

## 1. Biochemical applications

**P1-1** Self-sharpening arisen by ion-exchange membranes in ion-exchange membrane partitioned free-flow isoelectric focusing (IEM-FFIEF or MCE)

Jiu-Hua Cheng, Tai-Shung Chung

National University of Singapore, Singapore

**P1-2** Cake filtration of saccharomyces cerevisiae and escherichia coli microorganism suspensions: effect of the particle shape

Yu-Ling Li, Ching-Yi Chang, Kuo-Lun Tung

R&D Center of Membrane Technology, Chung Yuan University, Taiwan

**P1-3** The study of effect on cellulose acetate propionate/poly ethylene glycerol blends by adding poly (lactic acid)

Jing-Yi Wu<sup>1</sup>, Chi-Yuan Huang<sup>1</sup>, Su-Chen Chen<sup>2</sup>,

1: Department of Materials Engineering, Tatung University, Taiwan

2: Department of Raw Materials and Yarns, Taiwan Textile Research Institute, Taiwan

**P1-4** Study on microstructure and physical properties of composite membranes based on N,O-carboxymethylchitosan and methylcellulose

Shu-Huei Yu<sup>1</sup>, Fwu-Long Mi<sup>2</sup>, Chih-Kang Peng<sup>3</sup>, Yu-Fan Lin<sup>1</sup>, Chien-Hsin Hsieh<sup>1</sup>, Shing-Wen Shyu<sup>2</sup>

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3: Department of raw materials and yarn formation, Taiwan Textile Research Institute, Taiwan

**P1-5** Improving the phase separation between polycaprolactone and starch by acrylic acid

Jing-Yi Wu, Chi-Yuan Huang

Department of Materials Engineering, Tatung University, Taiwan

**P1-6** Microfiltration of skim milk for casein concentrate manufacture

Kensuke Karasu<sup>1</sup>, Nicole Glennon<sup>2</sup>, Nicole Lawrence<sup>3</sup>, Geoff Stevens<sup>2</sup>, Shiro Yoshikawa<sup>1</sup>, Sandra Kentish<sup>2</sup>

1: Department of Chemical Engineering, Tokyo Institute of Technology, Japan

2: Department of Chemical and Biomolecular Engineering, University of Melbourne, Australia

3: Burra Foods Australia, Australia

**P1-7** Novel hollow fiber membrane adsorber -- performance and scalability --

Naoyuki Shinohara<sup>1</sup>, Hironobu Shirataki<sup>1</sup>, Noboru Kubota<sup>1</sup>, Kyoichi Saito<sup>2</sup>

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Chemicals Corporation, Japan

2: Department of Applied Chemistry and Biotechnology, Faculty of Engineering, Chiba University, Japan

**P1-8** Potential mean force study on interaction between proteins and polymer membranes

Hiromitsu Takaba<sup>1</sup>, Ai Suzuki<sup>1</sup>, Michihisa Koyama<sup>2</sup>, Hideyuki Tsuboi<sup>1</sup>, Nozomu Hatakeyama<sup>1</sup>, Akira Endou<sup>1</sup>, Carlos A. Del Carpio<sup>1</sup>, Momoji Kubo<sup>1</sup>, Akira Miyamoto<sup>1</sup>

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**P1-9** Fractionation BSA and lysozyme by mixed matrix membrane adsorbers

Saiful<sup>1</sup>, Zandrie Zandrie<sup>2</sup>, Matthias Wessling<sup>2</sup>

1: Chemistry Department, Faculty of Match and Natural Science, Syiah Kuala University, Indonesia

2: Membrane Technology Group, University of Twente, The Netherlands

**P1-10** A thiol-modified, sulfate chitosan derivative membrane for binding and releasing basic fibroblast growth factor

Fwu-Long Mi<sup>1</sup>, Yi-Cheng Ho<sup>1</sup>, Shu-Huei Yu<sup>2</sup>, Shao Rong Wu<sup>3</sup>, Zhi-Ying Lee<sup>1</sup>, Cui-Wen Wu<sup>1</sup>, Bing-Quan Huang<sup>1</sup>

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**P1-11** Adsorbed separation with residual substance in honey by UF membrane

Mika Terakawa, Naoki Kogure, Shinji Itoh

Kato brothers honey co.,ltd, Japan

**P1-12** Controlled permeation of biomaterials through antigen-responsive membranes

Yurie Ohkita<sup>1</sup>, Eriko Furutani<sup>1</sup>, Takashi Miyata<sup>3</sup>, Tadashi Uragami<sup>2</sup>

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3: Faculty of Chemistry, Materials and Bioengineering, Kansai University, and HRC, Kansai University and JST-PRESTO, Japan

**P1-13** Controlled release of an anti-inflammatory drug from cross-linked conjugate hydrogel membranes of hyaluronic acid and N,O-carboxymethylchitosan

Shu-Huei Yu<sup>1</sup>, Fwu-Long Mi<sup>2</sup>, Yi-Yun Lai<sup>2</sup>, Ruo-Yu Chen<sup>2</sup>, Bo-Xuan Chen<sup>2</sup>, Juin-Yih Lai<sup>3</sup>, Shing-Shin Shyu<sup>4</sup>

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- 3: R&D Center for Membrane Technology, Chung Yuan University, Taiwan
- 4: Department of Cosmetic Science, Vanung University, Taiwan

**P1-14** Novel biomolecular recognition gating membrane using phase transition

Hidenori Kuroki<sup>1</sup>, Hidenori Ohashi<sup>2</sup>, Taichi Ito<sup>3</sup>, Takeo Yamaguchi<sup>2</sup>

- 1: Department of Chemical System Engineering, The University of Tokyo, Japan
- 2: Chemical Resources Laboratory, Tokyo Institute of Technology, Japan
- 3: Center for Disease Biology and Integrative Medicine, The University of Tokyo, Japan

**P1-15** New antigen-responsive system amplified by water shell around gold nanoparticle

Yuuki Sugawara<sup>1</sup>, Hidenori Kuroki<sup>2</sup>, Hidenori Ohashi<sup>1</sup>, Taichi Ito<sup>3</sup>, Takeo Yamaguchi<sup>1</sup>

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- 2: Department of Chemical Engineering, The University of Tokyo, Japan
- 3: Center for Disease Biology and Integrative Medicine, The University of Tokyo, Japan

**P1-16** A novel process for biodegradable starch/PVA blends by acid hydrolysis modification

Ru-Chien Kuo, Rong-Huang Jhang, Chi-Yuan Huang

Department of Materials Engineering, Tatung University, Taiwan

**P1-17** Mechanical properties of microporous foams of biodegradable plastics

Takaaki Tanaka<sup>1</sup>, Takashi Aoki<sup>1</sup>, Tomoaki Kouya<sup>1</sup>, Wataru Ogawa<sup>2</sup>, Yuuji Tanabe<sup>2</sup>, Masayuki Taniguchi<sup>1</sup>, Douglas R. Lloyd<sup>3</sup>

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- 2: Department of Mechanical and Production Engineering, Niigata University, Japan
- 3: Department of Chemical Engineering, The University of Texas at Austin, USA

**P1-18** Removal of endotoxin fragment (lipid A) by endotoxin-retentive filter

Kenichi Kokubo, Kozue Futatsugi, Hiroshi Tsukao, Toshihiro Shinbo, Minoru Hirose, Hirosuke Kobayashi  
Kitasato University School of Allied Health Sciences, Japan

**P1-19** Preparation of endocrine disruptors-responsive gel films by molecule imprinting and applications to surface plasmon resonance sensor

Syo Ohtaka<sup>1</sup>, Manabu Okutani<sup>1</sup>, Takashi Miyata<sup>3</sup>, Tadashi Uragami<sup>2</sup>

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**P1-20** The electrochemical urinalysis with neopterin-imprinted poly(ethylene-co-vinyl-alcohol) membrane

Cheng Hsin Hsieh<sup>1</sup>, Hung Yin Lin<sup>1</sup>, Mei Haw Lee<sup>2</sup>, Chun Yueh Huang<sup>3</sup>, Bin Da Lau<sup>4</sup>

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**P1-21** Surface modification of microporous PVDF membranes for neuron culture

Hsu-Hsien Chang, Liao-Ping Cheng

Department of Chemical and Materials Engineering, Tamkang University, Taiwan

**P1-22** The investigation of ozone modification process on macro-porous medical membranes

Lo Tang Yu, Ho Ming Hua, Lee Jun Jay, Hsiao Sheng Wen

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

**P1-23** Spheroid formed on rubbed polyimide membrane for cell transplantation

Mami Osoegawa, Shoichiro Asayama, Naoto Matsuno, Hiroyoshi Kawakami

Department of Applied Chemistry, Tokyo Metropolitan University, Japan

**P1-24** Enhancement of the differentiation of deciduous dental pulp stem cells by using chitosan-heparin membranes

Guo Shiang Huang<sup>1</sup>, Bor Shiunn Lee<sup>2</sup>, Hsyue Jen Hsieh<sup>1</sup>, Da Ming Wang<sup>1</sup>, Juin Yih Lai<sup>3</sup>

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**P1-25** Behaviors of neural stem cells on EVAL membranes modified with GYIGSR

Tai-Horng Young

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**P1-26** Chitosan-PAA-pHEMA hydrogel membranes for wound dressing application

Hong-Ru Lin<sup>1</sup>, Cheng-Ping Shih<sup>1</sup>, Yiu-Juan Lin<sup>2</sup>,

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2: Department of Nursing, Chung Hwa University of Medical Technology, Taiwan

**P1-27** Polyurethane (PU)/Hydrogel membranes for wound repair applications

Hong-Ru Lin<sup>1</sup>, Ga-How Lee<sup>2</sup>, Yiu-Jiuan Lin<sup>3</sup>, Chih-Wei Chou<sup>4</sup>

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**P1-28** Enhanced thermal and mechanical properties of chitosan membrane by silver nanoparticles

Chih-Wei Chou<sup>1</sup>, Yung-Hsiu Chen<sup>1</sup>, Ko-Shao Chen<sup>2</sup>

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**P1-29** The characterization of membranes with the addition of gold nano-particles for biomedical applications

Su Yuan Ming, Ho Ming Hua, Tai Yian, Hsiao Sheng Wen

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**P1-30** Preparation of novel porous chitosan micro-particles and applied on BSA adsorption

Tzu-Yang Hsien<sup>1</sup>, Yu-Lin Lin<sup>2</sup>, Hsyue-Jen Hsieh<sup>3</sup>, Da-Ming Wang<sup>3</sup>

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**P1-31** Development of enzyme sensors based on the gas permeation with use of follow fiber membrane

Yasuhiro Iida, Hiroomi Kan, Yuka Tsukada

Kanagawa Institute of Technology, Japan

**P1-32** Membrane chip analysis for surface property of model biomembranes

Toshinori Shimanouchi, Ena Oyama, Haruyuki Ishii, Hiroshi Umakoshi, Ryoichi Kuboi

Graduate School of Engineering Science, Osaka University, Japan

**P1-33** Significant influence of operating conditions on molecular structure of bovine serum albumin in AOT reverse micellar system

Shunpei Fujimoto<sup>1</sup>, Kazumitsu Naoe<sup>1</sup>, Tomoe Yamauchi<sup>1</sup>, Mikio Kawagoe<sup>1</sup>, Masanao Imai<sup>2</sup>

1: Department of Chemical Engineering, Nara National College of Technology, Japan

2: Department of Food Science & Technology, Nihon University, Japan

**P1-34** Purification of giant vesicles entrapping hydrophilic materials using microfiltration

Takumi Omori<sup>1</sup>, Takashi Kuroiwa<sup>2</sup>, Seigo Sato<sup>1</sup>, Sosaku Ichikawa<sup>1</sup>

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2: National Food Research Institute, Japan

**P1-35** Preparation of enzyme-containing giant vesicles and their application as microcompartments for biochemical reaction

Takashi Kuroiwa<sup>1</sup>, Ryoji Fujita<sup>2</sup>, Hiroyuki Kobayashi<sup>2</sup>, Mitsutoshi Nakajima<sup>2</sup>, Kunihiko Uemura<sup>1</sup>, Seigo Sato<sup>2</sup>, Sosaku Ichikawa<sup>2</sup>

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2: Graduate School of Life and Environmental Sciences, University of Tsukuba, Japan

**P1-36** LIPOzyme: Artificial enzyme design based on membranome

Hiroshi Umakoshi, Toshinori Shimanouchi, Ryoichi Kuboi

Osaka University, Japan

**P1-37** Liposome-regulated expression of green fluorescence protein in cell-free translation system

Keishi Suga, Hiroshi Umakoshi, Huong This Bui, Tomoyuki Tanabe, Toshinori Shimanouchi, Ryoichi Kuboi

Osaka University, Japan

**P1-38** Preparation of liposomes retaining Mn-porphyrin SOD mimics for brain targeting

Mayuko Kanehisa, Natsumi Hayakawa, Shoichiro Asayama, Hiroyoshi Kawakami

Department of Applied Chemistry, Tokyo Metropolitan University, Japan

**P1-39** Effect of DNA-surfactant on reverse micellar extraction of single-stranded DNA

Naoki Ishizu<sup>1</sup>, Tatsuo Maruyama<sup>1</sup>, Takuya Hosogi<sup>2</sup>, Masahiro Goto<sup>2</sup>, Yoshikage Ohmukai<sup>1</sup>, Hideto Matsuyama<sup>1</sup>

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**P1-40** Preparation of DNA-responsive gels having chromophores for DNA sensing systems

Misa Ueba<sup>1</sup>, Makoto Minamitsuji<sup>1</sup>, Takashi Miyata<sup>3</sup>, Tadashi Uragami<sup>2</sup>

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JST-PRESTO, Japan

**P1-41** Alkylated poly(1-vinylimidazole) for a new pH-sensitive DNA carrier without cytotoxicity

Tomoe Hakamatani, Shoichiro Asayama, Hiroyoshi Kawakami

Department of Applied Chemistry, Tokyo Metropolitan University, Japan

**P1-42** pH-responsive behavior of hydrogel microspheres altered by layer-by-layer assembly of polyelectrolytes

Akihiro Fujii, Tatsuo Maruyama, Tomohiro Sotani, Yoshikage Ohmukai, Hideto Matsuyama

Department of Chemical Science and Engineering, Kobe University, Japan

**P1-43** A molecularly imprinted self-supporting membrane for basic study of 'gate effect'

Yasuo Yoshimi, Rika Arai, Satomi Nakayama

Department of Applied Chemistry, Shibaura Institute of Technology, Japan

**P1-44** Visible light regulates gene expression and neurite outgrowth of nerve cells cultured on collagen-coated membranes

Ling-Yi Ho<sup>1</sup>, Qing-Dong Ling<sup>2</sup>, Akon Higuchi<sup>1,3</sup>

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

2: Cell Biology and Anatomy Laboratory, Cathay Medical Research Institute/Cathay General Hospital, Taiwan

3: National Research Institute for Child Health and Development, Japan

**P1-45** Separation and ex vivo expansion of hematopoietic stem cells from human blood by membrane filtration method and magnetic associated sorting method

Siou-Ting Yang, Pei-Tsz Li, Akon Higuchi

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

**P1-46** Stabilization of human epidermal growth factor (hEGF) and its bioassay

Jen-Hao Lee<sup>1</sup>, Toshiko Abe<sup>2</sup>, Motohisa Matsuzaki<sup>2</sup>, Akon Higuchi<sup>1</sup>

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### 3. Energy applications- fuel cells

**P3-1** Comparison of simulations with experiments of a reverse electro dialysis test cell system

Mitsuru Higa<sup>1</sup>, Hiroshi Onomoto<sup>1</sup>, Megumi Nishimura<sup>1</sup>, Takayuki Fujiwara<sup>2</sup>, Marica Anno<sup>2</sup>, Yurika Ohishi<sup>2</sup>, Yukari Karamatsu<sup>2</sup>, Atsumi Sato<sup>2</sup>, Yukiko Nao<sup>2</sup>

1: Graduate School of Science and Engineering, Yamaguchi University, Japan

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**P3-2** The synthesis and recognition of cellulase and glucose with molecularly imprinted poly(ethylene-co-vinyl-alcohol) thin film

Lin Chen Han<sup>1</sup>, Mei Hwa Lee<sup>1</sup>, Hung Yin Lin<sup>2</sup>, Chun Yueh Huang<sup>3</sup>, Bin Da Lau<sup>4</sup>

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2: Department of Chemical and Materials Engineering, National University of Kaohsiung, Taiwan

3: Graduate Institute of Communication Engineering, National University of Tainan, Taiwan

**P3-3** Theoretical design of polymer electrolyte fuel cell: multiscale computational chemistry approach

Hiromitsu Takaba<sup>1</sup>, Boyeong Kim<sup>1</sup>, Donghyun Kim<sup>1</sup>, Ai Suzuki<sup>1</sup>, Michihisa Koyama<sup>2</sup>, Hideyuki Tsuboi<sup>1</sup>, Nozomu Hatakeyama<sup>1</sup>, Akira Endou<sup>1</sup>, Carlos A. Del Carpio<sup>1</sup>, Momoji Kubo<sup>1</sup>, Akira Miyamoto<sup>1</sup>

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**P3-4** Molecular dynamics simulation of oxygen ions transport mechanisms in the cubic/monoclinic dual phase scandia-yttria- stabilized zirconia solid electrolyte

Kuo-Lun Tung, Kai-Shiun Chang

Department of Chemical Engineering and R&D Center for Membrane Technology, Taiwan

**P3-5** Preparation and characterization of the  $\text{Sc}_2\text{O}_3\text{-Y}_2\text{O}_3\text{-ZrO}_2$  solid electrolyte for IT-SOFC applications using atmospheric plasma spray technique

Kuo-Lun Tung, Chao-Hsiang Kang, Kai-Shiun Chang

Department of Chemical Engineering and R&D Center for Membrane Technology, Taiwan

**P3-6** Synthesis and preparation of all solid-state polymer electrolytes prepared from a graft copolymer using atom transfer radical polymerization

Kazuaki Yaguchi, Keita Takuno, Mitsuru Higa

Graduate School of Science and Engineering, Yamaguchi University, Japan

**P3-7** Crosslinked membranes of sulfonated polyimides derived from sulfophenoxy-benzidine for PEFC applications

Kazuaki Yaguchi, Kangcheng Chen, Nobutaka Endo, Mitsuru Higa, Kenichi Okamoto

Yamaguchi University, Japan

**P3-8** Preparation of hybrid membranes of sulfonated polyimides and inorganic nano-particles and their PEFC performances

Hajime Yamamoto, Kazuaki Yaguchi, Nobutaka Endo, Mitsuru Higa, Hidetoshi Kita, Kenichi Okamoto

Yamaguchi University, Japan

**P3-9** Rapid proton conduction through structured water of pore-filling electrolyte membranes for PEFCs and DMFCs

Nobuo Hara<sup>1</sup>, Hidenori Ohashi<sup>1</sup>, Taichi Ito<sup>1</sup>, Takeo Yamaguchi<sup>2</sup>

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**P3-10** [Withdrawn]

**P3-11** Proton conductive properties of aligned sulfonated polyimide nanofiber composite membranes

Takuya Tamura, Hiroyoshi Kawakami

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**P3-12** Proton conductive properties of non-woven sulfonated polyimide nanofiber composite membranes

Takuya Tamura, Hiroyoshi Kawakami

Department of Applied Chemistry, Tokyo Metropolitan University, Japan

**P3-13** Improvement of system efficiency using membrane humidifier for PEM fuel cell compared to applied bubble humidifier

Yong-Taek Lee, Dae-Kwon Chang, Su-Hwan Eom, Dong-Ho Shin

Department of Chemical Engineering, Kyung Hee University, Korea

**P3-14** Novel crosslinking method for sulfonated poly(phenylene sulfide sulfone nitrile) membranes for fuel cell application

Dong Won Shin, So Young Lee, Chi Hoon Park, Chang Hyun Lee, Ho Bum Park, Young Moo Lee

School of Chemical Engineering, Hanyang University, Korea

**P3-15** Preparation of red phosphors using W/O emulsion by membrane emulsification

Myung Hyun Chae, Kyung Ho Youm

School of Chemical Engineering, Chungbuk National University, Korea

**P3-16** Self-organized nanocomposite proton conducting membranes based on amphiphilic PVDF graft copolymer

Roh Dong Kyu, Yeon Sueng Hyeon, Koh Joo Hwan, Park Jung Tae, Kim Jong Hak

Department of Chemical and Biomolecular Engineering, Yonsei University, Korea

**P3-17** Proton conducting crosslinked polymer electrolyte membranes based on SBS block copolymer

Roh Dong Kyu, Ahn Sung Hoon, Seo Jin Ah, Koh Jong Kwan, Kim Jong Hak

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**P3-18** Preparation of electrospun PVDF membrane for the application of Li-ion battery separator

Byoungmin Kwon<sup>1</sup>, Moonyoung Ko<sup>1</sup>, Sehui Ye<sup>1</sup>, Kyungho Hwang<sup>1</sup>, Hongsik Byun<sup>1</sup>, Myungseo Seo<sup>2</sup>, Youngjoong Kim<sup>2</sup>

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**P3-19** Systematic investigation on hollow fiber membrane preparation for humidifier of PEMFc

Hwa-Chiang Lo, Jeng-Liang Kuo, Zhi-Feng Jue

Industrial Technology Research Institute, Taiwan

**P3-20** Surface fluorinated Poly(vinyl alcohol)/Poly(styrene sulfonic acid-co-maleic acid) membranes for polymer electrolyte membrane fuel cells

Ji Won Rhim<sup>1</sup>, Dae Hoon Kim<sup>1</sup>, Byung Seong Lee<sup>1</sup>, Bo Sung Lee<sup>1</sup>, Go Young Moon<sup>3</sup>, Hong Sik Byun<sup>2</sup>

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**P3-21** Nano-structured PVDF based proton exchange membrane

Dar-Jong Lin, Liao-Ping Cheng, Chun-Liang Lin, Shyuan-Yu Guo

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**P3-22** Surface morphology control of a Pd membrane for efficient hydrogen permeation

Tetsuaki Tsubono<sup>1</sup>, Taku Ohtani<sup>1</sup>, Akane Yamamoto<sup>1</sup>, Koichi Suzuki<sup>2</sup>, Mikihiro Nomura<sup>1</sup>

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**P3-23** Nano-hybrid electrolytes for direct methanol fuel cell

Hungkai David Lin, Shingjiang Jessie Lue

Department of Chemical and Materials Engineering, Chang Gung University, Taiwan

**P3-24** Syntheses of sulfonated block copolyimides and their proton conductivities

Kota Yamazaki, Hiroyoshi Kawakami

Department of Applied Chemistry, Tokyo Metropolitan University, Japan

**P3-25** Syntheses of sulfonated graft copolyimides for high proton conductivity

Kota Yamazaki, Hiroyoshi Kawakami

Department of Applied Chemistry, Tokyo Metropolitan University, Japan

**P3-26** Synthesis and properties of sulfonated block/block copolyimides bearing sulfophenyl pendant groups for fuel cell applications

Kangcheng Cheng, Zhaoxia Hu, Kazuaki Yaguchi, Nobutaka Endo, Mitsuru Higa, Kenichi Okamoto  
Yamaguchi University, Japan

**P3-27** Synthesis and properties of poly(sulfonated phenylene)-block-poly(naphthalimide) copolymers

Xuan Zhang<sup>1</sup>, Shouwen Chen<sup>1</sup>, Kangcheng Chen<sup>2</sup>, Zhaoxia Hu<sup>2</sup>, Kenichi Okamoto<sup>2</sup>, Lianjun Wang<sup>3</sup>

1: Yamaguchi University, Japan and Nanjing University of Science & Technology, China

2: Yamaguchi University, Japan

3: Nanjing University of Science & Technology, China

**P3-28** Characterization of random and block copolymers of highly sulfonated poly(arylene ether sulfone) for proton exchange membrane

Cui Liang, Yoshikage Ohmukai, Tatsuo Maruyamam, Tomohiro Sotani, Hideto Matsuyama

Department of Chemical Science and Engineering, Kobe University, Japan

**P3-29** Polyvinyl alcohol/fumed silica/KOH as electrolytes for alkaline direct methanol fuel cell (DMFC)

Wei-Ting Maxwell Wang, Shingjiang Jessie Lue

Department of Chemical and Materials Engineering, Chang Gung University, Taiwan

**P3-30** Preparation and characterization of the PVA/PSSA/TiO<sub>2</sub> nanocomposite polymer exchange membrane for DMFC

Chun-Chen Yang

Ming Chi University of Technology, Taiwan

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**P3-31** Sulfonated poly(arylene ether sulfone) (SPAES)/sulfonated silica composite membranes for direct methanol fuel cells

Hae Young Hwang<sup>1</sup>, Deuk Ju Kim<sup>1</sup>, Young Taik Hong<sup>2</sup>, Sang Yong Nam<sup>1</sup>

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**P3-32** Fuel barrier effect of SPAES/sulfonated clay composite membranes for direct methanol fuel cells

Deuk Ju Kim<sup>1</sup>, Hae Young Hwang<sup>1</sup>, Young Taik Hong<sup>2</sup>, Sang Yong Nam<sup>1</sup>

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**P3-33** Sulfonated polyimide membranes for direct methanol fuel cell application

Takashi Shimomura, Zhaoxia Hu, Kangcheng Chen, Hidetoshi Kita, Kenichi Okamoto

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**P3-34** Direct methanol fuel cells based on poly(vinyl alcohol)/polyanion composite polymer membranes

Nobutaka Endo, Mikinori Sugita, Mitsuru Higa

Graduate School of Science and Engineering, Yamaguchi University, Japan

**P3-35** Performances of membrane-electrode assembly (MEA) fabricated with non-perfluorinated binder for DMFC

So Young Lee, Doo Sung Hwang, Chang Hyun Lee, Ho Bum Park, Young Moo Lee

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**P3-36** Poly(vinyl alcohol) based semi-interpenetrating network as polymer electrolyte for direct methanol fuel cells

Chi-Wen Lin, Yu-Fong Huang

National Yunlin University of Science and Technology, Taiwan

**P3-37** Sulfonated polyhedral oligosilsesquioxane/Nafion composite membranes for the application in direct methanol fuel cells

Yi-Ming Sun<sup>1</sup>, Meng-Chieh Chuang<sup>1</sup>, Jang-Chun Liu<sup>1</sup>, Yu-Huei Su<sup>2</sup>, Ying-Ling Liu<sup>3</sup>, Juin-Yih Lai<sup>3</sup>

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**P3-38** Characterization of poly(vinyl alcohol) based polymer electrolyte membranes for a passive type direct methanol fuel cell

Mikinori Sugita<sup>1</sup>, Shin-ichi Maesowa<sup>1</sup>, Nobutaka Endo<sup>1</sup>, Mitsuru Higa<sup>1</sup>, Naoki Fujiwara<sup>2</sup>

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**P3-39** Operating conditions for ethanol steam reforming in a palladium membrane reactor without sweep gas

Sho Hiyama<sup>1</sup>, Naotsugu Itoh<sup>1</sup>, Misaki Ishitsuka<sup>2</sup>, Shigeki Hara<sup>2</sup>, Hiroyuki Suda<sup>2</sup>, Kenji Haraya<sup>2</sup>

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**P3-40 (O1-3)** The architecture effect of graft polyelectrolyte copolymers on their properties and proton conductivities

Yu-Huei Su<sup>1</sup>, Ying-Ling Liu<sup>2</sup>, Da-Ming Wang<sup>1</sup>, Juin-Yih Lai<sup>2</sup>, San-Der Chyou<sup>3</sup>, Win-Tai Lee<sup>3</sup>

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## 6. Hybrid and novel processes

### **P6-1** Influence of hydrophobicity of PVDF membrane on carbon dioxide recovery

Su Hsia Lin<sup>1</sup>, Kuo-Lun Tung<sup>2</sup>, Hao-Wei Chang<sup>2</sup>

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### **P6-2** Electric field effect on nanofiltration performance

Ching Jung Chuang, Chia Wei Wen, Cheng Hao Li, Meng Yang Tsai, Kai Wen Laic

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### **P6-3** Long-term stability of micro-porous filled electrolyte for dye-sensitized solar cells

Pei-Wen Lo, Shingjiang Jessie Lue

Department of Chemical and Materials Engineering, Chang Gung University, Taiwan

### **P6-4** A ceramic membrane reactor for acetone ammoxidation to acetone oxime over TS-1

Rizhi Chen, Zhen Bu, Weihong Xing, Wanqin Jin, Nanping Xu

Nanjing University of Technology, China

### **P6-5** Vapor phase separation of water/acetic acid mixture through zeolite membranes

Ken-ichi Sawamura, Shintaro Daikohara, Taisuke Furuhashi, Yasushi Sekine, Eiichi Kikuchi, Masahiko Matsukata

Department of Applied Chemistry, Waseda University, Japan

### **P6-6** Esterification of acetic acid and ethanol with acid tolerant mordenite membrane

Ken-ichi Sawamura, Takayuki Hagino, Jungo Kojima, Yasushi Sekine, Eiichi Kikuchi, Masahiko Matsukata

Department of Applied Chemistry, Waseda University, Japan

### **P6-7** Nanofiltration process coupled with spray evaporation desalination system

Jingwei Hou, Huaigang Cheng, Duo Wang, Xueli Gao, Congjie Gao

School of Chemistry, Ocean University of China, China

### **P6-8** Feasibility study on tartaric acid production using ion exchange resin-filled bipolar membrane electro-dialyzer

Zhagn Kai, Wang Meng, Wang Duo, Gao Cong-Jie

Ocean University of China, China

**P6-9** Comparison of reactor configurations in the catalytic palladium membrane system for direct phenol synthesis

Masayuki Ishii, Takafumi Sato, Naotsugu Itoh  
Utsunomiya University, Japan

**P6-10** Combined membrane extraction and fenton system for the separation and degradation of trichloroethylene in water

Grace M. Nisola, Eulsaeng Cho, Eliazar Vivas, Hercules R. Cascon, Wook Jin Chung  
Department of Environmental Engineering and Biotechnology, Myongji University, Korea

**P6-11** Control of nanoparticle cake structure by application of electro-acoustic fields

Yasuhito Mukai, Narimasa Shinoda, Eiji Iritani  
Department of Chemical Engineering, Nagoya University, Japan

**P6-12** Preparation and properties of silica/poly(vinyl alcohol) organic-inorganic hybrid gas barrier films via sol-gel method with microwave irradiation

Koji Kuraoka, Arifumi Hashimoto, Hiroshi Ashihara  
Graduate School of Maritime Sciences, Kobe University, Japan

**P6-13 (O7-1)** Effect of coagulant on sludge thickening using membrane filtration

Ramon Christian P. Eusebio<sup>1</sup>, Hyung-Gun Kim<sup>2</sup>, Han-Seung Kim<sup>1</sup>

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## 9. Membrane preparation and modification

### **P9-1** Preparation and properties of chitosan/gelatin/silica hybrid membrane

Yen Ling Tsai<sup>1</sup>, Jinn-Luh Ou<sup>1</sup>, Chin-Jung Lee<sup>1</sup>, Hung-Chi Liao<sup>1</sup>, Min-Yu Huang<sup>1</sup>, Ying-Ling Liu<sup>2</sup>

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### **P9-2** Preparation of ultra-fine polyimide nanofiber

Satoshi Fukushima, Hiroyoshi Kawakami

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### **P9-3** Electrical property of conductive polyimide nanofiber

Satoshi Fukushima<sup>1</sup>, Yoshiaki Suzuki<sup>2</sup>, Hiroyoshi Kawakami<sup>1</sup>

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### **P9-4** Electroactive biopolymer composite membranes

Josue F. Guzman, Hideki Miura, Haifeng Yu, Takaomi Kobayashi

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### **P9-5** Preparation and characterization of epoxy membrane

Kuo-Chung Cheng, Ching-Lin Wu, Yu-Shun Luo, C.-Y. Wang, Tsu-Hwang Chuang, Wenjeng Guo

National Taipei University of Technology, Taiwan

### **P9-6** Formation of microporous membranes of poly(1,4-butylene succinate) via nonsolvent and thermally induced phase separation

Takaaki Tanaka<sup>1</sup>, Masaki Takahashi<sup>1</sup>, Shigeko Kawaguchi<sup>1</sup>, Takeru Hashimoto<sup>1</sup>, Hiroshi Saitoh<sup>1</sup>, Tomoaki Kouya<sup>1</sup>, Masayuki Taniguchi<sup>1</sup>, Douglas R. Lloyd<sup>2</sup>

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### **P9-7** Fabrication and properties of mesoporous thin films synthesized by vapor deposition into a triblock copolymer template

Shunsuke Tanaka, Koji Kida, Yoshikazu Miyake

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### **P9-8** *In situ* investigation the formation process of EVAL membranes using an ultrasonic

through-transmission technique

Ying Cai, Jianxin Li, Yugao Guo, Yuzhong Zhang

School of Material Science and Chemical Engineering, Tianjin Polytechnic University, China

**P9-9** Study on kinetic behavior of EVAL membrane formation via immersion precipitation using an UTDR technique

Ying Cai, Jianxin Li, Yugao Guo, Yuzhong Zhang

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**P9-10** Preparation of HDPE/PE-g-PEG blend porous membrane via TIPS process

Mei Zhang, Jun-Li Shi, Chun-Fang Zhang, Bao-Ku Zhu, You-Yi Xu

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**P9-11** Preparation of hydroxyapatite filter by hydrothermal treatment

Takakuni Tanaka, Yuta Watanabe, Kento Ueno, Daisuke Kawagoe

Oyama National College of Technology, Department of Materials chemistry and Bioengineering, Japan

**P9-12** Gelation behavior with acetylation of chitosan for membrane preparation

Tomoki Takahashi<sup>1</sup>, Ai Yamada<sup>1</sup>, Atsushi Shono<sup>1</sup>, Katsuto Otake<sup>1</sup>, Masanao Imai<sup>2</sup>

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**P9-13** Formation of bicontinuous structures in porous poly (ether ether ketone) membranes via thermally induced phase separation

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**P9-14** Sensitive molecular size screening by calcium alginate membrane

Keita Kashima, Masanao Imai, Isao Suzuki

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**P9-15** Filtration characteristics of carbon nanotubes and preparation of buckypapers

Takaaki Tanaka

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**P9-16** Preparation of the ionomer based on ethylene acrylic acid copolymers(EAA) using various metal

cation

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**P9-17** Chemical resistance of a PVC flat sheet for MBR and its prediction

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**P9-18** Synthesis and characterization of chitosan-g-PEGDMA copolymer membrane

Trong-Ming Don, Chia-Chu Cheng

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**P9-19** Fabrication of hollow fiber membrane of Nylons by thermally induced phase separation method

Takahiro Ono<sup>1</sup>, Satoshi Kawanaka<sup>1</sup>, Kazuo Hirota<sup>1</sup>, Kenji Chizuka<sup>2</sup>, Rajabzadeh Saeid<sup>3</sup>, Hideto Matsuyama<sup>3</sup>

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**P9-20** Porous PLLA membranes prepared from PEG/PLLA blends under different crystallization conditions

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**P9-21** Preparation of poly(lactic acid) hollow fiber membrane via phase separation methods

Akihito Moriya, Yoshikage Ohmukai, Tatsuo Maruyama, Tomohiro Sotani, Hideto Matsuyama

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**P9-22** Preparation and characterization of high permeance polysulfone hollow fiber membranes

Mi Jin Koh<sup>1</sup>, Hae Young Hwang<sup>1</sup>, Hyung Chul Koh<sup>2</sup>, Seong Yong Ha<sup>2</sup>, Sang Yong Nam<sup>1</sup>

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**P9-23** Study on a new charged PVA membrane preparation and structure

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Engineering, China

**P9-24** Modification of porous polyethersulfone hollow fiber membrane by addition of surfactant Tetronic 1307

Nasrul Arahman<sup>1</sup>, Yoshikage Ohmukai<sup>2</sup>, Tatsuo Maruyama<sup>2</sup>, Tomohiro Sotani<sup>2</sup>, Hideto Matsuyama<sup>2</sup>

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**P9-25** Fabrication of polymer brush on polypropylene membrane surface by plasma-initiated controlled/living radical graft polymerization

Sixiao Wang<sup>1</sup>, Yuanyang Hou<sup>1</sup>, Jian Huang<sup>1</sup>, Xiaolin Wang<sup>2</sup>

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**P9-26** [Withdrawn]

**P9-27** A novel thermo-responsive and molecular-recognizable gating membrane: one gate, triple functions

Mei Yang, Rui Xie, Ji-Yun Wang, Xiao-Jie Ju, Lihua Yang, Liang-Yin Chu

School of Chemical Engineering, Sichuan University, China

**P9-28** Design and preparation of a negatively charged membrane with AND operation function in response to temperature and pH stimuli

Sayo Kamimoto, Mitsuru Higa

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**P9-29** Development of microporous membranes releasing ampicillin with the aid of detergent

Takaaki Tanaka, Masaki Takahashi, Shigeko Kawaguchi, Tomoaki Kouya, Masayuki Taniguchi

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**P9-30** Preparing chelating copolymer membrane for the fabrication of silver dendrites

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**P9-31** Impregnation of Aliquat 336 to carboxydecanyl-thiol-group-containing polymer chain grafted onto a porous sheet

Ryota Tanaka<sup>1</sup>, Ryo Ishihara<sup>1</sup>, Kazuyoshi Miyoshi<sup>1</sup>, Daisuke Umeno<sup>1</sup>, Kyoichi Saito<sup>1</sup>, Shiho Asai<sup>2</sup>,

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**P9-32** Surface graft poly(acrylic acid) film onto bamboo charcoal to improve ammonia absorption capacity

Ko-Shao Chen<sup>1</sup>, Tsui-Shan Hung<sup>1</sup>, Yuh-Shan Chang<sup>2</sup>, Wei-Yu Chen<sup>2</sup>, Su-Chen Chen<sup>3</sup>, Hon-Ru Lin<sup>4</sup>

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**P9-33** Photo-induced grafting polymerization of N-isopropylacrylamide gel onto polystyrene surface by atmospheric-pressure plasma treated

Ko-Shao Chen, Kuang-Hui Chang, Hsin-Ming Wu, Tsui-Shan Hung, Shu-Chuan Liao

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**P9-34** Improving the hydrophilicity of polymers by atmospheric plasma treatments

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**P9-35** Immobilization chitosan or chondroitin sulfate onto thermoplastic polyurethane non-woven by cold plasma treatment

Ko-Shao Chen<sup>1</sup>, Hsin-Ming Wu<sup>1</sup>, Tsui-Shan Hung<sup>1</sup>, Jung-Feng Lin<sup>1</sup>, Shu-Chuan Liao<sup>1</sup>, Chi Kuang Fen<sup>2</sup>, Hon-Ru Lin<sup>3</sup>

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**P9-36** Plasma deposition of hydrophobic films on ferrite powder for improve the corrosion resistance

Ko-Shao Chen<sup>1</sup>, Hsin-Ming Wu<sup>1</sup>, Shu-Chuan Liao<sup>1</sup>, Shu-Ju Chang<sup>1</sup>, Chang-Lin Lin<sup>1</sup>, Meng-Dan Jiang<sup>2</sup>, Cheng-Hsiung Chuang<sup>2</sup>, Su-Chen Chen<sup>3</sup>

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**P9-37** Introduction of various quaternary ammonium salts as cationic binding sites in partially-hydrolyzed poly(ethylene-co-vinyl acetate) films

Yuichi Hirata, Tomonori Kawasumi, Kunihiro Hamada

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**P9-38** Entrapment of amphiphilic molecules into the surface of polyethylene to improve the hydrophilicity

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**P9-39** Surface modification of optical fiber biosensor with cold plasma materials of HMDSZ plasma and AAc s-graft treatment to promote the SPR effect for the detection of protein BSA

Yu-Cheng Lin<sup>1</sup>, Yu-Chia Tsao<sup>2</sup>, Woo-Hu Tsai<sup>3</sup>, Ko-Shao Chen<sup>4</sup>, Min-Tzu Chao<sup>4</sup>, Shu-Chuan Liao<sup>4</sup>, Tsui-Shan Hung<sup>4</sup>

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**P9-40** Fabrication of superhydrophobic surface by PECVD using HMDSO/Ar

Chia-Hao Lo<sup>1</sup>, Vincent Rouessac<sup>2</sup>, Kueir-Rarn Lee<sup>1</sup>, Juin-Yih Lai<sup>1</sup>

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**P9-41** Synthesis of amphiphilic P(MMA-b-VP) and its modification on PVDF porous membrane formed in phase reversion process

Dong-Xu Pang, Li-Feng Fang, Hai-Bin Sun, Bao-Ku Zhu, You-Yi Xu

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**P9-42** Formation of hydrophilic PVDF/PMMA blend membrane via TIPS method using DPK and DPC as diluent

Ya-Kai Lin, Heng-Yu Ma, Yuan-Hui Tang, Wen-Zhong Ma, Ye Tian, Jian Wang, Xiao-Lin Wang

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**P9-43** Modification of the super-hydrophobic polyvinylidene fluoride membrane

Lu Xiaolong, Wu Chunrui, Lin Hanyang

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**P9-44** Preparation of (PVDF-g-PMMA)/chitosan membranes with antimicrobial property

France Noelle Villaruel, Hern Kim

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**P9-45** Preparation of porous PVDF copolymer membranes by blending-leaching method

Feng-His Huang, Liang-Chin Yao, Hsu-Hsien Chang, Liao-Ping Cheng

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**P9-46** Analysis of solidification rate of membrane in phase separation of polymer solution

Keisuke Nakatsuka, Yoshikage Ohmukai, Tatsuo Maruyama, Tomohiro Sotani, Hideto Matsuyama

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**P9-47** Formation of microporous PVDF membrane via TIPS method using diluent mixtures of GTA and DOA

Heng-Yu Ma, Ya-Kai Lin, Yuan-Hui Tang, Ye Tang, Jian Yang, Xiao-Lin Wang

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**P9-48** Formation of microporous PVDF membrane via TIPS method using diluent mixtures of DPK and PG

Yuan-Hui Tang, Ya-Kai Lin, Heng-Yu Ma, Jian Yang, Xiao-Lin Wang

State Key Laboratory of Chemical Engineering, Department of Chemical Engineering, Tsinghua University, China

**P9-49** Preparation of symmetric net-shaped PVDF membranes for protein adsorption by immersion precipitation

Qian Ye, Li Xing, Lin Zhang, Huan Lin Chen

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**P9-50** Preparation and characterization of the PVDF/PMMA hollow fiber membrane via thermally induced phase separation (TIPS) method

Saeid Rajabzadeh, Yoshikage Ohmukai, Tatsuo Maruyama, Tomohiro Sotani, Hideto Matsuyama

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**P9-51** Preparation of PVDF/PMMA/PVP blend hollow fiber membranes via TIPS process

Ryo Nikenya, Yoshikage Ohmukai, Tatsuo Maruyama, Tomohiro Sotani, Hideto Matsuyama

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**P9-52** Characterization of membranes prepared from PVDF/alkali-treated PVDF blends

Qifeng Liu, Jing Guo, Hern Kim

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**P9-53** Reduction of protein adsorption onto the surface of polyethylene-made porous hollow-fiber membrane by immobilizing carboxybetaine-group-containing polymer brush

Shinya Matsuno, Akio Iwanade, Daisuke Umeno, Kyoichi Saito

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**P9-54** Competition between mass transfer, phase separation, polymer crystallization and morphology evolution during membrane formation

Da-Ming Wang<sup>1</sup>, Yu-Shen Su<sup>1</sup>, Rong-Tsun Tsai<sup>1</sup>, Chia-Ling Li<sup>1</sup>, Chun-Ying Kuo<sup>2</sup>, Andre Deratani<sup>3</sup>, Juin-Yih Lai<sup>2</sup>

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**P9-55** Unusual crystallization behaviors of poly(4-methyl-1-pentene) from poly(4-methyl-1-pentene)/diluent mixture

Shuangjun Chen, Jun Zhang

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**P9-56** Solid-liquid phase separation of poly-4-methyl-1-pentene/diluent system via thermally induced phase separation

Haijun Tao<sup>1</sup>, Qin Xia, Jun Zhang<sup>1</sup>, Shuangjun Chen<sup>1</sup>, Xiaolin Wang<sup>2</sup>

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**P9-57** Relation between membrane performance and preparation condition in cellulose acetate hollow fiber membrane via thermally induced phase separation method

Keisuke Hiram, Yoshikage Ohmukai, Tatsuo Maruyama, Tomohiro Sotani, Hideto Matsuyama

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**P9-58** Preparation of highly stable polyelectrolyte membrane by layer-by-layer method for nanofiltration

Masaaki Imanishi, Yoshikage Ohmukai, Tatsuo Maruyama, Tomohiro Sotani, Hideto Matsuyama

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**P9-59** Development of organic-inorganic hybrid NF/RO membranes by interfacial polymerization

Akira Koshima, Masakoto Kanezashi, Tomohisa Yoshioka, Toshinori Tsuru

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**P9-60** The optimum improvement design of RO/NF membranes

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**P9-61** [Withdrawn]

**P9-62** Alkaline water electrolysis using a novel bipolar membrane as diaphragms under the ultrasonic field

Sheng-De Li<sup>1</sup>, Cheng-Chien Wang<sup>2</sup>, Chuh-Yung Chen<sup>1</sup>

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**P9-63** Relationship between ion transport properties and charge structure of poly(vinyl alcohol) based mosaic charged membranes prepared by polymer blending method

Hatsumi Maruoka, Mayumi Kobayashi, Mitsuru Higa

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**P9-64** Ionic transport properties of cation exchange membranes prepared from poly(vinyl alcohol) and poly(vinyl alcohol-co-2-acrylamido-2-methylpropane sulfonic acid)

Eriko Shimizu, Megumi Nishimura, Mitsuru Higa

Graduate School of Science and Engineering, Yamaguchi University, Japan

**P9-65** Characterization of hydrophilic hollow fiber membranes prepared from poly(vinyl alcohol)

Takehiro Sugimoto, Kakuya Toyota, Mitsuru Higa

Graduate School of Science and Engineer, Yamaguchi University, Japan

**P9-66** Evaluation of performance of ion-exchange membranes for salt production prepared by radiation-induced graft polymerization

Yuki Asari

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**P9-67** Electrodialytic transport properties of cation exchange membranes prepared from poly(vinyl alcohol) and poly(vinyl alcohol-co-2-acrylamido-2-methylpropane sulfonic acid)

Megumi Nishimura, Mitsuru Higa

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**P9-68** Preparation and characterization of charge mosaic membranes prepared from laminated structure of PVA based charged layers

Atsushi Jikihara<sup>1</sup>, Ken-ichi Kobayash<sup>2</sup>, Naoki Fujiwara<sup>2</sup>, Mayumi Kobayashi<sup>1</sup>, Mitsuru Higa<sup>1</sup>

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**P9-69** Preparation of composite cation-exchange membranes using negatively charged inorganic material

Ryotaro Kiyono, Yoshihiro Izawa, Hiroki Hasegawa

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**P9-70** Properties of VOC membrane sensor prepared by dispersing carbon nano fiber into poly(dimethylsiloxane)

Ryotaro Kiyono, Takatoshi Sato, Yukito Aoyama

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**P9-71** Effect of UV/ozone treatment on gas separation performance of poly(dimethylsiloxane) membrane

Chien Chieh Hu<sup>1</sup>, H. C. Chiu<sup>2</sup>, K. R. Lee<sup>2</sup>, J. Y. Lai<sup>2</sup>

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**P9-72** Development of hybrid gel membrane coated on porous alumina substrates

Akihiro Ichimiya, Takahiro Masuda, Naofumi Naga, Mikihiro Nomura

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**P9-73** Photocatalytic activity of electrospun PVDF/TiO<sub>2</sub> membrane: application on ethylene gas reduction

Dale John Satur, Hern Kim

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**P9-74** Study on structure and performance of PVDF/TiO<sub>2</sub> hybrid membrane

Duo Wang<sup>1</sup>, Haifeng Jiang<sup>2</sup>, Yuxin Ma<sup>2</sup>, Congjie Gao<sup>1</sup>

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**P9-75** Synthesis of compact ZSM-5 type zeolite membrane for hexane isomers separation

Ken-ichi Sawamura, Kiyotoshi Kawasaki, Shintaro Daikohara, Keisuke Sato, Yasushi Sekine, Eiichi Kikuchi, Masahiko Matsukata

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**P9-76** Hybrid molecular imprinted membranes for selective separation of bisphenol derivatives

Le Trung Son, Kaori Katagawa, Haifeng Yu, Takaomi Kobayashi

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**P9-77** Polymer-nanoinorganic particles composite membranes: a brief overview

Zhen Liang Xu, Li Yun Yu, Ling Feng Han

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**P9-78** Fabrication of high refractive TiO<sub>2</sub>/PMMA hybrid films from titania nanoparticles formed in polymer micelle

Shuhei Yamada, Emiko Mouri, Kohji Yoshinaga

Kyushu Institute of Technology, Japan

**P9-79** The effect of nano-filler on thermal and mechanical properties of polyurethane membrane

Chih-Wei Chou<sup>1</sup>, Hong-Ru Lin<sup>2</sup>, Te-Hsing Wu<sup>3</sup>

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**P9-80** Preparation of silica hybrid membranes for high temperature gas separation

Mikihiro Nomura, Keita Monma, Yoshio Negishi, Emi Matsuyama

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**P9-81** Separation of benzene/cyclohexane mixture with supported liquid membranes using ionic liquids

Baoguo Wang, Zhaorong Zeng, Letu Qingge, Li Ding, Yong Peng

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**P9-82** Fundamental investigation on control of porous structure of cross-linked polymelamine microcapsule membrane

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**P9-83** Fabrication of microcapsules with gaseous and aqueous cores by using microcapsules with controllable holey membrane

Eiji Kamio<sup>1</sup>, Ryota Watanabe<sup>1</sup>, Satoshi Yonemura<sup>2</sup>, Tsutomu Ono<sup>2</sup>, Hidekazu Yoshizawa<sup>2</sup>, Tatsuo Maruyama<sup>1</sup>, Hideto Matsuyama<sup>1</sup>

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**P9-84** Microfluidic preparation of monodisperse ethyl cellulose hollow microcapsules with non-toxic solvent

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**P9-85** Monodisperse microcapsules with calcium alginate membrane and oil core fabricated using a microfluidic device

Ping-Wei Ren, Xiao-Jie Ju, Rui Xie, Lihua Yang, Liang-Yin Chu  
School of Chemical Engineering, Sichuan University, China

**P9-86** Preparation of Ag nano-particles using SPG membrane emulsification technique

Kazuki Akamatsu, Emiri Kakazu, Takuya Murakami, Takashi Sugawara, Ryuji Kikuchi, Shin-ichi Nakao  
Department of Chemical System Engineering, The University of Tokyo, Japan

**P9-87** Formation of mono-particle layer of polymer-grafted polystyrene latexes at air/water and oil/water interfaces

Kohji Yoshinaga, Emiko Mouri, Hayami Sakamori  
Kyushu Institute of Technology, Japan

**P9-88** Preparation of hydrogen separation membranes using disiloxane compounds

Hye Ryeon Lee, Masakoto Kanazashi, Tomohisa Yoshioka, Toshinori Tsuru  
Department of Chemical Engineering, Hiroshima University, Japan

**P9-89** Preparation of PVDF porous microcapsule membranes for portable hydrogen production

Hyuck-Chul Kang, Yingbo Chen, Hern Kim  
Department of Environmental Engineering and Biotechnology, Myongji University, Korea

**P9-90** Hydrogen separation membrane encapsulating Pd nanoparticles in a mesoporous silica layer

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**P9-91** Recovery of carbon dioxide using mixed of absorbents with asymmetric polytetrafluoroethylene flat-membrane

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**P9-92** Dendrimer immobilized hydrogel membrane for the separation of carbon dioxide

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**P9-93** Scale-up of pervaporation for gasoline desulphurization by membrane separation technology

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**P9-94** Pervaporation properties of asymmetric aminated polysulfone membrane for dehydration of water/Ethanol mixtures

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**P9-95** Pervaporation separation of ethanol/water mixtures using ethanol-selective polyurethane membranes

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**P9-96** [Withdrawn]

**P9-97** [Withdrawn]

**P9-98** Preparation of superoxide dismutase LIPOzyme in the hollow fiber membrane

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**P9-99 (O6-3)** Characterisation of functionalised gold nanotube membranes for molecular separations

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**P9-100** [Withdrawn]

**P9-101 (O10-2)** Preparation of porous PVDF membrane via thermally induced phase separation with diluent mixture of TBC and DEHP

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**P9-102 (O10-3)** Effect of the nonsolvency of coagulation on the micro- and nano-scale structure of PVDF membranes

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