

A) Thermodynamics

[Oral Session] (Day 3: Friday, 17th November, 8:20–12:40) @ Room II

Session Organizer:

Hyeyoung SHIN (Chungnam Nat'l Univ.)

Takeshi FURUYA (AIST)

Session Chair:

Minkyu KIM (Yeungnam Univ.)

Hiroyuki MATSUDA (Nihon Univ.)

Yuya HIRAGA (Tohoku Univ.)

AO-01 Keynote Lecture	8:20–9:00 Distillation integration and intensification: A road forward sustainable chemical separation processes <u>Moonyong LEE</u> (Yeungnam U.)
AO-02	9:00–9:20 Excess molar enthalpies of the binary systems carbon dioxide + renewable solvent at 298.15–308.15 K and 5.0–7.5 MPa <u>Hiroyuki MATSUDA*</u> , Daiki NAKAYAMA, Shunsuke YANARI, Kiyofumi KURIHARA, Katsumi TOCHIGI (Nihon U.)
AO-03	9:20–9:40 Modeling of melting point depression under high-pressure CO ₂ through molecular information <u>Yuna TATSUMI</u> , Yasuhiko ORITA, Yusuke SHIMOYAMA* (Tokyo Tech.)
AO-04	9:40–10:00 Prediction of temperature-dependent vapor pressure of organic compounds using machine learning <u>Beom Chan RYU</u> , Sun Yoo HWANG, Jeong Won KANG* (Korea U.)
AO-05	10:00–10:20 Enhancing solar absorbance, reversibility, and photo-to-thermal energy conversion capability of CaO/CaCO ₃ composite for solar energy storage <u>Soyoung NOH</u> , Dasol CHOI, Youngjune PARK* (GIST)
Coffee Break 10:20–10:40	
AO-06 Keynote Lecture	10:40–11:20 Design for green chemistry from the perspective of measurement and modeling of fundamental physical properties <u>Yuya HIRAGA*</u> (Tohoku U.)

AO-07	<p>11:20–11:40</p> <p>Molecular informatics and solvation thermodynamics into Peng-Robinson equation of state on solubility prediction for supercritical CO₂ system</p> <p><u>Yusuke SHIMOYAMA*</u>, Yuna TATSUMI, Yasuhiko ORITA (Tokyo Tech.)</p>
AO-08	<p>11:40–12:00</p> <p>Imidazolium-based ionic liquids as both hydrate inhibitors and corrosion inhibitors: Is their hydrophobicity an important factor?</p> <p><u>Soyeong YUN</u>, Du-Won MIN, Dongyoung LEE, Sung Soo PARK, Yongwon SEO* (UNIST)</p>
AO-09	<p>12:00–12:20</p> <p>CO₂ absorption properties of ionic liquid mixture for membrane direct air capture</p> <p>Yu KANASAKI, Tatsuya FUJII, Yuki KOHNO, <u>Takashi MAKINO*</u> (AIST)</p>
AO-10	<p>12:20–12:40</p> <p>Investigating the behavior of amine speciation on the heat of CO₂ absorption in the blend of aminoethylethanolamine and diisopropanolamine</p> <p><u>Shaukat ALI*</u>, Jong-Ho MOON, Jin-Young CHA, Sijan DEVKOTA (Chungbuk National U.)</p>

A) Thermodynamics

[Poster Session] (Day 2: Thursday, 16th November, 14:30–17:20) @ Foyer

Session Organizer:

Hyeyoung SHIN (Chungnam Nat'l Univ.)

Takeshi FURUYA (AIST)

Session Chair:

Minkyu KIM (Yeungnam Univ.)

Hiroyuki MATSUDA (Nihon Univ.)

Yuya HIRAGA (Tohoku Univ.)

AP-01	Molecular thermodynamic modeling of complex systems and its application in chemical separation processes <u>Gangqiang YU*</u> (BJUT, Tohoku U.)
AP-02	Evaluation of vapor-liquid and liquid-liquid equilibria using simplified Wilson and T-K Wilson equations <u>Katsumi TOCHIGI*</u> , Hiroyuki MATSUDA (Nihon U.), Katsumi YOKOYAMA (PreFEED Corp.), Kiyofumi KURIHARA (Nihon U.)
AP-03	Selection of entrainer for separation of binary azeotropic mixture methanol + cyclopentyl methyl ether by extractive distillation <u>Kaito TAKATA</u> , Hiroyuki MATSUDA*, Kiyofumi KURIHARA, Katsumi TOCHIGI (Nihon U.)
AP-04	A computational screening study to identify optimal solvents for HBM-water separation <u>Songhyun KIM</u> , Yongjin LEE* (Inha U.)
AP-05	A computational screening study to develop ultra-high-performance aramid copolymers <u>Hyeonsuk YOO</u> , Ruth M. MUTHOKA, Yongjin LEE* (Inha U.)
AP-06	Density, viscosity, glass transition temperature of imidazolium-based mixed ionic liquids <u>Mana TOYOKAWA</u> , Chiaki YOKOYAMA, Daisuke KODAMA* (Nihon U.)
AP-07	Computational chemistry study on the diffusion of sodium ions in boron oxide materials for solid-state electrolytes in batteries <u>Sid Ahmed HAMMOUDI</u> , Masaya MIYAGAWA, Hiromitsu TAKABA* (Kogakuin U.)
AP-08	Technique for estimating hybrid nanoparticle molecular weight via analytical centrifugation <u>Yukina TAKAMURA</u> , Masaki OTA*, Richard Lee SMITH, Masaru WATANABE, Hiroshi INOMATA (Tohoku U.)

AP-09	Solubility parameter estimation of organic-inorganic hybrid nanoparticles via partition coefficients correlated with a proposed pKD-nano model <u>Yuta AKIWA</u> , Masaki OTA*, Masaru WATANABE, Hiroshi INOMATA, Richard Lee SMITH (Tohoku U.), Hiroyuki MATSUDA (Nihon U.)
AP-10	Multi-phase flow system study for mixed N ₂ + CO ₂ gas separation and pipeline transport <u>Jiyu PARK</u> , Seungmin LEE* (KITECH)
AP-11	Molecular dynamics simulations for the phase equilibria between ethylene carbonate and CO ₂ for recycling the lithium-ion battery electrolytes <u>Bomin KIM</u> , Tae Jun YOON* (Chungnam National U.)
AP-12	Prediction of surfactant-free microemulsion formation conditions using Kirkwood-Buff theory <u>Seungmin SEO</u> , Dongho YOO, Tae Jun YOON* (Chungnam National U.)
AP-13	Phase equilibrium conditions in cyclopentane clathrate hydrate forming systems coexisting with sodium chloride aqueous solutions <u>Toshikazu SASAKI</u> , Keitatsu KAMOCHI, Ayushman TRIPATHI, Masanao TAOKA (U. Ryukyus), Ryo OHMURA, Keita YASUDA* (Keio U.)
AP-14	Eutectic conditions of carbon dioxide clathrate hydrate and sodium chloride dihydrate for desalination and salt production <u>Hideya SUZUKI</u> , Akari GIBO, Seiya NAKAO (U. Ryukyus), Ryo OHMURA, Keita YASUDA* (Keio U.)
AP-15	The phase equilibrium conditions and crystal structure of hydrates formed in 1-methylpiperidine system <u>Kohei YAMAMOTO</u> , Takuma MISAWA, Haruki ITO (Keio U.), Satoshi TAKEYA (AIST), Saman ALAVI (U. Ottawa), Ryo OHMURA* (Keio U.)
AP-16	Influence of NaCl·2H ₂ O crystal and help gas on self-preservation phenomena in sll hydrate <u>Wonjung CHOI</u> * (Changwon National U.), Junghoon MOK (Colorado School of Mines), Yongwon SEO (UNIST)
AP-17	Treatment of high salinity water utilizing hydrate-based desalination (HBD): Experimental and computational approaches <u>SeongJu MUN</u> , Sungwoo KIM (UNIST), Junghoon MOK (UNIST, Colorado School of Mines), Woojin GO, Yongwon SEO* (UNIST)
AP-18	CO ₂ capture/storage through gas hydrate formation and carbon mineralization <u>Minseo PARK</u> , Jonghyuk LEE, Yongwon SEO* (UNIST)

AP-19	Encapsulation of 2,3,3,3-tetrafluoropropene (HFO-1234yf) within structure II hydrate in the presence of CO ₂ <u>Hyungee JANG (UNIST)</u> , Junghoon MOK (UNIST, Colorado School of Mines), Sungwoo KIM, Junkyu LIM, Yongwon Seo* (UNIST)
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B) Crystallization / Precipitation

[Oral Session] (Day 3: Friday, 17th November, 8:20–12:20) @ Room III

Session Organizer:

Kouji MAEDA (University of Hyogo)

Bum Jun PARK (Kyung Hee university)

Session Chair:

Masakazu MATSUMOTO (Nihon university)

Tomomichi HINO (Mitsubishi Chemical Co.)

Yun-Ho AHN (Soongsil University)

BO-01	8:20–8:40 Production of Ag nanowires with high yield and narrow size distribution through promoted nucleation by hot injection <u>Lin Lin FENG</u> , Jin Hyuck HEO, Jin Kyoung PARK, Sang Hyuk IM* (Korea University)
BO-02	8:40–9:00 Prediction of purity of phycocyanin in ammonium sulfate fractions of extracts from Spirulina <u>Takanori HIDANE</u> *, Mikihide DEMURA, Shintaro MORISADA, Keisuke OHTO, Hidetaka KAWAKITA (Saga University)
BO-03	9:00–9:20 Atomically dispersed hollow CNT-CoFe-NC electrocatalyst using spray pyrolysis with improved stability and activity for oxygen reduction reaction in acidic media <u>Sion OH</u> , Kyungmin IM, Minsoo KIM, Jinsoo KIM* (Kyung Hee University)
BO-04	9:20–9:40 Reactive crystallization of monodisperse benzoic acid crystals in the presence of polymer additives <u>Takashi MIKAMI</u> * (Niigata University)
BO-05 Invited Lecture	9:40–10:20 A framework incorporating thermodynamic and kinetic data for design of a suspension melt crystallization process <u>Jeong Won KANG</u> *, Tae Hyun KIM (Korea University)
Coffee Break 10:20–10:40	
BO-06	10:40–11:00 Effect of glycolipids on Lysozyme crystallization <u>Toshinori SHIMANOUCHI</u> *, Shunya UTSUMI, Yukitaka KIMURA (Okayama University)

BO-07	<p>11:00–11:20</p> <p>Intellectually-controlled synthesis of desired hybrid perovskite quantum dots based on a universal closed-loop feedback control algorithm in a continuous flow chemistry platform</p> <p><u>Thi Thuy Huong NGUYEN</u>, Van Dan NGUYEN, Hiep Van NGUYEN, Vu Minh PHAN, Tae Seok SEO* (Kyung Hee University)</p>
BO-08	<p>11:20–11:40</p> <p>Relative density of carbon dioxide clathrate hydrate and sodium chloride aqueous solution: Implications for desalination processes</p> <p><u>Shun TSUNEKAWA</u>, Akari GIBO, Toshiyuki TANAKA, Sayaka SHIRAISHI, Ryo OHMURA, Keita YASUDA* (University of the Ryukyus)</p>
BO-09	<p>11:40–12:00</p> <p>Experimental and molecular simulation approach on the morphology of material “A”</p> <p><u>Sokyun HONG</u> (Hanyang University) Seon Hwa BAEK, Sang Kyu KWAK, Jeong Won KANG* (Korea University)</p>
BO-10	<p>12:00–12:20</p> <p>Relationship between crystal size and purity in continuous evaporative crystallization of NaCl</p> <p><u>Kouji MAEDA*</u>, Koji ARAFUNE, Kenji IIMURA, Hiroshi SATONE, Kazuhiro ITOH (University of Hyogo)</p>

B) Crystallization / Precipitation

[Poster Session] (Day 2: Thursday, 16th November, 14:30–17:20) @ Foyer

Session Organizer:

Kouji MAEDA (University of Hyogo)

Bum Jun PARK (Kyung Hee university)

Session Chair:

Masakazu MATSUMOTO (Nihon university)

Tomomichi HINO (Mitsubishi Chemical Co.)

Yun-Ho AHN (Soongsil University)

BP-01	Synthesis of phase-pure Cs ₄ PbX ₆ perovskite nanocrystals using hydrogen halide-mediated stoichiometric reaction <u>Jin Kyoung PARK</u> , Jin Hyuck HEO, Sang Hyuk IM* (Korea University)
BP-02	Modeling and simulation of combined preferential crystallization and enzymatic processes <u>Hitomi MATSUDA</u> , Koichi IGARASHI* (Osaka Metropolitan University)
BP-03	Theoretical exploration of silver nanocrystallization through multiscale simulations Immanuel KRISTANTO (Korea University), Woo Cheol JEON (Northwestern University), Ju Hyun PARK (Samsung SDI), <u>Sang Kyu KWAK</u> * (Korea University)
BP-04	The emulsion crystallization of glycine using various kinds of surfactants <u>Issei OMURA</u> (Osaka Metropolitan University), Hiroshi OOSHIMA, Hideo NODA (Kansai Chemical Engineering), Koichi IGARASHI* (Osaka Metropolitan University)
BP-05	Crystallization of two active pharmaceutical ingredients in situ using polymers Namcheol LEE, Juhee LIM, <u>Jonghwi LEE</u> * (Chung-Ang University)
BP-06	The effects of design and manipulated variables under high shear field on the characteristics of MnCO ₃ crystals in tubular type crystallizer <u>Mako HOSOKAWA</u> , Shuntaro AMARI, Hiroshi TAKIYAMA* (Tokyo University of Agriculture and Technology)
BP-07	Drug composites prepared via reverse drowning-out crystallization in the presence of a polymer Namcheol LEE, <u>Jonghwi LEE</u> * (Chung-Ang University)
BP-08	Development of a new preparing method for seed crystals to control polymorphism <u>Chihiro TSUCHIYA</u> , Shuntaro AMARI, Hiroshi TAKIYAMA* (Tokyo University of Agriculture and Technology)
BP-09	Polymer-mediated composite crystallization of dual active pharmaceutical ingredients Juhee LIM, <u>Jonghwi LEE</u> * (Chung-Ang University)

BP-10	How do characteristics of crystal particles affect the initiation of scale formation in suspended-type crystallization? <u>Shoji KUDO*</u> (Chiba Institute of Technology)
BP-11	Evaluation of solid-liquid separation performance of hydrate-based desalination process in concentrated brine treatment <u>Minhee PARK</u> , Seong Deok SEO, Ju Dong LEE*, Kyung Chan KANG* (KITECH)
BP-12	Enhanced $\text{CaMg}(\text{CO}_3)_2$ production by $\text{CO}_2/\text{O}_2/\text{N}_2$ fine bubble injection into concentrated brine discharged from salt manufacturing process <u>Yusei SHIRAIISHI</u> , Yoshinari WADA, Mai NAKAZATO, Shinnosuke KAMEI (Nihon University), Koji MASAOKA (The Salt Industry Center of Japan), Masakazu MATSUMOTO* (Nihon University)
BP-13	(withdrawn)
BP-14	Sonochemical synthesis of dolomite from removed-K bittern and its high value-added for material applications <u>Shinnosuke KAMEI*</u> (Nihon University), Koji MASAOKA (The Salt Industry Center of Japan), Shigeki FURUKAWA, Masakazu MATSUMOTO (Nihon University)
BP-15	Titanium MOF-derived titanium oxide-carbon hybrid supports with enhanced activity and durability for proton exchange membrane fuel cell <u>Sion OH</u> , Jinsoo KIM* (Kyung Hee university), Eungjun LEE (KIST)
BP-16	Fundamental study on carbon dioxide fixation in Japanese salt production process: Economic viability of calcium carbonate crystallization using calcium ions from seawater <u>Satoru NAKAHARA</u> , Kiyomi NAKAJIMA, Hayato MINEO, Koji MASAOKA* (The Salt Industry Center of Japan)
BP-17	Microfluidic control of emulsion volume on the spontaneous chiral symmetry breaking in sodium chlorate crystals <u>Jiye JANG</u> , Woo-Sik KIM, Bum Jun PARK* (Kyung Hee University)
BP-18	Methods for reducing calcium impurities in magnesium hydroxide obtained from bittern discharged from salt factory <u>Hayato MINEO*</u> , Tomohiko KARUBE, Koji MASAOKA (The Salt Industry Center of Japan)
BP-19	Spontaneous chiral symmetry breaking in sodium chlorate crystallization through controlled solution volumes <u>Bo Young YOON</u> , Su Yeon BAK, Woo-Sik KIM, Bum Jun PARK* (Kyung Hee University)
BP-20	Synthesis of benzoic acid co-crystals by reactive crystallization <u>Keita SATO</u> , Takashi MIKAMI* (Niigata University)

BP-21	Numerical evaluation of hydraulic pressure influence on self-assembled PDA particles in a microchannel <u>Jiye JANG</u> , Narges AHMADI, Bum Jun PARK* (Kyung Hee University)
BP-22	Amyloid phase in the interfacial crystallization using phospholipids and polymers <u>Toshinori SHIMANOUCI</u> *, Masahiro UEDA (Okayama University)
BP-23	Fabrication and evaluation of highly stable amorphous polymer-drug composite particles via a nozzle-free ultrasonic nebulizer <u>Bo Young YOON</u> , Jieun LEE, Woo-Sik KIM, Bum Jun PARK* (Kyung Hee University)
BP-24	Development of rechargeable air-zinc battery under high-pressure Tomoki MAIHARA, <u>Kouji MAEDA</u> *, Kenji IIMURA, Koji ARAFUNE (University of Hyogo)
BP-25	Innovative high-throughput synthesis of gold nanomaterials using centrifugal microfluidics <u>Hiep Van NGUYEN</u> , Vu Minh PHAN, Thi Thuy Huong NGUYEN, Van Dan NGUYEN, Tae Seok SEO* (Kyung Hee University)
BP-26	Elucidation of polymorphic transition of a new polymorph of theophylline by supercritical carbon dioxide treatments <u>Sena OKINO</u> , Hirohisa UCHIDA* (Kanazawa University)
BP-27	Measuring solubility for determining solid-liquid phase equilibrium in organic mixtures <u>Si Yeon JUNG</u> , Tae Hyun KIM, Chae Hyun BAE, Jeong Won KANG* (Korea University)

C) Distillation / Absorption / Adsorption

[Oral Session] (Day 3: Friday, 17th November, 8:20–12:40) @ Room I

Session Organizer:

Youn-Sang BAE (Yonsei University)

Tatsuya OSHIMA (Univ. of Miyazaki)

Keigo MATSUDA (Nagoya Univ.)

Session Chair:

Kiwon EUM (Soongsil University)

Kaoru OHE (Univ. of Miyazaki)

Masakazu SASAKI (TEC)

CO-01	8:20–8:40 Energy savings in isopropyl alcohol production by heat integration using pinch technique <u>Uidong JIN</u> , Junwoo SHIN, Nguyen Nhu NGA, Raisa Aulia HANIFAH, Moonyong LEE* (Yeungnam University)
CO-02	8:40–9:00 Simulation-oriented optimization design of separation process for recovery of raw material used in diethyl carbonate synthesis <u>Thuy NGUYEN*</u> , Wahyu S. PUTRO, Norihisa FUKAYA, Satoshi TANIGUCHI, Takehiro YAMAOKI (AIST)
CO-03	9:00–9:20 Effective entrainer selection through thermodynamic criteria under varying pressure conditions <u>Seon Hwa BAEK</u> , Kang Jeong WON* (Korea university), Won Wook SEO (Sogang University)
CO-04	9:20–9:40 Lab-scale experiment of amine-based CO ₂ capture technology with a pressure swing process by using unused LNG cold energy <u>Lijuan ZHANG</u> , Yusuke UEHARA, Khuyen Viet Bao TRAN, Hiroshi MACHIDA, Koyo NORINAGA* (Nagoya University)
CO-05	9:40–10:00 Techno-economic performance assessment of advanced waste-heat recovery modules for improving energy efficiency of chemical absorption-based CO ₂ capture process: a case study in iron and steel mills <u>Zhiwei ZHANG</u> , Chang-Ha LEE* (Yonsei University)

CO-06	10:00–10:20 Modeling CO ₂ adsorption via mineralization and selective precipitation for integrating carbon capture and glass manufacturing <u>Benjamin Hall CAUDLE</u> , Thuy NGUYEN, Sho KATAOKA* (AIST)
Coffee Break 10:20–10:40	
CO-07	10:40–11:00 Low-temperature CO ₂ sorption on eutectic mixture-promoted magnesium oxide: promoting effect of electric field and electrophoresis <u>Monica Louise TRIVINO</u> , Jeong Gil SEO* (Hanyang University), Yasushi SEKINE (Waseda University)
CO-08	11:00–11:20 , Promoting the CO ₂ capture performance in the mesostructured cellular silica foam supported polyamines by ether groups <u>Quyen Thi VU</u> , Katsunori YOGO* (RITE)
CO-09	11:20–11:40 Tailoring frustrated Lewis pairs sites on the surface for low-concentration CO ₂ capture and activation for direct air capture and utilization <u>Muhammad TAYYAB</u> , Chang-Ha LEE* (Yonsei University)
CO-10	11:40–12:00 Connected CSTRs of adsorption and photo-Fenton reaction for decomposition of 1,4-dioxane in polyester wastewater <u>Hidetaka KAWAKITA</u> *, Shoki FURUNO, Shintato MORISADA, Keisuke OHTO (Saga University)
CO-11	12:00–12:20 Enhancement of low-temperature NO _x storage and reduction performance using Cu-loaded lean-NO _x trap catalysts <u>Hyunwook KIM</u> , Lee Ki BONG* (Korea University)
CO-12	12:20–12:40 Organocation dependency of adsorption site in organoclay revealed by molecular simulation <u>Masaya MIYAGAWA</u> , Kiwako OSHIRO, Keigo TOZAKI, Hiromitsu TAKABA* (Kogakuin University)

C) Distillation / Absorption / Adsorption

[Poster Session] (Day 2: Thursday, 16th November, 13:00–17:20)

13:00–15:00 Flash Presentation @ Room IV

15:20–17:20 Poster Session @ Foyer

Session Organizer:

Youn-Sang BAE (Yonsei University)

Tatsuya OSHIMA (Univ. of Miyazaki)

Keigo MATSUDA (Nagoya Univ.)

Session Chair:

Kiwon EUM (Soongsil University)

Kaoru OHE (Univ. of Miyazaki)

Masakazu SASAKI (TEC)

CP-01	Techno-economic assessment of alternative process designs for producing electronic grade propylene glycol monomethyl ether acetate <u>Junwoo SHIN</u> , Uidong JIN, Nguyen Nhu NGA, Raisa Aulia HANIFAH, and Moonyong LEE* (Yeungnam University)
CP-02	Energy savings in IPA production: a comparative study of conventional and Kaibel distillation columns <u>Nga Nhu NGUYEN</u> , Raisa Aulia HANIFAH, Junwoo SHIN, Uidong JIN, Moonyong LEE* (Yeungnam University)
CP-03	Dehydration of isopropyl alcohol via dividing wall heterogeneous azeotropic distillation column <u>Raisa Aulia HANIFAH</u> , Nga Nhu NGUYEN, Uidong JIN, Junwoo SHIN, Moonyong LEE* (Yeungnam University)
CP-04	DNN-based optimization of cryogenic distillation process for CO ₂ capture from SMR-PSA tail gas <u>Younghyu KO</u> , Chang-Ha LEE* (Yonsei University)
CP-05	Measurement of isobaric vapor-liquid equilibria and pressure dependences of azeotropic data of alcohol with 2,2,4-trimethylpentane systems <u>Toshiyuki SATO*</u> , Norihiro SASAKI, Mayuko HIDAKA, Masaki OKADA, Toshihiko HIAKI (Nihon University)
CP-06	Decision-making implications of wash columns in chemical absorption-based CO ₂ capture process and process scale-up: A case study in iron and steel mills <u>Zhiwei ZHANG</u> , Chang-Ha LEE* (Yonsei University)

CP-07	Modeling and uncertainty quantification of CO ₂ absorption process using phase separation solvent <u>Sota YUYAMA*</u> , Hiroshi MACHIDA, Tomoyuki YAJIMA, Yoshiaki KAWAJIRI (Nagoya University)
CP-08	Novel diamine-based biphasic solvent for energy efficient CO ₂ capture <u>Shuai WANG</u> , Jong Kyun YOU, Yeon Ki HONG* (Korea National University of Transportation)
CP-09	Absorption characteristics of water-lean solvent of MAPA-NMP for carbon dioxide capture Shuai WANG, <u>Jeong Hyeon HONG</u> , Yeon Ki HONG*, (Korea National University of Transportation), Jung Kyun YOU (Korea Institute of Energy Research)
CP-10	Study of CO ₂ absorption and regeneration energy by coal power, natural gas, cement, and steel industries using shortcut methods <u>Jin-Young CHA</u> , Sijan DEVKOTA, Shaikat Ali MAZARI, Jong-Ho MOON* (Chungbuk National University)
CP-11	Development of a device for degradation using a combination of ultrasonic atomization and UV irradiation Hinano WATANABE, Ayame KAWASHIMA, <u>Daisuke KOBAYASHI*</u> (Tokyo Denki University)
CP-12	Development and verification of a headspace-gas chromatography system for CO ₂ solubility measurement in CO ₂ capture <u>Khuyen Viet Bao TRAN</u> , Keiichi YANASE, Thuppati Rao UPENDER, Mikiro HIRAYAMA, Koyo NORINAGA, Hiroshi MACHIDA* (Nagoya University)
CP-13	Evaluation of fixed-bed adsorption/desorption behavior of CO ₂ onto supported amine adsorbent <u>Saika OKAMURA*</u> , Kazuhiro MOCHIDZUKI, Nao TSUNOJI, Takayuki ICHIKAWA (Hiroshima University) Hiroyuki TAKEI, Yuichiro ITO (Taiyo Nippon Sanso Corporation)
CP-14	Static and kinetic CO ₂ adsorption performance of GME-type zeolite <u>Yuto HIGUCHI</u> , Chihiro YASUDA, Shunsuke TANAKA* (Kansai University)
CP-15	Role of novel adsorbents for removal of Lead(II) from aqueous water bodies – A comprehensive review <u>Amna ANJUM*</u> (Dawood University of Engineering and Technology)
CP-16	Characterization of KOH-Activated porous carbon adsorbents derived from poly vinyl chloride and their CH ₄ adsorption behaviors <u>Uyen Phuong DO</u> , Hyeon Ook KIM, Jae Hyun PARK, Chan Hyun LEE* (University of Ulsan)

CP-17	Design of a hybrid adsorption-membrane processes for CO ₂ separation using machine learning <u>Yota FUJII</u> * (Yamagata University), Keigo MATSUDA (Nagoya University)
CP-18	Development of nitrogen compound recovery systems by using bioreactor and separator <u>Ryuta SASAKI</u> *, Keigo MATSUDA (Nagoya University) Yota FUJII (Yamagata University)
CP-19	Selective adsorption of heavy metals by layered double hydroxides intercalated with anionic chelating compounds <u>Tatsuya NISHIDA</u> , Kaoru OHE*, Tatsuya OSHIMA (University of Miyazaki)
CP-20	Enhanced sulfide photo-oxidation on C ₃ N ₄ /ZrO ₂ heterostructure: influence of surface area and surface chemisorption activity <u>Muhammad TAYYAB</u> , Chang-Ha LEE* (Yonsei University)
CP-21	Novel TSA configurations for NH ₃ removal from NH ₃ cracking gas : Performance comparison and DNN-based optimization <u>Jae Hun CHANG</u> , Dat-Nguyen VO, Chang-Ha LEE* (Yonsei University)
CP-22	Fabrication of Metal-Organic Framework (MOF) adsorbents and their application for Xe/Kr separation <u>YuJeong SHIN</u> , Kim JINSOO* (Kyung Hee University)
CP-23	In-silico discovery of metal-organic frameworks for highly selective radon capture and experimental validation Wanje PARK, Kwang-Hyun OH, <u>Seung-Jin LEE</u> , Seo-Yul KIM, Youn-Sang BAE* (Yonsei University)
CP-24	Adsorption behavior of Cadmium(II) by layered double hydroxides intercalated with sulfur-containing amino acids <u>Keita HORIE</u> , Kaoru OHE*, Tatsuya OSHIMA (University of Miyazaki)
CP-25	Study on the vapor-phase post-synthetic control of defects in UIO-66 and the altered physical and chemical properties <u>Taehwan KIM</u> , Kiwon EUM* (Soongsil University)
CP-26	ZSM-5 zeolites-based nitrogen-selective adsorbents for reducing Li usage and water vapor adsorption <u>Hyunwook KIM</u> , Ki Bong LEE* (Korea University)
CP-27	Techno-economic and environmental investigation of hydrogen production through ammonia <u>Sijan DEVKOTA</u> , Jin Young CHA, Shaukat Ali MAZARI, Jong-Ho MOON* (Chungbuk National University)

CP-28	Effect of particle size on adsorption kinetics of Li(I) using λ -MnO ₂ granulated adsorbents <u>Yudai KADOGAWA</u> , Tatsuya OSHIMA*, Kaoru OHE (University of Miyazaki), Kazuharu YOSHIZUKA (University of Kitakyushu)
CP-29	Adsorption performance of Zr-based metal-organic frameworks for water treatment <u>Ayu TSUKADA</u> , Hiroki KONNO* (Toho University)
CP-30	Amino-functionalized UiO-66 for removal of perfluorinated compounds from aqueous solution <u>Azuki ONO</u> , Ayu TSUKADA, Hiroki KONNO* (Toho University)
CP-31	Cu/MgO/Al ₂ O ₃ catalyst by cation–anion double hydrolysis (CADH) for low-temperature water gas shift (LTWGS) reaction <u>Zakia Akter SONIA</u> , Ji Hye PARK, Wathone OO, Kim Dong MYUNG, Kwang Bok YI* (Chungnam National University)
CP-32	Study of CO adsorption properties of Cu ⁺ -doped-boron-carbon-nitrogen-based composites for effective trace CO capture <u>Kwang Bok YI*</u> , May Zaw WIN, Ji Hye PARK, Wathone OO, Dong Myung KIM (Chungnam National University)
CP-33	Investigating the impact of SnO ₂ impregnation on the adsorption capacity of carbon monoxide by Cu ⁺ based C-coated N-doped alumina adsorbent <u>Ji Hye PARK</u> , Wathone OO, May Zaw WIN, Dong Myung KIM Kwang Bok YI*, (Chungnam National University)
CP-34	Feasibility study of PFOS adsorption technology using magnesium oxide with high surface area <u>Taiyo NABATA</u> , Hiroki KONNO*, (Toho University)
CP-35	A comparative examination of the adsorption and desorption characteristics of ammonia on diverse porous materials <u>Lapasov SHOKHJAKHON</u> , Dilshod UGLI, Ji Hye PARK, Zakia Akter SONIA, Kim Dong MYUNG, Kwang Bok YI* (Chungnam National University)
CP-36	Enhanced photo-thermal desorption by varying carbon black concentration in silica aerogels for direct air capture <u>Taishi KATAOKA</u> , Yasuhiko ORITA, Yusuke SHIMOYAMA* (Tokyo Institute of Technology)
CP-37	Development of mass-transfer-enhanced CaO pellets for CO ₂ capture Hyung Jin YOON, <u>Jong-nam KIM</u> , Hee-tae BEUM, Moeun HWANG, Ji-chan PARK, Jong-ho PARK* (Korea Institute of Energy Research)

CP-38	Recover of PGMs from nuclear waste with porous ceramics adsorbent <u>Minako IWAKUMA</u> *, Takuma TERADA (National Institute of Technology, Miyakonojo College) Toshiyuki KOKUBU (Metal Techno Co., Ltd), Tatsuya SUZUKI (Nagaoka University of Technology)
CP-39	Adsorption of semimetals by chelating resins with amino and hydroxyl groups <u>Kaoru OHE</u> *, Shotaro TSUDA, Miku FURUKAWA, Tatsuya OSHIMA (University of Miyazaki)
CP-40	(withdrawn)
CP-41	Selective adsorption of Au(III) from acidic aqueous solutions by nylon nanofibers <u>Tomoki MURASE</u> , Yasuhito MUKAI* (Nagoya University)

D) Membrane Separation / Fluid-solid Separation

[Oral Session] (Day 2: Thursday, 16th November, 13:00–17:15) @ Room I

Session Organizer:

Tae-Hyun BAE (KAIST)
Keizo NAKAGAWA (Kobe Univ.)
Daisuke SAEKI (Shinshu Univ.)

Session Chair:

Keizo NAKAGAWA (Kobe Univ.)
Daisuke SAEKI (Shinshu Univ.)

DO-01 Keynote Lecture	13:00–13:20 Charged mosaic membrane prepared by screen printing method using poly(vinyl alcohol) based polycation and polyanion Minato HIGA, Yuriko KAKIHANA, <u>Mitsuru HIGA*</u> (Yamaguchi Univ.)
DO-02	13:20–13:35 Development of efficient hydrogen production technology through a liquid organic hydrogen carrier-based membrane reactor <u>Chang Seob KIM</u> , Jeong Won KANG* (Korea Univ.)
DO-03	13:35–13:50 Ultrahigh-water permeable polyamide nanofiltration membranes fabricated via deesterification of cleavable diamine <u>Daisuke SAEKI*</u> , Hiroyuki TSUCHIDA (Shinshu Univ.), Takahiro KAWAKATSU, Yu FUJIMURA (Kurita Water Industries), Yukihisa OKUMURA (Shinshu Univ.)
DO-04	13:50–14:05 Enhanced H ₂ /CO ₂ selectivity of graphene oxide nanoribbon membrane via polymer hybridization <u>Hyungjoon JI</u> , Dae Woo KIM* (Yonsei Univ.)
DO-05	14:05–14:20 Nanosheet-based photocatalytic membrane reactor with two-dimensional heterostructured nanochannels for efficient water treatment <u>Keizo NAKAGAWA*</u> , Seiji IMOTO (Kobe Univ.), Chechia HU (National Taiwan University of Science and Technology), Tomohisa YOSHIOKA, Atsushi MATSUOKA, Eiji KAMIO, Takashi TACHIKAWA (Kobe Univ.), Shik Chi Edman TSANG (Univ. Oxford), Hideto MATSUYAMA (Kobe Univ.)
Coffee Break 14:20–14:30	

Session Chair:

Mikihiro NOMURA (Shibaura Institute of Technology)

Tae-Hyun BAE (KAIST)

DO-06 Keynote Lecture	14:30–14:50 Hollow fiber membrane contactor system for direct CO ₂ mineralization using seawater desalination brine <u>Tae-Hyun BAE*</u> (KAIST)
DO-07	14:50–15:05 CO ₂ capture by amine-containing polymeric membranes <u>Ikuo TANIGUCHI*</u> (Kyoto Institute of Technology)
DO-08	15:05–15:20 Distributor type membrane reactor for CO ₂ utilization <u>Mikihiro NOMURA*</u> , Yuya SATO, Daiki YANAI, Hiroto TSUYUKI, Itsuki ITO (Shibaura Institute of Technology)
DO-09	15:20–15:35 Impacts of metal-organic frameworks on the performance of thin-film composite membrane <u>Miso KANG</u> , Jong Hak KIM* (Yonsei University)
DO-10	15:35–15:50 Evaluation of oxygen permeation properties through bridged-type organosilica membranes at extremely low temperatures <u>Masakoto KANEZASHI*</u> , Ryouhei IZUMI, Norihiro MORIYAMA, Kazutoshi ISHIZAKI, Hiroki NAGASAWA, Toshinori TSURU (Hiroshima Univ.)
Coffee Break 15:50–16:00	

Session Chair:

Kazuho NAKAMURA (Yokohama National Univ.)

Dae Woo KIM (Yonsei Univ.)

DO-11	16:00–16:15 Effect of Al distribution in ZSM-5 membrane on its permeation property <u>Motomu SAKAI*</u> , Takumi KONDO, Masahiko MATSUKATA (Waseda Univ.)
DO-12	16:15–16:30 Synthesis of amine-functionalized two-dimensional ZIF-8 and its application as mixed matrix membrane fillers for CO ₂ /N ₂ separation <u>Sung Kuk JEONG</u> , Semin LIM (Kyung Hee Univ.), Jeong Yun JEONG, Hyuk Taek KWON (Pukyong National Univ.), Jinsoo KIM* (Kyung Hee Univ.)

DO-13	16:30–16:45 Batch and continuous thickening of aqueous slurries by applying DC electric field <u>Takamasa MORI*</u> , Fuki KOIKE, Kenta KITAMURA (Hosei Univ.)
DO-14	16:45–17:00 Unveiling the role of lithiophilic functionality over heteroatom-doped graphene separators in Li dendrite mitigation <u>Beom Gwon SON</u> , YongJun CHO, Eun Seon CHO* (KAIST)
DO-15	17:00–17:15 Thickening of nanoparticle slurry using DC electric field and its application to positive osmosis process <u>Kenta KITAMURA*</u> , Takamasa MORI (Hosei Univ.)

D) Membrane Separation / Fluid-solid Separation

[Poster Session] (Day 3: Friday, 17th November, 9:50–12:40) @ Foyer

Session Organizer:

Tae-Hyun BAE (KAIST)
Keizo NAKAGAWA (Kobe Univ.)
Daisuke SAEKI (Shinshu Univ.)

Session Chair:

Daisuke SAEKI (Shinshu Univ.)
Kiwon EUM (Soongsil Univ.)

DP-01	Effect of porous support on CO ₂ transport of a thin-film composite membrane <u>Sakura MITANI</u> , Ikuo TANIGUCHI (Kyoto Inst. Tech.)
DP-02	A study on designing hydrogen separation membrane and hydrogen permeability experiments using metal alloy properties <u>Minyeong KO</u> , Jaeyeong HWANG, Sung Woo HAN, Sieun KIM, Jung Hoon PARK* (Dongguk Univ.)
DP-03	Metal–organic framework nanosheet membranes for highly permeable CO ₂ separation <u>Zilun GUO</u> , Yuka KIMURA (Kansai Univ.), Keizo NAKAGAWA (Kobe Univ.), Shunsuke TANAKA* (Kansai Univ.)
DP-04	Enhancing the interfacial stability between polyamide-imide polymer and ZIF-8 filler for improved hydrogen separation performance <u>Jihee YU</u> , Jongbum KIM, Kiwon EUM, Yun-Ho AHN* (Soongsil Univ.)
DP-05	Effect of OCL/Ti ratio of TiO ₂ -SiO ₂ -OCL (Organic Chelating Ligand) composite membrane on hydrogen permselective performance <u>Takaya FUJIKI</u> , Tomohisa YOSHIOKA*, Keizo NAKAGAWA, Tooru KITAGAWA, Yasunao OKAMOTO, Atsushi MATSUOKA, Eiji KAMIO, Hideto MATSUYAMA (Kobe Univ.)
DP-06	Investigation of the physical and permeation characteristics from the addition of MFI nanosheets in MMMs <u>Wooyoung CHOI</u> , Seonmi EOM, Daewoo KIM* (Yonsei Univ.)
DP-07	Tailoring the microporous properties of organic-inorganic hybrid silica membranes for CO ₂ separation <u>Ikram RANA</u> , Norihori MORIYAMA, Hiroki NAGASAWA, Toshinori TSURU, Masakoto KANEZASHI* (Hiroshima Univ.)

DP-08	Improving the performance of hydrogen separation membranes on α -Al ₂ O ₃ hollow fiber supports through surface roughness enhancement <u>Sung Woo HAN</u> , Min Yeoun KO, Xuelong ZHUANG, Jung Hoon PARK* (Dongguk Univ.)
DP-09	High permselectivity through silica membranes by using 2 steps deposition method <u>Myuwako ITO</u> , Naoki SAKURA, Daisuke IWAKIRI, Megumi IRIE, Mikihiro NOMURA* (Shibaura Inst. Tech.)
DP-10	Enhancing gas separation performance with irregular micron-sized UTSA-16 and a comb copolymer matrix <u>Bomi KIM</u> , Jong Hak KIM* (Yonsei Univ.)
DP-11	Gas permeation properties of porous TiO ₂ -Al ₂ O ₃ -double organic chelating ligand (bi-OCL) composite hydrogen separation membranes <u>Taira SAWADA</u> , Tomohisa YOSHIOKA*, Keizo NAKAGAWA, Tooru KITAGAWA, Yasunao OKAMOTO, Atsushi MATSUOKA, Eiji KAMIO, Hideto MATSUYAMA (Kobe Univ.), Masahiro MIZUNO, Naoyuki FUKUI (Daicel Corp.)
DP-12	Influence of polymer types on nanosheets orientation in mixed-matrix membranes for CO ₂ /N ₂ separation <u>Hyejin KIM</u> , Sung Kuk JEONG, Semin LIM, Jinsoo KIM* (Kyung Hee Univ.)
DP-13	Modeling complex geometry of an ammonia decomposition catalytic membrane reactor in 2D for an ammonia <u>Sean-Thomas B. LUNDIN</u> * (AIST), William J. MOVICK (Univ. Tokyo), Ayumi IKEDA, Yasuhisa HASEGAWA (AIST)
DP-14	Morphology and surface chemistry tailored ZIF-8 for highly selective mixed matrix membranes <u>Nahyeon LEE</u> , Jongbum KIM, Jihee YU, Yun-Ho AHN, Eum KIWON* (Soongsil Univ.)
DP-15	Improvement of hydrogen permeance through CVD derived silica membranes <u>Megumi IRIE</u> , Naoki SAKURA, Myuwako ITO, Daisuke IWAKIRI, Mikihiro NOMURA* (Shibaura Inst. Tech.)
DP-16	Development of photocatalytic air-purifying filter by N-doped TiO ₂ coated ceramic hollow fiber membrane <u>Jae Yeon HWANG</u> , Min Yeoun KO, Sung Woo HAN, Sieun KIM, Jung Hoon PARK* (Dongguk Univ.)
DP-17	Membrane separation of air ultrafine bubbles in ultrapure water <u>Erika OMATA</u> , Koichi TERASAKA*, Satoko FUJIOKA (Keio Univ.)
DP-18	Effects of salts on permeation through MOR zeolite membranes <u>Yuta KURIBAYASHI</u> , Haruki KURATA, Masahide MATSUOKA, Irmariza Shafitri CARALIN, Mikihiro NOMURA* (Shibaura Inst. Tech.)

DP-19	Fabrication and power generation performance evaluation of reverse electro dialysis stack with novel 3D structured ion exchange membranes <u>Manato TANAKA</u> , Yu SUGIMOTO, Mitsuru HIGA* (Yamaguchi Univ.)
DP-20	Recovery of metal ions from spent lithium ion batteries (LIBs) by graphene oxide nanoribbons/polymer hybrid membranes <u>Jong Hyup LEE</u> , Dae Woo KIM* (Yonsei Univ.)
DP-21	Separation of soluble compounds of lignin by process of connected membrane modules <u>Taiki MATSUOKA</u> , Shintaro MORISADA, Keisuke OHTO, Hidetaka KAWAKITA* (Saga Univ.)
DP-22	Enhanced oil-in-water emulsion separation using nanofibrous membrane coalescers <u>Yunpeng YUE</u> , Yasuhito MUKAI* (Nagoya Univ.)
DP-23	Fabrication of laminar graphene oxide membrane with polyketone hollow fiber support and organic solvent nanofiltration <u>Haruka MONGUCHI</u> , Keizo NAKAGAWA*, Tooru KITAGAWA, Yasunao OKAOTO, Eiji KAMIO, Hideto MATSUYAMA, Tomohisa YOSHIOKA (Kobe Univ.)
DP-24	Post-treated large-area nanoporous multilayer graphene membrane for ultrafast organic solvent nanofiltration <u>Jiwon KIM</u> , Dae Woo KIM* (Yonsei Univ.)
DP-25	(withdrawn)
DP-26	Separation and concentration of ¹³⁷ Cs in river water for on-site analysis using solid-phase extraction disk <u>Taiga KASEDA</u> , Toru TAKAHASHI, Yuya KOIKE* (Meiji Univ.)
DP-27	Improved photocatalytic activity of g-C ₃ N ₄ /HNb ₃ O ₈ nanosheet-based photocatalytic membrane by addition of graphene oxide <u>Kana MORIGUCHI</u> , Keizo NAKAGAWA*, Chechia HU, Takashi TACHIKAWA, Hideto MATSUYAMA, Tomohisa YOSHIOKA, Tooru KITAGAWA, Yasunao OKAMOTO, Atsushi MATSUOKA, Eiji KAMIO (Kobe Univ.), S.C.E. TSANG (Univ. Oxford)
DP-28	Engineering polyimide membranes for enduring organic solvent nanofiltration in high pH conditions <u>Giyoung PARK</u> , Tae Hyun BAE* (KAIST)
DP-29	Water penetration to skin layer of RO membranes by mesoscale simulation <u>Ren TAKASUGI</u> , Masaya MIYAGAWA, Hiromitsu TAKABA* (Kogakuin Univ.)
DP-30	Developing fouling monitoring techniques for membrane bioreactor operation <u>Gagandeep KAUR</u> , Kazuho NAKAMURA*, Kentaro OGAWA, Kenji WAKUI (Yokohama Nat. Univ.)

DP-31	Transport properties of charged mosaic membranes prepared from laminated structure of poly(vinyl alcohol)-based charged layers <u>Yuriko KAKIHANA</u> , Minato HIGA, Mitsuru HIGA* (Yamaguchi Univ.)
DP-32	Enhanced potassium ion recovery from citric acid wastewater by γ -Al ₂ O ₃ film-coated porous α -Al ₂ O ₃ hollow fiber membrane <u>Dae Hyun LIM</u> , Jae Hoon YEO, Seong Wook MUN, Xuelong ZHUANG, Jung Hoon PARK* (Dongguk Univ.)
DP-33	Development of high performance reverse osmosis membrane <u>Shinya MITSUI</u> *, Takafumi OGAWA, Hiroki MINEHARA, Shinichi MINEGISHI (Toray Industries)
DP-34	Vapor permeation and pervaporation properties of ionic liquid containing silsesquioxane membranes Masaya MICHIWAKI (Nagoya Inst. Tech.), Ayumi IKEDA (AIST), Sadao ARAKI (Kansai Univ.), <u>Yuichiro HIROTA</u> * (Nagoya Inst. Tech.)
DP-35	Dehydration properties of disrupted sludge after ultrasonication and salt addition process <u>Juya AZADI</u> , Nobuyuki KATAGIRI* (Meijo Univ.)
DP-36	Gravity separation of minerals in sediments sampled at the Tama River watershed for crystal phase analysis <u>Hibiki SHIRATA</u> , Masahiro ONUKI (Meiji Univ.), Miki KASARI, Wataru MATSUDA, Atsuishi OHBUCHI (Rigaku Corp.), Yuya KOIKE* (Meiji Univ.)

E) Extraction / Supercritical Fluid Technology

[Oral Session] (Day 2: Thursday, 16th November, 13:00–17:20) @ Room II

Session Organizer:

Jaehoon KIM (Sungkyunkwan Univ.)

Hidetaka KAWAKITA (Saga Univ.)

Session Chair:

Hongshik LEE (Korea Institute of Industrial Technology)

Tae Jun YOON (Chungnam National Univ.)

Hidetaka KAWAKITA (Saga Univ.)

Seiichiro YOSHIDA (Hokkaido Res. Org.)

Chair: Hidetaka KAWAKITA (Saga Univ.)

EO-01	13:00–13:20 Extraction of high-quality rice bran oil with CO ₂ -expanded liquids <u>Mathayo Gervas MATHIAS</u> , Idzumi OKAJIMA*, Chang Yi KONG, Takeshi SAKO (Shizuoka University)
EO-02	13:20–13:40 Liquefied dimethyl ether used for direct extraction of lipids, β -carotene, and antioxidants from highly wet alga <i>Dunaliella salina</i> without prior drying treatment <u>Li ZHU</u> , Kaito KUSUMI, Bo XU, Tao WANG, Hideki KANDA* (Nagoya University)
EO-03	13:40–14:00 Composition design of deep eutectic solvents (DESs) for extraction of phytochemicals from natural resources <u>Seiichiro YOSHIDA*</u> , Yuta OGAWA, Hisaki KONDOH, Keiichiro MATSUSHIMA (Hokkaido Research Organization), Tomoyuki SATO (Hokkaido University), Hirotaka TAJIMA, Yuki KASAI (Hokkaido Wine)
EO-04	14:00–14:20 Extraction of intracellular bioactive compounds from wet <i>Haematococcus pluvialis</i> using liquefied dimethyl ether-based technology <u>Aye Aye MYINT</u> , Sabrina WULANDARI, Jongho CHOI, Jaehoon KIM* (Sungkyunkwan University)

Chair: Hongshik LEE (Korea Institute of Industrial Technology)

EO-05	14:20–14:40 Conversion of waste oil to biofuel-range hydrocarbons with sub-/supercritical water without using catalyst <u>Jongho CHOI</u> , Aye Aye MYINT, Jaehoon KIM* (Sungkyunkwan University)
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EO-06	14:40–15:00 Synthesis of biocompatible ionic liquid for metal extraction <u>Ainul MAGHFIRAH</u> , Adroit Thoriq Nur FAJAR, Masahiro GOTO* (Kyushu University)
EO-07	15:00–15:20 Production of stealth liposomes using high pressure carbon dioxide and direct ultrasonication <u>Tanjina SHARMIN</u> , Katsuki GOTO, Mayu MATSUMOTO, Mikio OUCHI, Kenji MISHIMA* (Fukuoka University)

Chair: Seiichiro YOSHIDA (Hokkaido Res. Org.)

EO-08	15:20–15:40 CO ₂ -expanded hexane extraction of rice bran oil using semi-flow bench plant <u>Takeshi SAKO*</u> , Idzumi OKAJIMA, Le Thi Thien LY, Chang Yi KONG (Shizuoka University)
EO-09	15:40–16:00 Subcritical water extraction for enhancing extraction of bioactive compounds from red ginseng marc <u>Ruqian CAO</u> , Aye Aye MYINT, Jaehoon KIM* (Sungkyunkwan University)
EO-10	16:00–16:20 Astaxanthin/ β -cyclodextrin microparticles synthesis using supercritical antisolvent (SAS) process <u>Sabrina WULANDARI</u> , Aye Aye MYINT, Jaehoon KIM* (Sungkyunkwan University)

Chair: Tae Jun YOON (Chungnam National Univ.)

EO-11	16:20–16:40 Solvent effect and potential of hydrogen donor in mucic acid deoxidehydration to adipic acid ester <u>Rizky Gilang KURNIAWAN</u> , Jaehoon KIM* (Sungkyunkwan University)
EO-12	16:40–17:00 Battery recycling technology using supercritical fluid process <u>Won-Wook SEO</u> , Joon-Hyuk YIM (Sogang University), Jae-won LEE (Dankook University)
EO-13	17:00–17:20 Efficient washing and drying technology of nanoparticles using high-pressure CO ₂ for practical applications <u>Yasuhiko ORITA</u> , Kai IKEDA, Yusuke SHIMOYAMA* (Tokyo Institute of Technology)

E) Extraction / Supercritical Fluid Technology

[Poster Session] (Day 3: Friday, 17th November, 9:50–12:40) @ Foyer

Session Organizer:

Jaehoon KIM (Sungkyunkwan Univ.)

Hidetaka KAWAKITA (Saga Univ.)

Session Chair:

Hongshik LEE (Korea Institute of Industrial Technology)

Tae Jun YOON (Chungnam National Univ.)

Hidetaka KAWAKITA (Saga Univ.)

Seiichiro YOSHIDA (Hokkaido Res. Org.)

EP-01	Impacts of polymer flocculants on lipid extraction from <i>Chlorella sorokiniana</i> with liquefied dimethyl ether <u>Kaito KUSUMI</u> , Tao WANG, Li ZHU, Xu BO (Nagoya University), Akiho YONEZAWA, Ryosuke HOMMA (Kyoto University), Tetsuya YAMAMOTO (Nagoya University), Kenji SHIOTA, Masaki TAKAOKA, Kazuyuki OSHITA (Kyoto University), Hideki KANDA* (Nagoya University)
EP-02	Formation of β -carotene nanoparticles using supercritical carbon dioxide antisolvent assisted by liquefied dimethyl ether <u>Li MEI</u> , Tao WANG, Li ZHU, Tetsuya YAMAMOTO, Hideki KANDA* (Nagoya University)
EP-03	Effects of co-solvent on supercritical carbon dioxide extraction from natural materials <u>Seung Eun LEE</u> , Ji Sun LIM, Hong-shik LEE* (Korea Institute of Industrial Technology)
EP-04	Novel recycling process for platinum group metals from automotive catalyst using hydrophobic deep eutectic solvent <u>Mayu KAMISONO</u> , Takafumi HANADA, Masahiro GOTO* (Kyushu University)
EP-05	Pressure control effect on supercritical carbon dioxide extraction of caffeine from coffee beans and its numerical model analysis <u>Chinatsu YOSHIDA</u> , Yuya HIRAGA, Atsushi KISHITA, Masaru WATANABE* (Tohoku University)
EP-06	Sustainable LIB cathode recycling through non-aqueous leaching with amide-type extractant <u>Takejiro MATSUJI</u> , Takafumi HANADA, Masahiro GOTO* (Kyushu University)
EP-07	Recovery of bio-oil and bioactive compounds from spent coffee grounds by liquefied dimethyl ether <u>Ruqian CAO</u> , Aye Aye MYINT, Jaehoon KIM* (Sungkyunkwan University)

EP-08	A study on decaffeination process using supercritical carbon dioxide extraction method to minimize flavor loss <u>Ji Sun LIM</u> , Seung Eun LEE, Hong-shik LEE* (Korea Institute of Industrial Technology)
EP-09	Extraction of sunflower oil using compressed carbon dioxide Idzumi OKAJIMA*, <u>Takeshi SAKO</u> , Yusuke AOKI, Haruka SANNO, Chang Yi KONG (Shizuoka University)
EP-10	Separation analysis of heavy metals in municipal solid waste incineration fly ash by several extraction method <u>Rina SEKINO</u> (Meiji University), Wataru MATSUDA, Atsushi OHBUCHI (Rigaku Corporation), Yuya KOIKE* (Meiji University)
EP-11	Investigation of elution suppression mechanism of heavy metals in geopolymer solidified materials prepared from municipal solid waste fly ash mixed with soil using sequential extraction method <u>Hidetaka ITO</u> , Yuki UMEZAWA (Meiji University), Atsushi OHBUCHI (Rigaku Corporation), Narihito OGAWA, Yuya KOIKE* (Meiji University)
EP-12	Environmentally friendly leaching of rare metals for a low grade nickel ore <u>Hayate SATO</u> , Mayu KAMISONO, Masahiro GOTO* (Kyushu University)
EP-13	Synthesis of cored and hollow polymer particles using subcritical water-assisted emulsification <u>Toshinori SHIMANOUCI</u> *, Daichi HIROTA, Yoshihiro BANDO (Okayama University), Kazuma YASUHARA (Nara Institute of Science and Technology), Yukitaka KIMURA (Okayama University)
EP-14	Removal of volatile organic compounds (VOC) from recycled polypropylene (PP) by using supercritical CO ₂ <u>Sabrina WULANDARI</u> , Jae Ryeong JEONG, Aye Aye MYINT (Sungkyunkwan University), DaeSung JUNG (Hyundai Motor Group), Jaehoon KIM* (Sungkyunkwan University)
EP-15	Extraction of ginseng oil from red ginseng marc (RGM) using liquified dimethyl ether (DME) <u>Sabrina WULANDARI</u> , Aye Aye MYINT, Jaehoon KIM* (Sungkyunkwan University)
EP-16	Development of predictive dimensionless solubility model (pDS II) for solubility of solid compounds in supercritical fluids <u>Kei SATO</u> , Masaki OTA*, Masaru WATANABE, Richard Lee SMITH (Tohoku University)
EP-17	Modeling of β -carotene elution profiles in supercritical fluid chromatography with equilibrium-stage theory <u>Masato URABE</u> , Masaki OTA*, Richard Lee SMITH, Masaru WATANABE (Tohoku University)

EP-18	Drying-free co-extraction of fucoxanthin, antioxidants and lipids from the hydrous diatom <i>Chaetoceros simplex</i> var. <i>calcitrans</i> with liquefied dimethyl ether <u>Tao WANG</u> , Kaito KUSUMI, Bo XU, Li ZHU, Hideki KANDA* (Nagoya University),
EP-19	Development of a machine learning program to find suitable solvent for Au(III) extraction <u>Tatsuya OSHIMA*</u> , Yuhi IWAKIRI, Asuka INADA, Kaoru OHE (University of Miyazaki)
EP-20	High-concentrated synthesis of surface modified iron oxide nanoparticles using supercritical CO ₂ <u>Aoi MURANOSONO</u> , Taishi FURUYA, Yasuhiko ORITA, Yusuke SHIMOYAMA* (Tokyo Institute of Technology)
EP-21	Highly selective separation of Sc(III) with deep eutectic solvent (DES) and quantitative evaluation of extraction mechanism <u>Sora USHIZAKI*</u> , Shintaro KANEMARU, Yoshinari BABA, Kazuhiro SUGAMOTO (University of Miyazaki)
EP-22	Effects of operation parameters on the microparticles production of caffeine by supercritical assisted atomization with spray-drying (SAA-SD) <u>Shunnosuke GOTO</u> , Hiroki MATSUOKA, Hirohisa UCHIDA* (Kanazawa University)
EP-23	Deposition of Ph-BTBT-10 thin films on self-assembled monolayers modified SiO ₂ /Si substrates by rapid expansion of supercritical solutions (RESS) using CO ₂ <u>Masaya MUKAI</u> , Hirohisa UCHIDA* (Kanazawa University)
EP-24	Mechanochemical extraction of lithium from cathodes in spent lithium-ion batteries <u>Haesung JUNG*</u> (Changwon National University)
EP-25	Drop coalescence in drop layer observed in emulsion-flow column Susumu NII*, Miki Makishima, Zhang Ming, <u>Mikiro Hirayama</u> , Takashi Goshima, Kei Mizuta (Kagoshima University)

F) New Separation Process & Materials

[Oral Session] (Day 2: Thursday, 16th November, 13:00–17:20) @ Room III

Session Organizer:

Hiroshi UMAKOSHI (Osaka Univ.)

Youngjune PARK (GIST)

Session Chair:

Toshinori SHIMANOUCI (Okayama Univ.)

Yukwon JEON (Yonsei Univ.)

FO-01	13:00–13:20 Crystal morphology and growth in D ₂ O+HFC-134a clathrate hydrate for tritiated water separation <u>Leo KAMIYA</u> , Ryo OHMURA* (Keio Univ.)
FO-02	13:20–13:40 Covalent-organic frameworks nanosheets with superior ion exchange capacity through post-synthetic modification <u>Nam Ho KWON</u> , Eun Seon CHO* (KAIST)
FO-03	13:40–14:00 Quantitative Surface Modification Approach for Controlling the Nanoparticle Solubility in Less-Polar Solvents <u>Keishi SUGA</u> *, Shota SAMPEI, Taketo MOCHIZUKI, Kanako WATANABE, Tom A. J. WELLING, Daisuke NAGAO (Tohoku Univ.)
FO-04	14:00–14:20 Preparation and characterization of biodegradable sponge-like cryogel particles of chitosan via the inverse Liesegang (ILF) effect <u>Endang COPTAWATI</u> (Osaka Univ./ State Univ. Malang), Hayato TAKASE (Kagoshima Univ.), Nozomi M. WATANABE, Yukihiko OKAMOTO (Osaka Univ.), Hadi NUR (State Univ. Malang), Hiroshi UMAKOSHI* (Osaka Univ.)
FO-05	14:20–14:40 Continuous preparation of vesicles using microcapillary flow system <u>Toshinori SHIMANOUCI</u> *, Yuta. SANO, Kazuki TORAMOTO, Yui KOMORI (Okayama Univ.), Keita HAYASHI (National Inst. Tech., Nara College), Kazuma YASUHARA (National Inst. Tech.), Ho-Sup JUNG (Seoul Nat. Univ.), Yukitaka KIMURA (Okayama Univ.)
FO-06	14:40–15:00 Theoretical prediction of selective CO adsorption enhancement through functional group engineering on activated carbon (AC) with CuCl cluster Ji Eun LEE, Kyung Min LEE, Jin Chul KIM (UNIST), Seunggeon NOH, Ki Bong LEE, <u>Sang Kyu KWAK</u> * (Korea Univ.)

Coffee Break 15:00–15:20	
FO-07	15:20–15:40 Development of novel non-aqueous absorbent for efficient CO ₂ capture <u>Firoz Alam CHOWDHURY*</u> (RITE)
FO-08	15:40–16:00 Synthesis of bimetallic metal organic frameworks using microwave technique for enhanced CO ₂ capture <u>Sanjit GAIKWAD</u> , Sangil HAN* (Changwon National Univ.)
FO-09	16:00–16:20 Renewed measurements of carbon dioxide hydrate phase equilibrium <u>Haruki ITO</u> , Ryo OHMURA* (Keio Univ.)
FO-10	16:20–16:40 Efficient CO oxidation catalysis using separable noble metal-Ni nanoparticle on perovskite support <u>Heesu KIM</u> , Seulgi KIM (Yonsei Univ.), Chanmin LEE (KITECH), Yukwon JEON* (Yonsei Univ.)
FO-11	16:40–17:00 Cobalt doped tungsten-based double perovskite for electrolysis separation <u>Kyeongwon HAN</u> , Jeongeun SONG, Yukwon JEON* (Yonsei Univ.)
FO-12	17:00–17:20 Significance of perovskite pretreatment conditions on the structure and activity of LaSrMnTiO ₃ perovskite in oxidation reactions <u>Rasika Bharat MANE</u> , HeeSu KIM, Kyeongwon HAN, Hyungjin KIM, Seulgi KIM, Yukwon JEON* (Yonsei Univ.)

F) New Separation Process & Materials

[Poster Session] (Day 3: Friday, 17th November, 9:50–12:40) @ Foyer

Session Organizer:

Hiroshi UMAKOSHI (Osaka Univ.)

Youngjune PARK (GIST)

Session Chair:

Toshinori SHIMANOUCI (Okayama Univ.)

Yukwon JEON (Yonsei Univ.)

FP-01	Separation of dissolved air in ethanol as ultrafine bubbles by poor-solvating with high-speed shaking <u>Hitomi HIRASE</u> , Koichi TERASAKA, Satoko FUJIOKA (Keio Univ.)
FP-02	Adsorptive separation of ribonucleic acid using mesoporous silica nanoparticles <u>Daiki OBA</u> , Keishi SUGA, Kanako WATANABE, Daisuke NAGAO (Tohoku Univ.)
FP-03	Hollow-type mesoporous silica particles for removal of organic dyes from aqueous solution <u>Hana AIZAWA</u> , Shin SAITO, Hikaru NAMIGATA, Kanako WATANABE, Keishi SUGA, Daisuke NAGAO (Tohoku Univ.)
FP-04	Influence of ball milling parameter on the structure and activity of perovskite in dry reforming of methane <u>Seulgi KIM</u> , Heesu KIM, Yukwon JEON* (Yonsei Univ.)
FP-05	Designed novel-transition metal on perovskite for oxygen evolution reaction <u>Jeongeun SONG</u> , Kyeongwon HAN, Yukwon JEON* (Yonsei Univ.)
FP-06	Liposomes combined with metal-supported catalyst for synthesis of lactic acid <u>Toshinori SHIMANOUCI</u> , Yuki TAKAHASHI (Okayama Univ.), Yukitaka KIMURA (Okayama Univ.)
FP-07	Preserving the hydrogen uptake activity of Mg nanocrystals under low-purity hydrogen condition through reduced graphene oxide encapsulation <u>Changmin KIM</u> , Eun Seon CHO* (KAIST)
FP-08	Unveiling the potential of Zn–Co bimetallic zeolitic imidazolate frameworks: Highly sensitive and chemically stable nonenzymatic electrochemical glucose sensor Kijun KIM, <u>Jungsub KIM</u> , Youn-Sang BAE* (Yonsei Univ.)
FP-09	Effect of micromixing pattern on hydrothermal vesiculation <u>Ryunosuke TAKAHASHI</u> , Toshinori SHIMANOUCI, Yukitaka KIMURA (Okayama Univ.)

FP-10	Analyze interaction between cationic lipid and oligonucleotide with lipid immobilized column: an HPLC approach <u>Junghu LEE</u> (Osaka Univ.), Noriko YOSHIMOTO (Yamaguchi Univ.), Hayato TAKASE (Kagoshima Univ.), Nozomi WATANABE, Yukihiro OKAMOTO, Hiroshi UMAKOSHI (Osaka Univ.)
FP-11	Design of lipid membrane coated cryogel particles with shape-memory function for separation Hayato TAKASE (Kagoshima Univ.), Nozomi WATANABE (Osaka Univ.), Koichiro SHIOMORI (Miyazaki Univ.), Endang CIPTAWATI (Osaka Univ.), Hideki MATSUNE (Miyazaki Univ.), Masahiro YOSHIDA (Kagoshima Univ.), <u>Hiroshi UMAKOSHI</u> (Osaka Univ.)
FP-12	Cu(II) extraction properties of core-shell type polystyrene microcapsules containing phenolic oxime extractant prepared from S/O/W emulsion by solvent evaporation and volatile solvent exchange methods <u>Koichiro SHIOMORI</u> , Fuma OGURA (Miyazaki Univ.), Shiro KIYOYAMA (Nat'l. Inst. Tech., Miyakonojo College), Hayato TAKASE, Takayuki TAKEI, Masahiro YOSHIDA (Kagoshima Univ.)
FP-13	Disclosing interior structure of nanostructured lipid carriers: Relation of core-shell structure to lipid composition Ni'matul IZZA, Nozomi WATANABE, Yukihiro OKAMOTO (Osaka Univ.), Yusuf WIBISONO (Univ. Brawijaya), <u>Hiroshi UMAKOSHI</u> (Osaka Univ.)
FP-14	A facile preparation of core-shell particles with thick mesoporous silica shells towards high performance liquid chromatography <u>Ryuto FUJINUMA</u> , Kanako WATANABE, Keishi SUGA, Daisuke NAGAO (Tohoku Univ.)
FP-15	Extraction of CO ₂ from the surrounding atmosphere through a direct air capture method with an electrochemical adsorption setup <u>Hyungjin KIM</u> , Jin Hui JO, Joo-Il PARK, Won Seok CHI, Yukwon JEON* (Yonsei Univ.)
FP-16	Oxygen reduction activity of non-stoichiometric structured transition metal doped perovskite <u>Hyeonji PARK</u> , Hyungjin KIM, Yukwon JEON* (Yonsei Univ.)
FP-17	Novel melamine-functionalized carbonyl-based porous organic polymer for efficient CO ₂ capture Seenu RAVI, Yujin CHOI, <u>Jungsub KIM</u> , Youn-Sang BAE* (Yonsei Univ.)
FP-18	Novel non-metal amine-functionalized triazine-based porous organic polymers for efficient CO ₂ capture and conversion Seenu RAVI, <u>Seung-Jin LEE</u> , Yujin CHOI, Hyug-Hee HAN, Youn-Sang BAE* (Yonsei Univ.)