November 5(Fri.), 2010

PA : Poster Session 1
Time : 13:00 ~ 14:00
Place : Sapphire Ballroom 1 (3th)

PA-1  Comparative Study of Water Vapor Sorption and Diffusion Properties in Various Proton Exchange Membranes (PEMs)
Dong Won Shin¹, Chi Hoon Park¹ and Young Moo Lee¹,²*
¹Department of Chemical Engineering, College of Engineering, Hanyang University, Seoul, Korea,
²WCU Department of Energy Engineering, College of Engineering, Hanyang University, Seoul, Korea

PA-2  Membrane-electrode Assembly (MEA) of Hydrocarbon Polymer Electrolyte Membranes with Various Ionomer Ratio to Catalysts for High Single Cell Performance
Doo Sung Hwang¹, Chi Hoon Park² and Young Moo Lee¹,²*
¹WCU Department of Energy Engineering, Hanyang University, ²Department of Chemical Engineering, Hanyang University

PA-3  Anhydrous Polymer Electrolyte Membranes Based on Polystyrene Block Copolymer for PEMFC
Jin Ah Seo, Sung Hoon Ahn, Ha Rim Jeon, Rajkumar Patel and Jong Hak Kim*
Department of Chemical and Biomolecular Engineering, Yonsei University, 262 Seongsanno, Seo-daemun-gu, Seoul 120-749, Korea

PA-4  Cross-Linked Sulfonated Poly(arylene ether) Using Cycloaddimerization of Trifluorovinyl Ether Groups for Fuel Cell Membranes
Byoung Gak Kim, Jong-Hyun Jang and Hyoung-Juhn Kim*
Fuel Cell Center, Korea Institute of Science and Technology, 39-1 Hawolgok, Seongbuk, Seoul 136-791, Korea

PA-5  Silica Filled Polysulfones for Fuel Cell Application
Dirk Henkensmeier*, Nambi Krishnan Nagappan, Jong-Hyun Jang and Hyoung-Juhn Kim
Fuel Cell Center, Korea Institute of Science and Technology, 39-1 Hawolgok, Seongbuk, Seoul 136-791, Korea

PA-6  Reinforced Proton Exchange Membranes Impregnated with Hydrocarbon-based Ionomer for PEM Fuel Cells
Dong Hoon Lee*, Moo-Seok Lee, Nayoung Kim, Kyoung-Ju Kim and Yong Cheol Shin
Eco Research Institute, Kolon Central Research Park, Kolon Industries, Inc., 207-2, Mabuk-Dong, Giheung-Gu, Yongin-Shi, Gyeonggi-Do, Korea

PA-7  Investigation of Direct Surface Fluorinated Proton Exchange Membrane through Various Degree of Sulfonation for PEMFC
Na Rae Kang¹, So Young Lee² and Young Moo Lee¹,²*
¹WCU Department of Energy Engineering, Hanyang University, Seoul 133-731, Korea, ²School of Chemical Engineering, Hanyang University, Seoul 133-791, Korea

PA-8  Electrospun Nanofiber Composite Polymer Electrolyte Membranes and Their Polarization Behaviors in a PEFC
Sung-Hyun Yun¹, Jung-je Woo¹, Seok-Jun Seo¹, Tongwen Xu¹,² and Seung-Hyeon Moon¹*
¹School of Environmental Science and Engineering, Gwangju Institute of Science and Technology, 261 Cheomdan-gwagiro, Buk-gu, Gwangju 500-712, Korea, ²School of Chemistry and Materials Science, University of Science and Technology of China, Hefei, Anhui 230026, People’s Republic of China
PA-9 Thermally Stable Nafion-impregnated Poly(ether sulfone) Membrane for PEMFCs
Hyungkwon Hwang¹, Hongyeon Lee¹ and Yong-gun Shul¹,²,∗
¹Department of Chemical and Biomolecular Engineering, Yonsei University, ²The specialized Graduate School of hydrogen & fuel cell, Yonsei university

PA-10 Analysis of Influence of Cathodic Gas Composition on Polymer Electrolyte Fuel Cell (PEFC) Performance Based on Electrochemical Impedance Spectroscopy
Jungwoo Park¹, Norbert Wagner², Andreas Friedrich² and Seung-Hyeon Moon¹,∗
¹School of Environmental Science and Engineering, Gwangju Institute of Science and Technology (GIST), ²Institute of Technical Thermodynamics, German Aerospace Center

PA-11 Influence of Ionomer and Binder Contents at Cathodic Non-platinum Electrode for Ethanol Alkaline Fuel Cell
Mi-Kyoung Kim, Jung-Je Woo, Seok-Jun Seo, Sung-Hyun Yun and Seung-Hyeon Moon∗
School of Environmental Science and Engineering, Gwangju Institute of Science and Technology, 261 Cheomdan-gwagiro, Buk-gu, Gwangju 500-712, Korea

PA-12 Characterization of the Fluorinated Polymer Electrolyte Membrane Surfaces Using XPS
So Young Lee¹, Na Rae Kang² and Young Moo Lee¹,²,∗
¹School of Chemical Engineering, Hanyang University, Seoul 133-791, ²WCU Department of energy Engineering, Hanyang University, Seoul 133-791, Korea

PA-13 Research about Manufacturing of PEG based Solid Electrolyte for Dye-sensitized Solar Cell (DSSC)
Hui-jin Kim¹, No-hyung Park¹, Choong-keun Park¹, Jae-joon Lee², Sang Yong Nam³ and Hoon Huh¹,∗
¹Korea Institute of Industrial Technology, ²Konkuk University, ³Gyeongsang National University

PA-14 Preparation and Application of OPBI as Proton Conduct Membrane
Kyungsoo Hwang¹, Byungpyo Hong¹, Sehui Ye¹, Wonki Jang¹, Jian Hou¹, Yungu Jung², Myungsu Seo³ and Hongsik Byun¹,∗
¹Department of Chemical System Engineering, Keimyung University, Daegu, ²Special Battery Division Research Institute R&D Team, Bexel Corporation, 261-1 Gongdan-Dong, Gumi-City

PA-15 Preparation of Ion Exchange Membrane with sPEEK and Study of Application in Fuel Cell
Sehui Ye¹, Byungpyo Hong¹, Wonki Jang¹, Jian Hou¹, Yungu Jung², Myungsu Seo³ and Hongsik Byun¹,∗
¹Department of Chemical System Engineering, Keimyung University, Daegu, ²Special Battery Division Research Institute R&D Team, Bexel Corporation, 261-1 Gongdan-Dong, Gumi-City

PA-16 Preparation and Characterization of PVdF Composite Membrane for the Application in PEM Fuel Cell
Jian Hou¹, Byungpyo Hong¹, Sehui Ye¹, Wonki Jang¹, Kyungho Hwang¹, Yungu Jung², Myungsu Seo³ and Hongsik Byun¹,∗
¹Department of Chemical System Engineering, Keimyung University, Daegu, ²Special Battery Division Research Institute R&D Team, Bexel Corporation, 261-1 Gongdan-Dong, Gumi-City

PA-17 Effect of Heat Treatment on Dispersion of Ag Metal in Ionic Liquid/Ag Metal Composite Membrane
Sang Wook Kang¹,²,∗ and Yong Soo Kang²
¹Department of Chemistry, Sangmyung University, Seoul 110-743, Korea, ²Department of Chemical Engineering, Hanyang University, Seoul 133-791, Korea

PA-18 Synthesis of Highly Positively Polarized Silver Nanoparticles in Poly(ethylene phthalate)/AgBF₄ Composite for Separation of Olefin/Paraffin Mixtures
Sang Wook Kang¹,²,∗ and Yong Soo Kang²
PA-19 Oxygen Production Using $\text{Ba}_{0.5}\text{Sr}_{0.5}\text{Co}_{0.8}\text{Fe}_{0.2}\text{O}_3$ (BSCF) Perovskite Tube Membrane
Jong Pyo Kim$^1$, Jung Hoon Park$^2$, Sou Hwan Son$^2$, Young Jong Choi$^3$ and Yongtaek Lee$^{1,*}$
$^1$Department of Chemical Engineering, Chungnam National University, $^2$Korea Institute of Energy Research, $^3$INNOWILL Corp.

PA-20 Characterization of Porous PVDF Membrane Prepared by Pre-treating Electron-Beam Radiation
Seong-Won Lee$^1$, Min Kim$^1$,*, Bong-Kuk Seo$^2$ and Yong-Jin Choi$^3$
$^1$Dong-guk university, $^2$KRICT, $^3$Dong-eui University

PA-21 Evidence of Hydroxyl-modified PVDF in Irradiating EB to Pristine PVDF
Seong-Won Lee$^1$, Min Kim$^1$, Bong-Kuk Seo$^2$, Kwang-Hyun Lee$^3$ and Yong-Jin Choi$^3$*
$^1$Dong-guk university, $^2$KRICT, $^3$Dong-eui University

PA-22 Template Synthesis of Nanosized Conductive Polymer Tubules and Fibrils by AAO Porous Membrane
A-Reum Jang, Hwa-Sup Shin and Kyung-Ho Youm*
Department of Industrial Engineering Chemistry, Chungbuk National University, Cheongju, Chungbuk 361-763, Korea

PA-23 A Solid-state $^{13}$C NMR Study on Alkaline Hydrolysis of Polyacrylonitrile Hollow Fiber Ultrafiltration Membranes
Yong Hun Choi, Chang Min Choi, Dae Ho Choi and Nam Joon Kim*
Department of Chemistry, Chungbuk National University, Chungbuk 361-763, Korea

PA-24 Gas Permeability through Mixed Matrix Membrane of PDMS with Imogolite, Aluminosilicate $[(\text{OH})_2\text{Al}_2\text{O}_3\text{SiOH}]$ hollow nanotubes
Mijin Choi, Jinuk Kim, Garry Nathaniel B. Baroña and Bumsuk Jung*
Laboratory of Environmental & Energy Materials, Department of Environmental Engineering & Biotechnology, Myongji University, San 38-2, Nam-dong, Yongin, Gyeonggi-do 449-728, Korea

PA-25 Gas Separation Membrane Module Made by Airrane Co., Ltd.
Hyungchul Koh, Choong-Seop Lee and Seong Yong Ha*
Airrane Co., Ltd., Aekyung R&D Center, 217-2 Shinsung-dong, Yusung-gu, Daejeon, Korea

PA-26 Synthesis of Copper Oxide Nanorods and Their Applications for Facilitated Olefin Transport Membranes
Ji Yun Park$^1$, Young Rae Kim$^2$ and Yong Soo Kang$^3$*
$^1$Department of Chemical Engineering, Hanyang University, Seoul 133-791, Korea, $^2$WCU program, Department of Energy Engineering, Hanyang University, Seoul 133-791, Korea

PA-27 Enhanced Olefin Carrier Activity of Clean Surface Silver Nanoparticles for Facilitated Transport Membranes
Jimi Kang$^1$, Sung Hyun Mun$^1$, Il Seok Chae$^1$, Sang Wook Kang$^2$ and Yong Soo Kang$^1$*
$^1$WCU Program Department of Energy Engineering, Hanyang University, Seoul 133-791, Korea, $^2$Department of chemistry, Sang Myung University, Seoul, Korea

PA-28 Facilitated Olefin Transport Nanocomposite Membranes Comprising Gold Nanoparticles with Partially Positively Polarized Surface
Sunghyun Jeon$^1$, Sang Wook Kang$^2$, Jung Hyun Lee$^1$ and Yong Soo Kang$^1$*
$^1$WCU program Department of Energy Engineering, Hanyang University, Seoul 133-791, Korea, $^2$Department of Chemistry, Sang Myung University, Seoul 110-743, Korea

PA-29 Facilitated Transport Membranes Using Chemically Activated Copper Nanoparticles by Ionic Liquids
Young Rae Kim¹, Jongho Kim², Ji Yun Park² and Yong Soo Kang¹,*  
¹WCU program Department of Energy Engineering, Hanyang University, Seoul 133-791, Korea,  
²Department of Chemical Engineering, Hanyang University, Seoul 133-791, Korea

PA-30 Behavior of Inorganic Nanoparticle in Silver Polymer Electrolyte and Their Effects on Silver Ion Activity for Facilitated Olefin Transport  
Il Seok Chae¹, Sang Wook Kang² and Yong Soo Kang³*  
¹Department of Chemical Engineering, Hanyang University, Seoul 133-791, Korea, ²Department of Chemistry, Sangmyung University, Seoul 110-743, Korea, ³WCU Program, Department of Energy Engineering, Hanyang University, Seoul 133-791, Korea

PA-31 Selective Separation of Ethanol from Their Aqueous Solution by PDMS-zeolite Composite Membrane  
Changin Kong, Jeongsik Oh, Ina Yum, Moon Hee Cho and Yongtaek Lee*  
Dept. of Chem. Eng., College of Eng., Chungnam National University 220 Gung-dong, Yuseong-gu, Daejeon 305-764, Korea

PA-32 Separation Crude Ethylbenzene by Zeolite Membrane to Produce High Purified Ethylbenzene  
Yukwon Jeon, Sangsun Park, Junki Rhee and Yonggun Shul*  
Department of Chemical and Biomolecular Engineering, Yonsei University

PA-33 Separation of Hydrogen-Nitrogen Gases by PTMSP/PDMS-NaY Zeolite and PTMSP/PDMS-NaA Zeolite Composite Membranes  
Na-Eun Kim and Tae-Beom Kang*  
Department of Chemistry, Sangmyung University

PA-34 Pervaporation of N-butanol/water Mixture through PDMS-nano Zeolite Membrane  
Moon Hee Cho, Jeongsik Oh, Ina Yum, Changin Kong and Yongtaek Lee*  
Dept. of Chem. Eng., College of Eng., Chungnam National University, 220 Gung-dong, Yuseong-gu, Daejeon 305-764, Korea

PA-35 Removal of Heavy Metal Ions from Wastewater by Filtration with a Polysulfone Membrane Incorporating Amphiphilic Hyperbranched Poly(amidoamine)  
Kuk Nam Han, Hyonggoo Yoo and Seung-Yeop Kwak*  
Department of Materials Science and Engineering, Seoul National University, 599 Gwanak-ro, Gwanak-gu, Seoul 151-744, Korea

PA-36 Pervaporation of Ethanol from Their Aqueous Solutions Using a PVA-NaA Zeolite Composite Membrane  
Moon Hee Cho, Ina Yum, Jeongsik Oh, Changin Kong and Yongtaek Lee*  
Dept. of Chem. Eng., College of Eng., Chungnam National University, 220 Gung-dong, Yuseong-gu, Daejeon 305-764, Korea

PA-37 Vacuum Stripping Process of CO₂ using PDMS-PE Composite Membrane from Aqueous Primary, Secondary, Tertiary Amine Solutions  
Jeonghoon Kim¹², Sung-Ryul Park¹², Hyoseong Ahn¹, Bongkuk Seo¹, Soo-Bok Lee¹ and Jeong-Hoon Kim¹*  
¹Korea Research Institute of Chemical Technology, Environment and Resources Research Center, ²University of Science and Technology, Green Chemistry and Environmental Biotechnology

PA-38 Characterization of Gas Permeability a Nano Porous Ceramic Membrane by Chemical Vapor Deposition  
Seung Hee Ryu and Yong Taek Lee*  
Department of Chemical Engineering, College of Engineering, Kyung Hee University
PA-39  Impregnation to Porous PE Membrane of Crosslinked PVA Membranes with Various Crosslinking Agents and Their Characterization  
Sung Pyo Kim, Hak Min Lee, Bo Sung Lee, Sun Kyoung Jung, Il Hyung Kim, Chan Jong Pack and Ji Won Rhim*  
Department of Chemical Engineering, Hannam University, 461-6 jeonmin-Dong, Yuseong-Gu, Daejeon 305-811, Korea

PA-40  A Numerical Analysis for Recovery of CO₂ and DEA from Aqueous Absorbent Solution by Film Layer  
Duckkyu Oh, Changin Kong, MoonHee Cho and Yongtaek Lee*  
Dept. of Chem. Eng., College of Eng., Chungnam National University, 220 Gung-dong, Yuseong-gu, Daejeon 305-764, Korea

PA-41  Experimental Study of NH₃ and CO₂ Removal Efficiency in Aqueous Ammonium Bicarbonate Solution Using a Membrane Contactor  
Sang Jin Lee ¹, Hye Joon Hwang² and Sung Min Shim³  
¹STX Institute of Technology, Division of Heavy Industries, ²Hanyang University, Department of Mechanical Engineering

PA-42  Enhanced Hydrophic Membrane Surface Engineering for Water Purification Applications  
Hyo Won Kim, Tae Hwan Choi and Ho Bum Park*  
Department of Energy Engineering, Hanyang University, Seoul 133-791, Korea

PA-43  Preparation of Polymeric Microfiltration Membrane with Macropore by Macrocyclic Metal Complexes  
Ye Ji Son and Nowon Kim*  
Department of Environmental Engineering, Dongeui Univ., Busan, Korea

PA-44  Compatibility Review for Design and Operation of Membrane System  
Heekyong Oh*, Jungyeol Eom, Sunghun Kang, Euisin Lee and Bumgoo Lee  
Daewoo Institute Construction Technology

PA-45  Gas Permeation Characteristics of EVA/LDH Nanocomposite Membranes  
Sung-Loung Kang¹, Hyun-Kyung Lee¹* and Tae-Beom Kang²  
¹Department of Industrial chemistry, Sangmyung University, ²Department of chemistry, Sangmyung University

PA-46  Preparation of PES Hollow Fiber Membranes and their O₂/N₂ Permeation Properties  
Sung-Ryul Park¹,², Bong-Jun Chang¹, Hyoseong Ahn¹ and Jeong-Hoon Kim¹*  
¹Korea Research Institute of Chemical Technology, Environment and Resources Research Center, ²University of Science and Technology, Green Chemistry and Environmental Biotechnology

PA-47  Modification of Sea Water Reverse Osmosis Membrane Using NH-DMMMSA  
Hyoungwoo Choi, Jinhong Kim, Hyeryun Ahn and Taemoon Tak*  
Department of Biosystems and Biomaterials Science and Engineering, Seoul National University, San 56-1, Sillim-dong, Seoul 151-921, Korea

PA-48  Filtration Characteristics of Nanofiltration Membranes Integrated with TiO₂ Nanoparticles: Permeability and Membrane Fouling  
Jeongwhan Kim*, Arcadio Sotto¹,², Stefan Balta¹,³ and Bart Van der Bruggen¹*  
¹K.U. Leuven, Department of Chemical Engineering, Laboratory for Applied Physical Chemistry and Environmental Technology, Leuven, Belgium, ²Department of Chemical and Environmental Technology, University Rey Juan Carlos, Madrid, Spain, ³University Dunarea de Jos, Department of Environmental and Material Engineering, Domneasca, Galati, Romania, ¹Department of Environmental Engineering, INHA University, Incheon, Korea
PA-49 Gas Diffusivity, Solubility, and Permeability in Polysulfone-poly(ethylen oxide) Segmented Multi-block Copolymers
Hyo Won Kim, Hee Wook Yoon, Hye Jin Shin and Ho Bum Park*
Department of Energy Engineering, Hanyang University, Seoul 133-791, Korea

PA-50 Improvement of Wettability in Microporous PTFE Membranes
Tae Hwan Choi, Hyo Won Kim and Ho Bum Park*
Department of Energy Engineering, Hanyang University, Seoul 133-791, Korea

PA-51 Control of Membrane Fouling by Underwater Plasma Discharge
Ye-Jin Kim, Seung-Min Ryu, Tae-Hyup Lho and Bong-Ju Lee
National Fusion Research Institute

PA-52 Surface Modification of Poly(tetrafluoroethylene) Membrane with Hyperbranched Poly(amidoamine) Via Wet Chemical Hydroxylation and Coupling
Hyonggoo Yoo, Tae-Seon Yun and Seung-Yeop Kwak*
Department of Materials Science and Engineering, Seoul National University, 599 Gwanak-ro, Gwanak-gu, Seoul 151-744, Korea

PA-53 Methanol/water Separation Characteristics of Sodium Alginate/PVA Membranes: The Effect of Annealing on the Structural Deformation and Permeation of the Membranes
Sang-Gyun Kim¹, Asif Mahmood² and Kew-Ho Lee³,*
¹Chungnam Nat’l University, 220 Gung-dong, Daejeon 305-765, Korea, ²Lab. for Functional Membranes, Environment & Energy Research Center, KRICT, P.O. Box 107 Yuseong, Daejeon 305-600, Korea

PA-54 Development of PVDF Hollow Fiber Membrane and Its Module for Drinking Water Production
Jong Pyo Kim*, Myung Jun Park and Ik Bae Yang
H2L Co., Ltd.

PA-55 Preparation of Hydrophilized PVDF Ultrafiltration Membrane for Drinking Water Production
Jong Pyo Kim* and Jae Won Lee
H2L Co., Ltd.

PA-56 Terminal-crosslinked Sulfonated Poly(arylene ether sulfone) (SPE) Block Copolymer as a Highly Conductive and Stable Polymer Electrolyte Membrane
Roshni Lilly Thankamony and Tae-Hyun Kim*
Organic Material Synthesis Lab. Department of Chemistry, University of Incheon

PA-57 Preparation and Characterization of Li-Ion Battery Separator based on PVdF-HFP Copolymer
Je Won Yeon, Junyoung Han, Kyungjun Choi and Byung-Ryul Min*
Yonsei Univ. Department of Chemical and Biomolecular Engineering

PA-58 Characterization of SPAES Composite Membrane Containing Various Functionalyzed MMT for DMFC Application
Deuk Ju Kim¹, Hae Young Hwang¹, Young Taik Hong² and Sang Yong Nam¹,*
¹School of Nano and Advanced Materials Engineering, Engineering Research Institute, i-Cube Center, Gyeongsang National University, Jinju 660-701, Korea, ²Energy Materials Research Center, Korea Research Institute of Chemical Technology, Yuseong, Daejeon 305-600, Korea

PA-59 SPAES/silicaphosphate Sol-gel Composite Membrane for Fuel Cell Systems
Hae Young Hwang¹, Deuk Ju Kim¹, Young Taek Hong² and Sang Yong Nam¹,*
¹School of Nano and Advanced Materials Engineering, i-Cube Center, Gyeongsang National University, Jinju 660-701 Korea, ²Energy Material Research Center, Korea Research Institute of Chemical Technology, Daejeon 305-600, Korea
PA-60  Ionic Conductivities and Interactions of Electrolyte Membranes Based on Poly(epichlorohydrin) Amphiphilic Graft Copolymer
Joo Hwan Koh, Dong Kyu Roh, Xiaolei Zeng and Jong Hak Kim*
Department of Chemical and Biomolecular Engineering, Yonsei University

PA-61 Various Morphology of Silver Nanoparticles Prepared from Amphiphilic Graft Copolymer Membranes
Jin Ah Seo, Jong Kwan Koh, Su Jin Byun and Jong Hak Kim*
Department of Chemical and Biomolecular Engineering, Yonsei University, 262 Seongsanno, Seodaemun-gu, Seoul 120-749, Korea
PB-1 High Performances of Thermally Rearranged Polybenzoxazole Membrane for H₂/CO₂ Separation at High Temperature
Hye jin Kwon¹, Sang Hoon Han² and Young Moo Lee¹,²,*
¹School of Chemical Engineering, College of Engineering, Hanyang University, Seoul 133-791, Korea, ²WCU Department of Energy Engineering, College of Engineering, Hanyang University, Seoul 133-791, Korea

PB-2 Highly Permeable Asymmetric Polybenzoxazole Membranes Using Phase Separation Phenomena
Jun Sung Kim¹, Seungju Kim¹, Sang Hoon Han² and Young Moo Lee¹,²,*
¹School of Chemical Engineering, College of Engineering, Hanyang University, Seoul 133-791, Korea, ²WCU Department of Energy Engineering, College of Engineering, Hanyang University, Seoul 133-791, Korea

PB-3 Preparation and Properties of Cellulose Triacetate Hollow Fiber Membrane
Se Jong Kim¹, Seung Moon Woo⁵, Hae Young Hwang¹, Hyung Chul Koh³, Seong Yong Ha³ and Sang Yong Nam¹,²,*
¹School of Nano and Advanced Materials Engineering, Engineering Research Institute, i-Cube Center, Gyeongsang National University, Jinju 660-701, Korea, ²Korea Package Center, Korea Institute of Industrial Technology

PB-4 Poly(vinylidene fluoride-co-hexafluoropropylene) Hollow Fiber Gas Separation Membranes
Dae Youn Oh¹, Hae Young Hwang¹, Jin Kie Shim² and Sang Yong Nam¹,*
¹School of Materials Science and Engineering, Engineering Research Institute, i-Cube Center, Gyeongsang National University, Jinju 660-701, Korea, ²Korea Package Center, Korea Institute of Industrial Technology

PB-5 Synthesis of Polysulfone-graft-poly(ethylene glycol) Graft Copolymers for Gas Separation Membranes
Seung Moon Woo⁵, Hae Young Hwang⁵ and Sang Yong Nam¹,²,*
¹Department of Polymer Science and Engineering, Gyeongsang National University, Jinju 660-701, Korea, ²School of Nano and Advanced Materials Engineering, Engineering Research Institute, i-Cube Center, Gyeongsang National University, Jinju 660-701, Korea

PB-6 Characterization of High Free Volume Polymer Membranes for Gas Separation
Sang Hoon Han¹, Young Moo Lee¹,* and Anita J. Hill²
¹WCU Department of Energy Engineering, College of Engineering, Hanyang University, Seoul 133-791, Korea, ²CSIRO Materials and Science Engineering, Commonwealth Scientific and Industrial Research Organization(CSIRO), VIC 3168, Australia

PB-7 Preparation of Hydroxyl Polyimide Flat Sheet Membranes for Gas Separation
Jong Jin Choi¹, Hae Young Hwang¹ and Sang Yong Nam¹,²,*
¹School of Nano and Advanced Materials Engineering, Engineering Research Institute, i-Cube Center, Gyeongsang National University, Jinju 660-701, Korea, ²Department of Polymer Science and Engineering, Gyeongsang National University, Jinju 660-701, Korea

PB-8 Highly Gas Permeable Polybenzoxazole Asymmetric Hollow Fiber Membranes
Seungju Kim¹, Sang Hoon Han¹ and Young Moo Lee¹,²,⁺
¹School of Chemical Engineering, College of Engineering, Hanyang University, Seoul 133-791, Korea, ²WCU Department of Energy Engineering, College of Engineering, Hanyang University, Seoul 133-791, Korea

PB-9 Formation of Silver Nanoparticles Templated By Polystyrene-b-Poly(oxyethylene methacrylate) Amphiphilic Block Copolymer Membranes
Joo Hwan Koh, Jung Tae Park, Seung Hyeon Yeon, Won Seok Chi and Jong Hak Kim⁺
Department of Chemical and Biomolecular Engineering, Yonsei University

PB-10 CO₂/CH₄ Mixed Gas Study in Triptycene-Based Polyimide Membranes
Yoon Jin Cho, Byung kook Ahn and Ho Bum Park⁺
Department of Energy Engineering, Hanyang University, Seoul 133-791, Korea

Mariola Calle and Young Moo Lee⁺
WCU Department of Energy Engineering, College of Engineering, Hanyang University, Seoul 133-791, Korea

PB-12 Comparative Study of Simulated and Experimental Results for High Free Volume Polyimide for Gas Separation
Chi Hoon Park, Ho Bum Park and Young Moo Lee⁺
WCU Department of Energy Engineering, College of Engineering, Hanyang University, Seoul, Korea

PB-13 Preparation and Characterization of Pore-filling Polymer Electrolyte Membranes Immobilized with Ionic Liquids for Anhydrous and High Temperature PEFCs
Young-Woo Choi⁺, Ji-Suk Baek, Mi-Soon Lee and Chang-Soo Kim
Fuel Cell Research Center, Korea Institute of Energy Research, Daejeon 305-343, Korea

PB-14 Thermally Rearranged(TR) Poly(benzoxazole-co-imide) Membranes for Gas Separation
Hye-Jin Jo¹, Seungju Kim², Sang Hoon Han¹ and Young Moo Lee¹,²⁺
¹WCU Department of Energy Engineering, College of Engineering, Hanyang University, Seoul 133-791, Korea, ²School of Chemical Engineering, College of Engineering, Hanyang University, Seoul 133-791, Korea

PB-15 Fabrication and Properties of Reinforced membranes Based on Sulfonated poly(arylene ether sulfone) for DMFC applications
Duk Man Yu, Kyungseok Yoon, Tae-Ho Kim and Young Taik Hong⁺
Energy Materials Research Center, Korea Research Institute of Chemical Technology, P.O.Box 107, Yuseong, Daejeon 305-600, Korea

PB-16 Effect of Diverse Imidization Routes on Thermally Rearranged (TR) Polybenzoxazole Membranes
Kyung Taek Woo¹, Seungju Kim², Sang Hoon Han¹, Cara M. Doherty², Anita J. Hill² and Young Moo Lee¹,²⁺
¹WCU Department of Energy Engineering, College of Engineering, Hanyang University, Seoul 133-791, Korea, ²School of Chemical Engineering, College of Engineering, Hanyang University, Seoul 133-791, Korea, ³CSIRO Materials and Science Engineering, Commonwealth Scientific and Industrial Research Organization(CSIRO), VIC 3168, Australia

PB-17 Fabrication of BSCF Dense Hollow Fiber Membranes for Air Separation
Sung Il Jeon¹,², Jung Hoon Park¹⁺, Jong Pyo Kim² and Yong Taek Lee²
¹Greenhouse Gas Research Center, Climate Change Technology Research Division, Korea Institute
PB-18 Fabrication of Porous Ni Hollow Fiber Membranes for Hydrogen Separation
Sung Il Jeon1,2, Jung Hoon Park1,* and Yong Taek Lee2
1Greenhouse Gas Research Center, Climate Change Technology Research Division, Korea Institute of Energy Research, 102 Gajung-ro, Yuseong-gu, Daejeon 305-343, Korea, 2Department of Chemical Engineering, Chung Nam National University, 79 Daehak-ro, Yuseong-gu, Daejeon 305-764, Korea

PB-19 Chlorine Resistant Polyamide Reverse Osmosis Membranes Based On Different Diamine Monomers
Jonggeon Jegal and Seung-Hee Son
Industrial Bio-Chemistry Research Center, Green Chemistry Division, Korea Research Institute of Chemical Technology, Post Office Box 107, Yuseong, Daejeon 305-600, Korea

PB-20 Colorimetric Sensor Arrays for the Detection of Volatile Organic Compounds (VOCs), Using a Microporous Membrane as a Substrate
Jonggeon Jegal, Seung-Hee Son and Eunsuk Seong
Industrial Bio-Chemistry Research Center, Green Chemistry Division, Korea Research Institute of Chemical Technology, Post Office Box 107, Yuseong, Daejeon 305-600, Korea

PB-21 Fabrication and Characterization of Mesoporous Alumina/Titania Membranes by Sol-Gel Process
Hyuk Taek Kwon and Jinsoo Kim*
Department of Chemical Engineering, Kyung Hee University

PB-22 Forward Osmosis (FO) and Membrane Distillation (MD) Process for Freshwater Production
Su-Hwan Eum1, Albert S. Kim1,2 and Yong Taek Lee1,*
1Department of Chemical Engineering, Collage of Engineering, Kyung Hee University, 2Civil and Environmental Engineering, College of Engineering, University of Hawaii at Manoa, USA

PB-23 Preparation and Characterization of the Fluorescence Doped PVDF Membranes and Membrane Fouling by Fluorescence Signal Analysis
Mirae Seo1,2, Mi Yeon Nam3, You In Park1,* Beom Sik Kim1 and Ho Bum Park2
1Environment and Resources Research Center, Korea Research Institute of Chemical Technology, 2Department of Chemical Engineering and Energy Engineering, Hanyang University, 3MF Team, R&D Institute, Woongjin Chemical Co., Ltd.

PB-24 Preparation and Properties of Cellulose Triacetate Nanofiltration Flat Sheet Membrane
Tae Yang Son1, Se Jong Kim2, Hae Young Hwang3, Hyung Chul Koh3, Seong Yong Ha2 and Sang Yong Nam1,2,*
1Department of Polymer Science and Engineering, Gyeongsang National University, Jinju 660-701, Korea, 2School of Nano and Advanced Materials Engineering, Engineering Research Institute, i-Cube Center, Gyeongsang National University, Jinju 660-701, Korea, 3Airane Co. Ltd, 217-2, Shinsung-dong, Yusung-gu, Daejeon 306-791, Korea

PB-25 Effect of PVP Concentration on Water Permeability of Polysulfone Phase Inversion Membrane
Jin-Young Lee1,* So-Jin Park1, Kune-Woo Lee2, Jong-Su Im2,* and Myung-Jin Han3
1Chungnam University, 2Korea Atomic Energy Research Institute, 3Kyungil University

PB-26 Hydrophilicity Improvement of Polysulfone by Electron Beam Graft Polymerization
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PB-27 Preparation of Porous PTFE(Poly-tetrafluoroethylene) Membranes
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PB-28 Synthesis and Characterization of Sulfonated Poly(arylene ether sulfone) Branch-block Copolymer Membranes Containing PFCB Group
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PB-29 Surface Hydrophilization of PVDF Membrane by Thermal Graft Polymerization Process
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PB-30 New Membranes Materials based on Nanofabrication for Water Purification and Desalination
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PB-31 Assessment of Air-Liquid Conversion Ratio (ALCR) for Low Pressure Membrane Integrity Test
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PB-32 Optimization of Low Pressure Membrane Process by Using Unified Membrane Fouling Index (UMFI)
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PB-33 Synthesis of Polybenzimidazole for High Temperature H2/CO2 Separation
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PB-34 Preparation of Forward Osmosis Membranes with Novel Cellulosic Polymer
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PB-35 Performance of Forward Osmosis Membrane with Hydrophilic Support
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PB-36 Advanced Water Treatment by Hybrid Process of Ceramic Ultrafiltration and Photocatalyst: Effect of Water-back-flushing
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PB-37 Advanced Water Treatment by Hybrid Process of Multi-channel Ceramic MF and Photocatalyst:
Role of Adsorption and Photo-oxidation
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PB-38 CO₂ Transport through Carbonic Anhydrase Immobilized Poly(vinyl alcohol) Membranes by NPC/TEA Method
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PB-39 Separation and Recovery of SF₆ Gas from N₂/O₂/CF₄/SF₆ Gas Mixtures by Using a Polymer Hollow Fiber Membranes
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PB-40 Effect of pH Variation on Membrane Fouling during the Maintenance Cleaning Step of PMR Process
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PB-41 Effects of Aeration Mode of a CYEF Module on the Filtration of PAC and Kaolin Suspensions
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PB-42 Sedimentation and De-watering Characteristics of the Concentrate from PMR Process
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PB-43 Pulsed High-Voltage Discharge Plasma Technology for Control of Membrane Fouling in Membrane Bioreactor
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PB-44 Fouling-tolerant Ultrafiltration Membranes Using Polysulfone-poly(ethylene oxide) Segmented Multiblock Copolymers
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PB-45 Performance of Submerged Membrane Bioreactor with Waste Lime Support Carrier
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PB-46 Filtration Performance of Membrane Coupled Sequencing Batch Reactor Using Fermented leachate of Food Waste
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PB-47 The Multiple Preparation of Silica Membrane for Membrane Reactor in Hydrogen Production
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PB-48 Powdered Activated Carbon Adsorption - Ultrafiltration for Water Treatment: Fouling Paradox
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PB-49 Novel Iron Oxide Adsorbents to Control Membrane Fouling in Ultrafiltration for Water Treatment
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PB-50 Preparation of PVDF Membranes with Enhanced Mechanical Strength and Porosity by NIPS Process
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PB-51 Preparation of Porous PVDF Hollow Fiber Membranes by Hybrid Process of the TIPS and Stretching
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PB-52 Preparation of PVDF Hollow Fiber Membranes by MSCS Process
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PB-54 Comparison of a High Performance Forward Osmosis Membrane and Reverse Osmosis Membrane
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PB-55 Development of Drinking Water Treatment Technology Using Membrane Filtration Process Combined with Streaming Current Control
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PB-56 Effect of Operating Condition on Pressure Retarded Osmosis Performance in Commercial RO Membranes
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PB-57 Estimation of Optimal Chemical Cleaning Time on Membrane Filtration Process with Data Analysis
Enju Jeon*, Jaelim Lim, Heunghan Yoon and Kwanghyun Yoon
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PB-58 Control of Slurry Particle Rejection Using Depth Filter for Chemical Mechanical Planarization (CMP) Process
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PB-59  An Experimental Study of Dense Layer Control in a Microfiltration Membrane
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PB-60  The Development of Highly Efficient Membrane Integrated System for Drinking Water Treatment with Low Energy Consumption and Footprint
Hyungwoo Hur*, Seung Kook Park, Kyong Ho Yeon and In Ho Yeo
Hanwha Engineering and Construction Corp.

PB-61  The Effect of Bio-media on the Filtration Performance and Removal Efficiency in a Submerged Flat Sheet Type Sequencing Batch Membrane Reactor
Seung-geon Kim¹, Ho-won Lee², Yeung-joo Kang¹, Joo-hye Kim¹ and Taek-kwan Lee²*
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PB-62  The Effect of Feed Solution pH on Chlorination of Polyamide Nanofiltration Membrane
Joung-Eun Gu*, Nguyen Thi Phuong Nga and Young-Nam Kwon
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PB-63  Facilitated Transport Composite Membrane with Ionic Liquids as a Carrier for Olefin/Paraffin Separation
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