea Conference for Chemical Engineering) held in Beppu, Japan.

Main objective of this conference is to provide a platform for chemical engineers to present their research results and development activities in chemical engineering. This conference will include 6 invited, 33 oral and 75 poster presentations covering recent advances in chemical engineering. More than 130 professors, researchers and students are participating in this conference.

2019 JTK conference will provide opportunities for the participants to exchange new ideas and recent progress face to face, establish research relations and find global partner for further collaboration.

We wish that all participates have successful and rewarding communications, and a delightful time on *Beppu Onsen*.

Jun Fukai
Conference Chair
Manager of Kyushu Branch, Society of Chemical Engineers, Japan
Professor, Kyushu University

Organizing Committee

Conference Chair

Jun Fukai	Kyushu University

Conference Co-Chair

Jia-Ming Chern	Tatung University
Kwangsun Huh	Kyungnam College of Information & Technology

Executive Committees

Katsuki Kusakabe	Sojo University
Kazuharu Yoshizuka	The University of Kitakyushu

Organizing Committee

Yu Hoshino	Syouhei Nishihama	Kohji Nakazawa
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Koichiro Shiomori	Taku Matsushita	Susumu Nii
Akira Kawabata	Muneharu Goto	Takahiko Kakoi
Tadashi Okobira	Hideo Nagata	Reiko Wakasugi
Minako Iwakuma	Takaaki Otake	Shuji Yamamoto
Naoki Arimitsu	Hiroyuki Yoshino	Shinji Suzuki

Venue

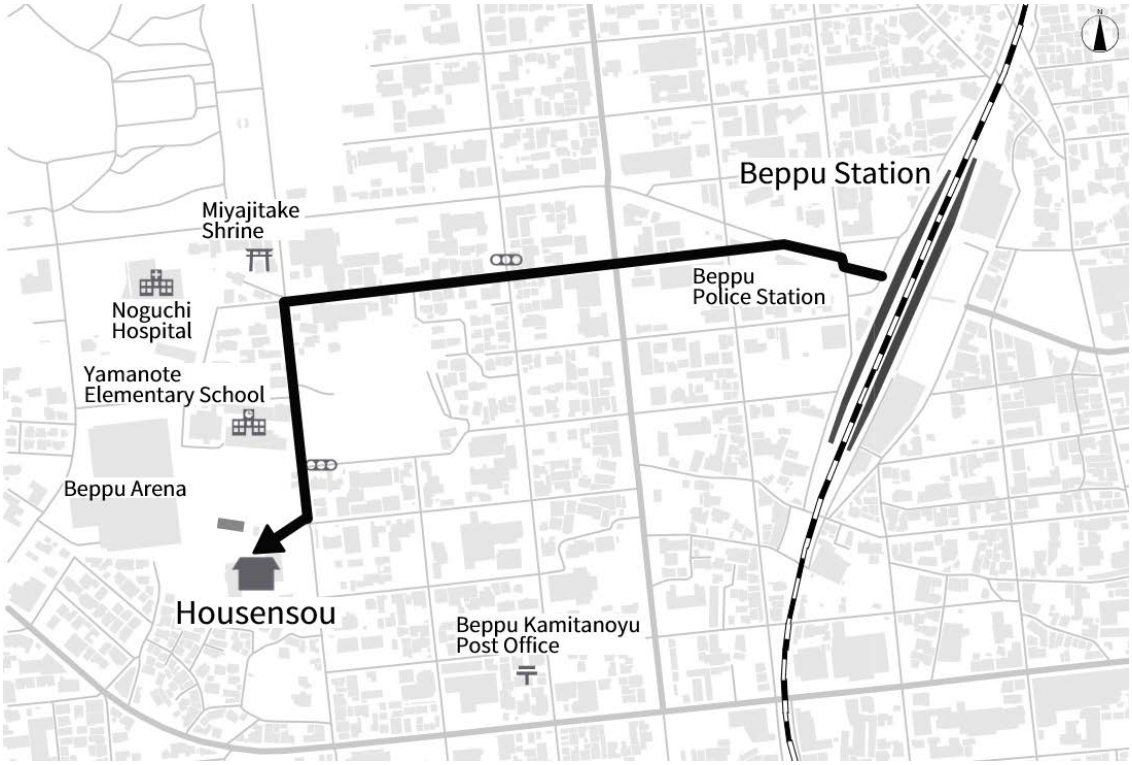
Beppu Housensou, Conference Room

Aoyamacho 5-73, Beppu, Oita 874-0902, Japan

Tel: +81-977-23-4281

Web Site: https://www.housensou.jp/

15 min walk or 5 min taxi from Beppu Station



Program at a Glance

November 13, 2019

18:00 – 20:00 Registration

November 14, 2019

8:00 – 9:00 Registration

Room A (B1F)		Room B (B1F)	
9:00 – 9:30	IA-01	9:00 – 9:30	IB-01
9:30 – 10:00	IA-02	9:30 – 10:00	IB-02
10:00 – 11:15	OA-01 ~ OA-05 (15 min including Q&A)	10:00 – 11:15	OB-01 ~ OB-05 (15 min including Q&A)
11:15 – 11:30	Coffee Break		
11:30 – 12:00	IA-03	11:30 – 12:00	IB-03
12:00 – 13:00	OA-06 ~ OA-09 (15 min including Q&A)	12:00 – 13:15	OB-06 ~ OB-10 (15 min including Q&A)
13:15 – 15:00	Lunch Time (Room B is available for students. Restaurant (1F) is available for regular-fee participates.)		
15:00 – 16:00	Poster Session (Core time for odd number)	15:00 – 16:00	OB-11 ~ OB-15 (12 min including Q&A)
16:00 – 17:00	Poster Session (Core time for even number)	16:05 – 17:05	OB-16 ~ OB-20 (12 min including Q&A)
		17:10 – 17:58	OB-21 ~ OB-24 (12 min including Q&A)
19:00 – 21:00	Conference Dinner (1F)		

November 15, 2019

9:00 – 15:00 Technical Tour (Showa Denko K.K.)

Bus will pick you up at Beppu Station (9:00 am)

and at Oita Station (9:30 am)

Invited & Oral Session

Room A

Chair: Jun Fukai

9:00 – 9:30 **IA-01** **Lithium Recovery from Various Aqueous Resources**

Kazuharu Yoshizuka

Department of Chemical Engineering, The University of Kitakyushu, Japan

9:30 – 10:00 **IA-02** **Nanoporous Metal-Organic Framework Membranes for Olefin/Paraffin Separations**

Hyuk Taek Kwon

Department of Chemical Engineering, Pukyong National University, Korea

Chair: Jeng-Yu Lin

10:00 – 10:15 **OA-01** **Systems Design and Exergy Analysis of the Liquid Air Energy Storage System Integrated with Liquefied Natural Gas Regasification**

Inkyu Lee

School of Chemical and Biomolecular Engineering, Pusan National University, Korea

10:15 – 10:30 **OA-02** **Approach the Bulk Particle Flow Behavior by Pressure Drop Monitoring**

Hsiu-Po Kuo[1,2], Wan-Yi Hsu[1], An-Ni Huang[1,2]

[1]Department of Chemical and Materials Engineering, Chang Gung University, Taiwan, [2]Department of Otolaryngology-Head & Neck Surgery, Linkou Chang Gung Memorial Hospital, Taiwan

10:30 – 10:45 **OA-03** **Polymer Inclusion Membranes Containing Novel Phosphonium-Based Ionic Liquid for Selective Separation of Palladium(II) and Rhodium(III)**

Adroit T.N. Fajar[1], Fukiko Kubota[1], Masahiro Goto[1,2]

[1]Department of Applied Chemistry, Graduate School of Engineering, Kyushu University, Japan, [2]Center for Future Chemistry, Kyushu University, Japan

10:45 – 11:00 **OA-04** **Preparation of DSPE-PEG Modified Liposomes with Ultrasonication**

Shinichi Tokunaga[1], Aida M. Taku[1,2], Tanjina Sharmin[1,2], Miyuki Nakamura[1], Kenji Mishima[1,2]

[1]Department of Chemical Engineering, Faculty of Engineering, Fukuoka University, Japan, [2]Research Center of Composite Material, Fukuoka University, Japan

11:00 – 11:15 **OA-05** **Effect of Chemical Treatment on Adsorption Properties of Wool Fibres for Au(III) and Cu(II)**

Solongo Enkhzaya[1], Koichiro Shiomori[2], Bolormaa Oyuntsetseg[3]

[1]Interdisciplinary Graduate School of Agriculture and Engineering, University of Miyazaki, Japan, [2]Faculty of Engineering, University of Miyazaki, Japan, [3]School of Arts and Sciences, National University of Mongolia, Mongolia

Chairs: Kazuharu Yoshizuka & Inkyu Lee

11:30 – 12:00 **IA-03** **Conjugated Molecules and Molecular Machines for Use in Organic Optoelectronics**

Masaki Horie

Department of Chemical Engineering, National Tsing Hua University, Taiwan

12:00 – 12:15 **OA-06** **Glutathione-Responsive Nanoparticle Consisting of an Amino-Functionalized Silsesquioxane Network Cross-Linked by Zinc Ions for a Promising Drug Carrier**

Hideki Matsune, Tomoya Ono, Ryoya Yoshida, Tsuyoshi Yamamoto, Masahiro Kishida

Department of Chemical Engineering, Faculty of Engineering, Kyushu University, Japan

12:15 – 12:30 **OA-07** **Electrodeposition of Electroactive Materials for Aqueous Hybrid Supercapacitors**

Jeng-Yu Lin

Department of Chemical Engineering and Biotechnology, Tatung University, Taiwan

12:30 – 12:45 **OA-08** **Extraction of As and Se Based on Ion Solvation Using Various Organic Solvents in Hydrochloric Acid Media**

Naoki Matsuo, Tastuya Oshima, Kaoru Ohe

Department of Applied Chemistry, University of Miyazaki, Japan

12:45 – 13:00 **OA-09** **A Hydraulic Model of the Expanded-Bed Reactor for the Pretreatment of Drinking Water**

Nguyet Thi-minh Dao[1,2], The-Anh Nguyen[1,3], Mitsuharu Terashima[1], Hidenari Yasui[1]

[1]Faculty of Environmental Engineering, The University of Kitakyushu, Japan, [2]Institute of Environmental Science and Engineering, National University of Civil Engineering, Vietnam, [3]Faculty of Water Resources Engineering, Thuy Loi University, Vietnam

Room B

Chair: Kwangsun Huh

9:00 – 9:30 **IB-01** **From Waste Cooking Oil to Biofuel**

Jia-Ming Chern

Department of Chemical Engineering and Biotechnology, Tatung University, Taiwan

9:30 – 10:00 **IB-02** **Monitoring System for Gas-Liquid Slug Flow Using AI Technology**

Ken-Ichiro Sotowa[1], Takumi Nishimoto[2], Toshihide Horikawa[2]

[1]Department of Chemical Engineering, Kyoto University, Japan, [2]Faculty of Science and Technology, Tokushima University, Japan

Chair: Hiroshi Mizumoto

10:00 – 10:15 **OB-01** **Piezoelectric and Magnetoelectric Responses of Multiferroic Polymer Films**

Su Chul Yang

Department of Chemical Engineering, Dong-A University, Korea

10:15 – 10:30 **OB-02** **Phenanthroimidazole Based Small Molecules for Blue Emitting LECs**

Sunesh Chozhidakath Damodaran[1], Jino C. John[2], Youngson Choe[2]

[1]Department of Chemistry, St. Stephens College, India, [2]School of Chemical and Biomolecular Engineering, Pusan National University, Korea

10:30 – 10:45 **OB-03** **Spontaneous Degradation of Aromatic Compounds on Fe_2O_3 Nanorods/CNF**

Yiseul Park

Department of chemical engineering, Pukyong National University, Korea

10:45 – 11:00 **OB-04** **Highly Electrocatalytic Ca-doped CuS Counter Electrodes to Improve the Performance of Quantum Dot Sensitized Solar Cells**

Mohammed Panthakkal Abdul Muthalif, Youngson Choe

Pusan National University, Busan, Korea

11:00 – 11:15 **OB-05** **Computational Fluid Dynamics Simulations of Human Nasal Airflow**

An-Ni Huang[1,2], Chi-Che Huang[2], Hsiu-Po Kuo[1,2]

[1]Department of Chemical and Materials Engineering, Chang Gung University, Taiwan, [2]Department of Otolaryngology-Head & Neck Surgery, Linkou Chang Gung Memorial Hospital, Taiwan

Chairs: Jia-Ming Chern & Hidetaka Kawakita

11:30 – 12:00 **IB-03** **Bacterial Surface Display and Its Biotechnological Applications**

Junehyung Kim[1,2]

[1]Department of Chemical Engineering, Dong-A University, Korea, [2]Center for Sliver-Targeted Biomaterials, Brain Busan 21 Plus Program, Graduate School, Dong-A University, Korea

12:00 – 12:15 **OB-06** **Evaluation of Growth and Differentiation Profile of iPS Cells in a Hollow Fiber Culture Device**

Hiroshi Mizumoto[1], Sakiko Matsushita[2], Ryo Taniguchi[3], Yusuke Takasuka[3], Toshihisa Kajiwara[1]

[1]Department of Chemical Engineering, Faculty of Engineering, Kyushu University, Japan, [2]Graduate School of Systems Life Sciences, Kyushu University, Japan, [3]Graduate School of Engineering, Kyushu University, Japan

12:15 – 12:30 **OB-07** **Bioconjugation and Self-Assembly Technologies for Drug Delivery**

Sung In Lim

Department of Chemical Engineering, College of Engineering, Pukyong National University, Korea

12:30 – 12:45 **OB-08** **Transcutaneous Immunotherapy Using Solid-in-Oil Nanodispersions Loaded with Pollen-Galactomannan Conjugate for Japanese Cedar Pollinosis**

Qingliang Kong[1], Kouki Higasijima[1], Momoko Kitaoka[1], Yoshiro Tahara[1], Rie Wakabayashi[1], Noriho Kamiya[1,2,3], Masahiro Goto[1,2,3]

[1]Department of Applied Chemistry, Graduate School of Engineering, Kyushu University, Japan, [2]Center for Future Chemistry, Kyushu

University, Japan, [3]Advanced Transdermal Drug Delivery System Center, Kyushu University, Japan

12:45 – 13:00 **OB-09** **Preparation of Heparin-Conjugated Collagen Gel and Its Application to a Scaffold for Formation of a Hepatic Tissue**

Yue Yue[1], Kohji Sasaki[2], Yuki Naruo[2], Hiroshi Mizumoto[3], Hiroyuki Ijima[3], Toshihisa Kajiwara[3]

[1]Graduate School of Systems Life Sciences, Kyushu University, Japan, [2]Graduate School of Engineering, Kyushu University, Japan, [3]Department of Chemical Engineering, Faculty of Engineering, Kyushu University, Japan

13:00 – 13:15 **OB-10** **Development of Cell Cryoprotectant Based on Trehalose**

Kozue Yoshida[1], Fumiyasu Ono[2], Takehiro Chouno[1], Nana Shirakigawa[1], Yusuke Sakai[1], Hiroyuki Ijima[1]

[1]Deprtment of Chemical Engineering, Kyushu University, Japan, [2]Global Innovation Center (GIC), Kyushu University, Japan

Chair: Shuji Hironaka

15:00 – 15:12 **OB-11** **Evaluation of a Hollow Fiber Culture with Genetically Engineered Hepatoma Cells in Developing a Bioartificial Liver Device**

Tomoki Ishibashi[1], Hiroshi Mizumoto[2], Masamichi Kamihira[2], Toshihisa Kajiwara[2]

[1]Graduate School of Engineering, Kyushu University, Japan, [2]Department of Chemical Engineering, Faculty of Engineering, Kyushu University, Japan

15:12 – 15:24 **OB-12** **Preparation of Oligomer Ligand Neutralizing Toxicity of Target Peptide *via* Aqueous Phase Radical Polymerization**

Hinata Takimoto, Shohei Taniguchi, Yu Hoshino, Yoshiko Miura

Department of Chemical Engineering, Faculty of Engineering, Kyushu University, Japan

15:24 – 15:36 **OB-13** **Study of Cell Separation Method Based on Size and Deformability Using Metal Mesh Device**

Kazuki Nobuhiro, Shoma Aki, Yu Hoshino, Yoshiko Miura

Department of Chemical Engineering, Faculty of Engineering, Kyushu University, Japan

15:36 – 15:48 **OB-14** **Potential-Reversal Electrodeposition of Transparent MoS_2 as Cathode Materials for Efficient Bifacial Dye-Sensitized Solar Cells**

Ya-han Lin, Chin-yu Chang, Krishnan Shanmugam Anuratha, Jeng-Yu Lin

Department of Chemical Engineering, Tatung University, Taiwan

15:48 – 16:00 **OB-15** **Effect of Vanadium and Fluorine Dopants on the Morphology and Electrochemical Properties of Spinel $LiNi_{0.5}Mn_{1.5}O_4$ Cathode Materials for Lithium-Ion Batteries**

Chang-Peng Shih, Jeng-Yu Lin

Department of Chemical Engineering and Biotechnology, Tatung University, Taiwan

Chair: Ken-Ichiro Sotowa

16:05 – 16:17 **OB-16** **Investigation of Oxygen Diffusion Resistance Based on the Difference of Surface of the Catalyst Layer in Cathode for Polymer Electrolyte Fuel Cells**

Yuting Wei, Kayoung Park, Yoshifumi Tsuge, Gen Inoue, Naoki Kimura

Department of Chemical Engineering, Graduate School of Engineering, Kyushu University, Japan

16:17 – 16:29 **OB-17** **Electrodeposition of Nanostructured NiS/Ni_3S_2 for Binder Free Flexible Cathodes for High-Performance Hybrid Supercapacitor**

Ming-Kuen Huang, Aniruddha Mondal, Jeng-Yu Lin

Department of Chemical Engineering, Tatung University, Taiwan

16:29 – 16:41 **OB-18** **Electrodeposition of V_2O_5 on Carbon Nanotubes as Advanced Electrode Materials for Supercapacitors**

Yi-Hsuan Chou, Shih-Yu Lin, Jeng-Yu Lin

Department of Chemical Engineering, Tatung University, Taiwan

16:41 – 16:53 **OB-19** **A Synergetic Effect of Steam Reforming of LNG over Ni Based Hierarchical Nanoporous Al_2O_3 Catalyst for Enhancing Durability; Prevention of Catalyst Deactivation**

Eunseok Woo[1,2], Jae-Hyung Choi[1], Dae-Won Park[2], Dong-Ha Lim[1]

[1]Korea Institute of Industrial Technology, Energy Plant R&D Group, Korea, [2]Pusan National University, Division of Chemical and Biomolecular Engineering, Korea

16:53 – 17:05 **OB-20** **Microwave Irradiation-Assisted Hydrothermal Hydrolysis of Rutin Using Graphene Oxide for Selective Recovery of**

Quercetin

Hiras T. Manalu[1], Armando T. Quitain[2], Tetsuya Kida[3], Mitsuru Sasaki[3,4]

[1]Graduate School of Science and Technology, Kumamoto University, Japan, [2]College of Cross-Cultural and Multidisciplinary Studies, Kumamoto University, Japan, [3]Faculty of Advanced Science and Technology, Kumamoto University, Japan, [4]Institute of Pulsed Power Science, Kumamoto University, Japan

Chair: Hideki Matsune

17:10 – 17:22 **OB-21** **Partial Oxidation of Methane into Formaldehyde over Copper-Vanadium Complex Oxide Catalysts**

Ryota Sei, Sakae Takenaka

Department of Chemical Engineering and Materials Science, Faculty of Science and Engineering, Doshisha University, Japan

17:22 – 17:34 **OB-22** **Recovery of Pd Nanoparticle in Viscous Solution Using Precipitation of Polymer**

Wataru Kasaishi, Shintaro Morisada, Keisuke Ohto, Hidetaka Kawakita

Department of Chemistry and Applied Chemistry, Saga University, Japan

17:34 – 17:46 **OB-23** **Selective Transport of Rh(III) over Fe(III) across Polymer Inclusion Membrane Based on a Phosphonium Ionic Liquid**

Takafumi Hanada[1], Wataru Yoshida[1], Fukiko Kubota[1], Masahiro Goto[1,2]

[1]Department of Applied Chemistry, School of Engineering, Kyushu University, Japan, [2]Center for Future Chemistry, Kyushu University, Japan

17:46 – 17:58 **OB-24** **High Selective Separation of In(III) and Ga(III) with *N*-Lauroylsarcosine and Its Application to PIMs**

Takahiro Ito[1], Tsutomu Shiragami[1], Yoshinari Baba[1], M. Inês G.S. Almeida[2], Spas D. Kolev[2]

[1]Department of Applied Chemistry, Faculty of Engineering, University of Miyazaki, Japan, [2]School of Chemistry, The University of Melbourne, Australia

Poster Session

Chair: Kohji Nakazawa

P-01 **Complexation between Paclitaxel and Histidine-Containing Amphiphilic Peptides for the Enhancement of Water-Dispersibility**

Makoto Hitotsumatsu, Yuki Sakurai Tatsuya Oshima

Department of Applied Chemistry, University of Miyazaki, Japan

P-02 **Enteric Polymer Encapsulation and Survival of Probiotic Bacteria Using W/O Emulsion Method**

Eito Arita[1], Tanjina Sharmin[2], Taku Aida[2], Miyuki Nakamura[2], Yukihiko Nakashima[3], Kenji Mishima[2]

[1]Faculty of Chemical Engineering, Fukuoka University, Japan, [2]Research Center of Composite Materials, Fukuoka University, Japan

P-03 **Analysis of Cell Density-Dependent Gene Expression Systems for Microbial Chemical Production**

Tomoya Noma, Hiroyuki Hamada, Taizo Hanai

Graduate School of System Life Sciences, Kyushu University, Japan

P-04 **Optimization of Solid-in-Oil Formulation for Transcutaneous Vaccination**

Ryotaro Hayashi[1], Qingliang Kong[1], Momoko Kitaoka[1], Rie Wakabayashi[1], Noriho Kamiya[1,2,3], Masahiro Goto[1,2,3]

[1]Department of Applied Chemistry, Graduate School of Engineering, Kyushu University, Japan, [2]Center for Future Chemistry, Kyushu University, Japan, [3]Advanced Transdermal Drug Delivery System Center, Kyushu University, Japan

P-05 **Change of Cell Size and Astaxanthin Accumulation during Photosynthetic *Haematococcus pluvialis* Cultivation with Aminoclay**

Young-Eun Kim[1], Ibrahim A. Matter[1,2], Mikyoung Jung[1], Young-Chul Lee[3], You-Kwan Oh[1]

[1]Department of Chemical and Biomolecular Engineering, Pusan National University, Korea, [2]Agricultural Microbiology Department, National Research Centre, Egypt, [3]Department of BioNano Technology, Gachon University, Korea

P-06 **Effect of Aminoclay on Lipid and Carotenoid Pigment Accumulation in Three Oleaginous *Chlorella* Species with Different Robustness**

Mikyoung Jung[1], Young-Eun Kim[1], Young-Chul Lee[2], You-Kwan Oh[1]

[1]Department of Chemical & Biomolecular Engineering, Pusan National University, Korea, [2]Department of BioNano Technology, Gachon University, Korea

P-07 **How Fine Bubbles Change Germination and Initial Plant Growth of Spinach and Japanese Mustard Spinach**

Yudai Mikuni, Takashi Goshima , Kei Mizuta, Susumu Nii

Department of Chemical Engineering, Kagoshima University, Japan

P-08 Investigation of Piezoelectric Responses in 3-3 Type Polymer-Ceramic Composite Films

Kyujin Ko, Sang Mok Chang, Su Chul Yang

Department of Chemical Engineering, Dong-A University, Korea

P-09 Tunable Magnetoelectric Voltages in Flexible ME Composites Based on Patterned Magnetostrictive Material

Byung-Il Noh, Sang Mok Chang, Su Chul Yang

Department of Chemical Engineering, Dong-A University, Korea

P-10 Fabrication and Characterization of Polymer Coated CNT/Nitrogen Doped Carbon Electrodes Derived from Metal Organic Frameworks

Pyeong Kang Yoo, Seok Kim

Department of Chemical and Biomolecular Engineering, Pusan National University, Korea

P-11 Synthesis and Analysis of Pt-carbon Composites Composed of Unzipped Multi-Walled Carbon Nanotubes and Graphene

Jin Won Lee, Seok Kim

Department of Chemical and Biomolecular Engineering, Pusan National University, Korea

P-12 Fabrication and Electrochemical Performance Measurement of Nickel Organic Framework Having Mixed Ligands for Capacitor Electrodes

Hye Jin Oh, Seok Kim

Department of Chemical and Biomolecular Engineering, Pusan National University, Korea

P-13 Shape Controlled Bimetal Organic Frameworks Blended with Graphene Oxide for Lithium-Sulfur Cell Electrodes and Electrochemical Study

Woo-Seop Song, and Seok Kim

Department of Chemical and Biomolecular Engineering, Pusan National University, Korea

P-14 Aluminum Fluoride Modified $LiNi_{0.5}Mn_{1.5}O_4$ Cathode Materials for High-Performance Lithium-Ion Batteries

Ching-Teng Chu, Jeng-Yu Lin

Department of Chemical Engineering and Biotechnology, Tatung University, Taiwan

P-15 Production of DMC-Biodiesel without By-Production of Glycerol

Yuri Ueda, Takami Kai, Tsutomu Nakazato

Department of Chemical Engineering, Kagoshima University, Japan

P-16 **Biodiesel Production with Methyl Acetate over an Alkaline Catalyst Prepared by Recrystallization**

Sumire Miyajima, Takami Kai, Tsutomu Nakazato

Department of Chemical Engineering, Kagoshima University, Japan

P-17 **Preparation of Zirconia Supported on Electroconductive Particles Using Magnetron Sputtering with Powder Stirring Drum as an Alternative Cathode Catalysts for PEFC**

Naoki Kameyama[1], Hiroshi Nagashima[1], Jun Kubota[1,2]

[1]Department of Chemical Engineering, Fukuoka University, Japan, [2]Elements Strategy Initiative for Catalysts and Batteries (ESICB), Kyoto University, Japan

P-18 **Green Light-Emitting Electrochemical Cells from an Ionic Small Molecules**

Puthanveedu Archana, Youngson Choe

Department of Polymer Science and Chemical Engineering, Pusan National University, Korea

P-19 **Blue Light-Emitting Electrochemical Cells from an Ionic Small Molecules**

Kanagaraj Shanmugasundarama, Youngson Choe

Department of Polymer Science and Chemical Engineering, Pusan National University, Korea

P-20 **Effect of Heterogeneous Electrode Structure on All-Solid State Batteries**

Ryusei Hirate, Hiroki Mashioka, Shinichiro Yano, Gen Inoue, Naoki Kimura, Yoshifumi Tsuge

Department of Chemical Engineering, Faculty of Engineering, Kyushu University, Japan

P-21 **Synthesis and Electrochemical Properties of Si/MnO/C Composite for Lithium-Ion Battery Anodes**

Dong Hwan Kang, Hyo Jeong Park, Jung Kyoo Lee

Department of Chemical Engineering, Dong-A University, Korea

P-22 **Porous Silicon/Carbon Composites for Lithium-Ion Battery with High Energy and Long Cycle Life**

Naeun Yoon, Jung Kyoo Lee

Department of Chemical Engineering, Dong-A University, Korea

P-23 **A Synergy Effect of CeO_2 into MnO_x Supported on Modified Cake-Like TiO_2 for Low-Temperature SCR of NO_x with NH_3**

Jae-Hyung Choi[1], Jungyong Park[1,2], Dong-Ha Lim[1]

[1]Korea Institute of Industrial Technology, Energy Plant R&D Group, Korea, [2]Environmental Engineering, Dong-A University, Korea

P-24 **An Alternative SCR Catalyst Coated on Metal Substrate by Slurry Wash Coating for NH_3-NO_x Reduction at Low-Temperature**

Jungyong Park[1,2], Jae-Hyung Choi[1], Kyungchul Jung[3], Dae-Won Park[3], Dong-Ha Lim[1]

[1]Korea Institute of Industrial Technology, Energy Plant R&D Group, Korea, [2]Environmental Engineering, Dong-A University, Korea, [3]Pusan National University, Division of Chemical and Biomolecular Engineering, Korea

P-25 **Oxidative Desulfurization of Diesel by WO_x-ZrO_2 Catalyst with H_2O_2**

Hyeonwoo Oh, H.C. Woo

Department of Chemical Engineering, Pukyong National University, Korea

P-26 **Performance Optimization of Lotus Root shaped for Lithium Ion Batteries (LIBs) with Respect to Phase Change by Thermal Treatment**

Sung Il Choi, Yeji Lee, Joo Hyun Kim, Yong Sun Won

[1]Department of Chemical Engineering, Pukyong National University, Korea, [2]Department of Chemistry and Protein Research Center for Bio-Industry, Hankuk University of Foreign Studies, Korea

P-27 **Effects of Coexisting Solutes on the Morphology of Pt Nanoparticles Prepared by Liquid Phase Reduction with PNIPMA Nanogels**

Takaaki Ishihara, Hidetaka Kawakita, Keisuke Ohto, Shintaro Morisada

Department of Chemistry and Applied Chemistry, Saga University, Japan

P-28 **Preparation and Characterization of Stable Micelles Loaded with Ethanolic Extract of *Sargassum macrocarpum***

Kwon Taek Lim[1], Byung-Hyun Ahn[2], Chul-Woong Oh[3], Hyeung-Rak Kim[4]

[1]Department of Display Engineering, Pukyong National University, Korea, [2]Department of Materials Engineering, Pukyong National University, Korea, [3]Department of Marine Biology, Pukyong National University, Korea, [4]Department of Food Science and Nutrition, Pukyong National University, Korea

P-29 **Fabrication of Mesolens Arrays Using Non-Close-Packed Colloidal Monolayers**

Natsuki Okubo, Hidetaka Kawakita, Keisuke Ohto, Shintaro Morisada

Department of Chemistry and Applied Chemistry, Saga University, Japan

P-30 **Synthesis and Catalytic Activity of Pd Nanocluster in CD-MOF**

Kosuke Sembon, Katsuki Kusakabe

Department of Nanoscience, Sojo University, Japan

P-31 **CD-MOF Crystallization of Modified γ-Cyclodextrin**

Takuma Yonemura, Anna Nagai, Katsuki Kusakabe

Department of Nanoscience, Sojo University, Japan

P-32 Synthesis and Characterization of Two-Dimensional Crystalline Silica Nanoplates *via* Hydrothermal Methods for Efficient Microalgae Harvest Application

Jihoon Moon, Nakyeong Lee, You-Kwan Oh, Sungwook Chung

School of Chemical and Biomolecular Engineering, Pusan National University, Korea

P-33 A Systematic Investigation of Hexavalent Chromium Adsorption and Removal from Aqueous Environments *via* Amine-Functionalized Amorphous and Mesoporous Silica Nanoparticles

Eunhye Jang, Sungwook Chung

School of Chemical and Biomolecular Engineering, Pusan National University, Korea

P-34 Preparation and Characterization of Temperature Responsive Microcapsules Encapsulating Solid Microparticles

Keitaro Tokuda[1], Shiro Kiyoyama[2], Takayuki Takei[3], Masahiro Yoshida[3], Koichiro Shiomori[1]

[1]Department of. Applied Chemistry, University of Miyazaki, Japan, [2]Department of. Chemical Science & Engineering, Miyakonojyo National College of Technology, Japan, [3]Department of Chemical Engineering, Graduate School of Engineering, Kagoshima University, Japan

P-35 Development and Characterization of Gel-in-Water Nanodispersion as a Novel Drug Delivery System

Jannatul Fardous[1,2], Yuji Omoso[1], Emiko Yamamoto[1], Kozue Yoshida[1], Fumiyasu Ono[3], Hiroyuki Ijima[1]

[1]Department of Chemical Engineering, Kyushu University, Japan, [2]Department of Pharmacy, Comilla University, Bangladesh, [3]Global Innovation Center, Kyushu University, Japan

P-36 $CsPbX_3@SiO_x$ Quantum Dots Fluorescence Powders Applied in Emission Devices

Liang-Yih Chen, Tsau-Hung Tsai, Shih-Yu Hsien, Yong-Jie Gan

Department of Chemical Engineering, National Taiwan University of Science and Technology, Taiwan

P-37 Synthesis and Characterization of Hybrid Calcium Phosphate (CaP)-Metalorganic Framework (MOF) Nanoparticles for Drug Delivery Applications

Ji-Hoon Han, Sungwook Chung

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P-38 Hydrogen Reduction of a Black Nickel Oxide Ore in a Fluidized-Bed Reactor

without Sticking

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P-39 Development of Large-Area OLED Fine Metal Mask by Electroforming

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P-40 Development of Eco-Friendly Filter Cake Type Pigment Yellow 12 with Excellent in Storage Stability

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P-41 Fast synthesis of Poly(*N*-Isopropylacrylamide) Polymer through Pulsed Arc Discharge and Plasma Jet Method

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P-42 The Selective Synthesis of Linear Oligopeptides by Pulsed Arc Discharge to Diketopiperazine

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P-43 Hierarchically Porous Fe Based MOF for the Chemical Fixation of CO_2 under Ambient Pressure

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P-44 Kinetics of Esterification of Kapok Seed Oil with Methanol Using Amberlyst BD20 Cation-Exchange Resin as a Solid Catalyst

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P-45 Effects of Ultrasonication on the Production of Drug-Encapsulated Liposomes in Liquid Carbon Dioxide

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P-46 Defluidization Phenomena due to Gas Volume Eeduction Caused by Adsorption in a Fluidized Bed

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P-47 Effects of Surfactants on the Formation of Liposomes

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P-48 Selective Hydrocracking Catalysts for FCC Light Cycle Oil Conversion for Petrochemical BTX Production

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P-49 Adsorption and Reduction of Chromium(VI) from Aqueous Solution Using Coal-Base Activated Carbon

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P-50 Production of Lithium Chloride by Forward Osmosis Technology

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P-51 Rosmarinic Acid Extraction Using Ultra-Fine Bubbles from Perilla Frutescens Leaves

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P-52 A Green Extraction Method for Crocin Extraction from *Gardenia jasminoides* Ellis Using Liquid Carbon Dioxide

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P-53 Have We Developed Higher-Performing MOFs for Xe/Kr Separation?

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P-54 Effect of Extraction of Cu(II) with Microcapsules of Cross-Linked Gel of poly(vinyl alcohol)/Alginic Acid Encapsulating of Extractant

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P-55 The Effect of Metal on Amine-Grafted MCM-41 for Acidic Gas Removal from Natural Gas

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P-56 The Separation of Cardanol from Cashew Nut Shell Liquid (CNSL) by Vacuum Distillation: Optimization Using Response Surface Methodology (RSM)

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P-57 Numerical Computation of Benard Convection Using Al_2O_3-Water Nanofluid

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P-58 Numerical Computation of CZ Melt Flow under the Synchronized Rotation of Horizontal Magnetic Filed and Crucible

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P-59 Measurement of Melt Convection in the Electric Conductive Crucible under the RMF by Using Ultrasonic Velocity Profiler

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P-60 Experimental Study of Natural Convection of SiO_2 Nanofluid in the Cylindrical Container (Effect of the Concentration and Particle Diameter of SiO_2 Nanoparticles)

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P-61 Experimental Study of the Cooling Performance for the Impinging Jet Cooling in the Confined Channel with Bypass Flow Using a Heat Sink

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P-62 Experimental Study of Natural Convection of Nanofluid in the Cylindrical Container (Effect of the Materials of CuO, Fe_2O_3 and TiO_2 Nanoparticle)

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P-63 Numerical Computation of Czochralski Melt Flow for the Electric Conductive and Insulative Crucible under the Rotational Magnetic Field

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P-64 Effect of the Nanoparticle Materials on Evaporation Time of the Water Droplet on the Nanoparticle Layer

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P-65 Effect of Amount of Nanoparticle on Evaporation Time of the Water Droplet on the Nanoparticle Layer

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P-66 Experimental Study of the Impinging Jet Cooling in the Confined Channel Using the Heat Sink Made of Foamed Metal (Effect of Material of Foamed Metal on Cooling Performance)

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P-67 Effects of Surfactants on Morphology of Solute Droplets After Drying

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P-68 Visualization of Mass Transfer in Liquid-Liquid Alternating Flow in Microchannel

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P-69 Drying Behaviour of an Inkjet Solution Droplet Under Low Pressure

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P-70 Introduction of Time Difference to Plant Fault Detection System Using Negative Selection Algorithm

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P-71 Monitoring of Heat Transfer Performance in Heat Exchanger with Temperature Controller

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P-72 Heat Exchanger Network Design Considering Its Risk of Breakage and Leakage

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P-73 Effect of the Polyol Molecular Weight and NCO/OH Ratio on the Mechanical Properties of Polycarbonate-Diol Polyurethane

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P-74 Thermal Property of Thermoplastic Polyurethane Prepared from Polycarbonate-Diol Based Polyurethane Dispersion

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P-75 Characterization of the Particle Flow Properties by the Pressure Drop Monitoring in a Fluidized Bed

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