

## H: New Separation Process & Materials for Energy & Environment

**[Oral Session] (Day 2 – Friday, October 31st, 13:30-17:30)**

**HO-01 13:30 - 13:50**

A Study for Al-Mo-based Catal-Sorbent to Simultaneous Remove the H<sub>2</sub>S and NH<sub>3</sub> in the Hot Coal Gases

Suk Yong JUNG, Eun Ji Lim, Soo Chool LEE, and Jae Chang KIM\* (Kyungpook National University, Korea)

**HO-02 13:50 - 14:10**

Precipitation of Asphaltene in Water/Crude Oil Emulsion with Oxidized Asphaltene

Jong-Duk KIM\*, Seonung CHOI (KAIST, Korea)

**HO-03 14:10 - 14 :30**

Synthesis of Sapo-34 Membranes: The Effect of Zeolitic And Non-Zeolitic Pathways On Gas And Vapor Permeation, Yuichiro HIROTA(Tokyo Institute of Technology, Japan), Anna SHIMMURA (Osaka University, Japan), Yoshiaki Uchida (Osaka

University, Japan, JST, PRESTO, Japan) and Norikazu NISHIYAMA\* (Osaka University, Japan)

**HO-04 14 :30 - 14:50**

Study on the Carbon Dioxide Removal Process Using Several Physical Solvents

Jae Hyun NOH, Choul Ho LEE, Dong Sun KIM, and Jung Ho CHO\*, (Kongju National University, Korea)

**HO-05 14:50 - 15:10**

Wet Spinning of Surface-Modified Nanofiber For High Performance Filtration

Kazuhisa KISHIMOTO, Takaichi WATANABE, and Tsutomu ONO\* (Okayama University, Japan)

**HO-06 15:10 - 15:30**

Activity tests of Cu-Sn-Zr Based Catalyst for Reduction of SO<sub>2</sub> Exhausted from Desulfurization Process

Tae Hoon LEE, Yeon Baek SEONG, Chan Tae Ji, Yong Sul KIM, No-Kuk PARK, Tae Jin LEE\* (Yeungnam University, Korea), Jeom-In BAEK, and Joong Beom LEE (Korea Electric Power Research Institute, Korea)

**[15:30-15:50] Coffee Break**

**HO-07 15:50 - 16:10**

New Diamine-Based Molten Salts as a SO<sub>2</sub> Absorption Media from Flue Gas

Seung Rok LIM, Minserk CHEONG(Korea Institute of Science and Technology, Korea), Hoon Sik KIM(Kyunghee University, Korea), Hyunjoo LEE\*(Korea Institute of Science and Technology, Korea)

**HO-08 16:10 - 16:30**

Degree of Steam Involvement in CO<sub>2</sub> Sorption Reaction of K-Mg Based Sorbent at High Pressure and Low Temperature for SEWGS CO<sub>2</sub> Capture  
Chang Ki BYUN, Soon Jin KWON, Hyo Bin IM (Chungnam National University, Korea), Hee Sung AHN, Ho Jung RYU\* ( Korea Institute of Energy Research, Korea), Kwang Bok YI\* (Chungnam National University, Korea)

**HO-09 16:30 - 16:50**

Application of Stacked Multi Channel Reactor to Liquid-Liquid Extraction  
Akira MATSUOKA, Koji NOISHIKI (Kobe Steel, LTD., Japan)

**HO-10 16:50 - 17 :10**

Study on the Removal of High Concentration CO<sub>2</sub> Generated in SNG Production Process, Duhee CHO, Dong Sun KIM, and Jungho CHO\*(Kongju National University, Korea)

**HO-11 17 :10 - 17:30**

Nanoscale Manipulation of Morphology and Interfacial Characteristics of Cobalt Hydroxides by Self-Assembly of Ionic Liquids  
Bong Gill CHOI (Kangwon National University, Korea), Ho Seok PARK (Kyung Hee University, Korea), Young-Kyu HAN\* ( Dongguk University, Korea), and Yun Suk HUH\* (Inha University, Korea)

**[Poster Session] (Day 3 – Saturday, November 1st, 9:00-11:00 / 11:20-13:00)**

**(ODD-numbered posters presentation: 9:00-11:00, EVEN-numbered posters presentation: 11:20-13:00)**

**HP-02** Synthesis of Block Copolymer-Magnetic Nanoparticle Composites

Van Chinh TRAN, Van Hoa NGUYEN, Thi Toan NGUYEN, and Jae JIN- SHIM\* (Yeungnam University, Korea)

**HP-03** Kinetics and Structural Changes in CO<sub>2</sub> Sorption of K<sub>2</sub>CO<sub>3</sub> And Na<sub>2</sub>CO<sub>3</sub> under Moisture  
HONGCHAO Luo, Hideyuki CHIOYAMA, Tomonori OHBA, Hirofumi KANO<sup>H\*</sup>, (Chiba University, Japan)

**HP-04** Synthesis of Porous Fe<sub>2</sub>O<sub>3</sub> Microstructures for Supercapacitors

Jiarui HUANG, Kaikai CHEN, Thi Toan NGUYEN, Trung Hieu TRAN, and Jae-Jin SHIM\* (Yeungnam University, Korea)

**HP-05** Preparation of Block Copolymer of Methyl Methacrylate and Vinyl Acetate by Successive Atom Transfer Radical Mechanism

Kaikai CHEN, Van Chinh TRAN, Charmaine LAMIEL, Allan QUINTO, Jr., and Jae-Jin SHIM\* (Yeungnam University, Korea)

**HP-06** Accumulation Behavior of Amyloid Protein on Lipid Planar Membrane.

Toshinori SHIMANOUCHI, Miki IWAMURA, Yukitaka KIMURA\*, (Okayama University, Japan)

- HP-07** Synthesis of Nano-Composite Materials Based on Polyaniline-MnO<sub>2</sub> and Their Application on Hydrazine Sensor  
Trung Hieu TRAN, Thi Toan NGUYEN, Van Hoa NGUYEN, and Jae-Jin SHIM\*  
(Yeungnam University, Korea)
- HP-08** Organic Dye Bleaching by Photocatalysis Using Carbon rich Mesoporous Graphitic Carbon Nitride (g-C<sub>3</sub>N<sub>4</sub>)  
Sun Uk LEE, Eun Zoo LEE, Young-Si JUN, Young Kuen CHANG\* and Won Hi HONG\*  
(Korea Advanced Institute of Technology and Science, Korea)
- HP-09** Analysis of Mass Transfer Promotion in Miniturized Gas-Liquid Slug Flow Including Wall Liquid Film Effect.  
Takashi FUKUDA, Kazua SATO, Taisuke MAKI, and Kazuhiro MAE\*, (Kyoto University, Japan)
- HP-10** High-Performance Polyethyleneimine(PEI)/Nafion® Composite Membranes Based on Semi-Interpenetrating Network for PEMFC  
Hee Jin KIM, Krishan TALUKDA, Young Ho KIM, Ho-Chang LEE and Sang-June CHOI\*  
(Kyungpook National University, Korea)
- HP-11** Theoretical and Experimental Study of Amino Acid Ionic Liquid Functionalized Ordered Mesoporous Silica for CO<sub>2</sub> Capture  
Vishwanath HIREMATH (Myongji University, Korea), Soonchul KWON (Advanced Institute of Technology, Korea), and Jeong Gil SEO\* (Myongji University, Korea)
- HP-12** Extraction Process of Potassium Ion using a Slug Flow Microreactor - Effect of Junction Method on Mass Transfer -  
Tetsuya YAMAMOTO and Akinori MUTO\*, (Osaka Prefecture University, Japan)
- HP-13** Estimation of Boil-Off Gas (BOG) Evaporation Rate and LNG heating value from LNG Storage Tank Using Dynamic Simulation  
Alyssa Marie FULGUERAS (Kongju National University, Korea), Sungjin CHO (Dongguk University, Korea), and Jungho CHO\* (Kongju National University, Korea)
- HP-14** The Analysis of Cracked Oil for Measuring the Content of Saturates, Aromatics, Resins, and Asphalates Using Thin-Layer Chromatography – Flame Ionization Detector (TLC-FID)  
Dong Woo CHO, Min-Hoe AHN, Jong-ho PARK, Go-Yeon CHOO, Jongkee PARK, and Kwon-Il KIM\* (Korea Institute of Energy Research, Korea)
- HP-15** Lab-on-a-Chip with Self Assembled Materials and Quasi-Equilibrium System  
Yusuke TSUJIMOTO, Yukihiro OKAMOTO, Keishi SUGA and Hiroshi UMAKOSHI\*,  
(Osaka University, Japan)
- HP-16** Porous Activated Mongolian Anthracite as Highly Stable EDLC Electrode Materials  
Hyun-Chul LEE, Narandalai BYAMBA-OCHIR, Wang-Geun SHIM, and Hee MOON\*  
(Chonnam National University, Korea)

- HP-17** ITER ADS Technology Tracking and CFD Simulation Program Development of Wet Scrubbing Process  
Hoey Kyung PARK, Jae Hyun NOH (Kongju National University, Korea), Hyeon Gon LEE, Sei Hun YUN (National Fusion Research Institute (NFRI), Korea), JungHo CHO, and Dong Sun KIM\* (Kongju National University, Korea)
- HP-18** Continuous Demulsification of Water – Toluene Emulsion Using Electric Field in a mm-Order Diameter Tube.  
Akinori MUTO\*, Tomoyuki MATSUMOTO, and Hayato TOKUMOTO, (Osaka Prefecture University, Japan)
- HP-19** Adsorption Properties of Octahedral Molecular Sieve Manganese Oxide (Oms-2) for Removal of Odorant Sulfur Compounds  
Phuoc Hoang HO (Pukyong National University, Korea), Doohwan LEE (The University of Seoul, Korea), and Hee Chul WOO\* (Pukyong National University, Korea)
- HP-20** Separation of Macroalgal Bio-Oil by Reduced Pressure Distillation  
Jae Hyung CHOI, Yong Beom PARK (Pukyong National University, Korea), Dong Jin SUH (Korea Institute of Science and Technology, Korea), Gwang Sun HUH (Kyungnam College of Information & Technology, Korea), and Hee Chul WOO\* (Pukyong National University, Korea)
- HP-21** Synthesis of Ordered Mesoporous Carbons for Adsorbents and Electrodes  
Takahito MITOME (Osaka University, Japan), Yoshiaki UCHIDA (Osaka University, Japan, Japan Science and Technology Agency, PRESTO, Japan), and Norikazu NISHIYAMA\* (Osaka University, Japan)
- HP-22** Three-Dimensional Nickel Foam/Graphene/ $\text{NiCo}_2\text{O}_4$  for Electrochemical Energy Storage  
Van Hoa NGUYEN, Thi Toan NGUYEN, Van Chinh TRAN, Dian KHARISMADEWI, and Jae-Jin SHIM\* (Yeungnam University, Korea)
- HP-23** Effect of Steam as an Inhibitor for Removal of Exothermic Heat on Methanation  
Chan Tae JI, Yong Sul Kim, Yeon Baek SEONG, No-Kuk PARK and Tae Jin LEE\* (Yeungnam University, Korea)
- HP-24** Preparation of Carbon Cryogel Microhoneycomb with Hierarchical Pore Structure by Ice-Templating  
Hajime TAMON\*, Keiko MIYAMOTO, Tetsuo SUZUKI and Noriaki SANO, (Kyoto University, Japan)
- HP-25** Enhanced  $\text{CO}_2$  Adsorption of Poly(Ionic Liquid)s  
Jungae LIM, Sunil Kwon, Jina HWANG, Myungho CHOI, Jina CHOI and Beom-Sik KIM\* (Korea Research Institute of Chemical Technology, Korea)
- HP-26** Preparation and Characterization of Microemulsion Formed Between as Solution and Crude Oil  
Sang heon LEE, Sang kyum KIM (Chungnam National University, Korea), Wisup BAE (Sejong University, Korea), Young Woo RHEE\* (Chungnam National University, Korea)

- HP-27** Synthesis of PMMA Templated Carbon Gel Monoliths with Tunable Micro- Meso- And Macropores  
Takeshi MORI, Takanori TSUCHIYA, Shinichiro IWAMURA Isao OGINO, Shin R MUKAI\*, (Hokkaido University, Japan)
- HP-28** Highly Efficient Organic-Inorganic Hybrid Sensitized Solar Cells  
Jin Hyuck HEO, Dae Ho SONG, and Sang Hyuk IM\* (Kyung Hee University, Korea)
- HP-29** Inorganic Semiconductors Sensitized Solar Cells  
Do Hyeong KWON, Jin Hyuck HEO, Myoung Sang YOU, Sang Hyuk IM\* (Kyung Hee University, Korea)
- HP-30** Surface Modification of Mesoporous Carbons through a Wet Oxidation Method And Their Electrochemical Performance  
Hiroki FUJIMOTO (Kansai University, Japan), Yoshikazu MIYAKE (Kansai University, Japan, Organization for Research and Development of Innovative Science and Technology (ORDIST), Japan) and Shunsuke TANAKA\*, (Kansai University, Japan, Organization for Research and Development of Innovative Science and Technology (ORDIST), Japan)
- HP-31** Ionic Liquid-Assisted Separation of Cellulose from Wood  
Hyunjoo LEE\*, Huyen Thanh VO, (Korean Institute of Science and Technology, Korea)
- HP-32** Effect of Zirconia on CO<sub>2</sub> Sorption and Regeneration Properties of Lithium Silicate-Based Sorbents at High Temperatures  
Soo Chool LEE, Min Joo KIM, Yong Mok KWON, Myung Gon PARK, Suk Yong JUNG (Kyungpook National University, Korea), Yong Ki Park, Hwi Min SEO (Korea Research Institute of Chemical Technology, Korea) and Jae Chang KIM\* (Kyungpook National University, Korea)
- HP-33** Sensory Janus Polydiacetylene and Magnetic Microbeads  
Do Hyun KANG (Seoul National University, SOUTH Korea), Jinsang KIM (University of Michigan, USA), and Keesung KIM (Seoul National University, SOUTH Korea), Ho-Sup JUNG (Seoul National University, SOUTH Korea)
- HP-34** Phase Equilibria and Dissociation Enthalpies of Tri-*n*-butylphosphine Oxide Semiclathrate Hydrates Incorporated with CH<sub>4</sub>, CO<sub>2</sub>, and H<sub>2</sub>  
Ki Sun LEE, Eun Sung Kim and Ki-Sub KIM\* (Korea National University of Transportation, Korea)
- HP-35** CO<sub>2</sub> Sorption Behaviors of Amine Groups Grafted on The Nanoporous Silica  
Dong Hyun KIM, Jong Hyun PARK, Young Soo KO\* (Kongju National University, Korea)
- HP-36** Biodiesel Production Method by Novozym® Fixed Bed Reactor  
Yusuke ENDO, Takuya HATANAKA, \*Kouji MAEDA, Koji ARAFUNE, Takuji YAMAMOTO, Kazuhiro ITOH, Keisuke FUKUI (University of Hyogo, Japan) and Hidetoshi KURAMOCHI (National Institute for Environmental Studies, Japan)
- HP-37** Unusual Synergy Effect on Methane Hydrate Inhibition When Ionic Liquid Meets Polymer  
Eun Sung KIM, Ki Sun LEE and Ki-Sub KIM\* (Korea National University of Transportation, Korea)

- HP-38** Catalytic Hydrolysis of  $\text{NF}_3$  over  $\gamma\text{-Al}_2\text{O}_3$   
Yong Sul KIM, Tae Hoon LEE, Yeon Baek SEONG, Chan Tae JI, No-Kuk PARK, Tae Jin LEE\* (Yeungnam University, Korea) and Won Chul Chang (KOCAT, Korea)
- HP-39** Preparation of Super Powdered Activated Carbon and Its Application to Advanced Treatment for Municipal Sewage Wastewater  
Tomoko FUKUHARA and Takahiro HASEGAWA (Osaka Municipal Technical Research Institute, Japan)
- HP-40** Highly Efficient Hydrogen Production Via Water Splitting Using Pt@MWNT/ $\text{TiO}_2$  Ternary Hybrid Composite as a Catalyst under UV-Visible Light  
Yuvaraj HALDORAI (Inha University, Korea), Arunkumar RENGARAJ (Dongguk University, Korea), Jin-Bae LEE (Korea Basic Science Institute, Korea), Young-Kyu HAN\* (Dongguk University, Korea) and Yun Suk HUH\* (Inha University, Korea)
- HP-41** Catalytic Activity of rGO Added Pt/ $\text{TiO}_2$  Catalyst in LT-WGS Reaction  
Soon Jin KWON, Hee Sung AHN ( Korea Institute of Energy Research, Korea), Chang Ki BYUN, Hyo Been IM, Kwang Bok YI\* (Chungnam National University, Korea)
- HP-42** Development of New Lithium Silicate-Based  $\text{CO}_2$  Dry Sorbent Using Different Precursor at High Temperature  
Yong Mok KWON, Yong Hee PARK, Byung Wook HWANG, Eun Ji LIM, Min sun CHO, Min Joo KIM, Dong Su HA, Jung Hee AHN, Myung Gon PARK, Seong Min CHOI, Soo Chool LEE, Suk Yong JUNG and Jae Chang KIM\* (Kyungpook National University, Korea)
- HP-43** Comparative Study of BOG Generated From  $\text{LCO}_2$  Using Experimental Measurements and Dynamic Simulation  
Jin Woo PARK, Dong Sun KIM, and Jungho CHO\* (Kongju National University, Korea)
- HP-44** Green Synthesis and Photocatalytic Property of Graphene-Metal Oxide Nanocomposites  
Van Hoa NGUYEN, Thi Toan NGUYEN, Trung Hieu TRAN, Kaikai CHEN, and Jae-Jin SHIM\* (Yeungnam University, Korea)
- HP-45** Pilot Tests of Direct Sulfur Recovery Process over Cu-Sn-Zr-Based Catalysts for Hot Gas Desulfurization System  
Tae Hoon Lee, Yeon Baek Seong, Chan Tae Ji, Yong Sul Kim, No-Kuk Park, Tae Jin Lee\* (Yeungnam University, KOREA), Jeom-In Baek, and Joong Beom Lee (Korea Electric Power Research Institute, KOREA)
- HP-46** Determination of Individual Mass-Transfer Coefficient for Liquid-Liquid Extraction with Slug Flow  
Daisuke WATANABE and Susumu NII\* (Nagoya University, Japan)