

1. Refereed Journal Articles

- 1) Guanying Dong, Hiroki Nagasawa, Liang Yu, Meng Guo, Masakoto Kanezashi, Tomohisa Yoshioka, Toshinori Tsuru, Energy-efficient separation of organic liquids using organosilica membranes via a reverse osmosis route, *Journal of Membrane Science*, accepted. doi: 10.1016/j.memsci.2019.117758.
- 2) Qing Wang, Yuta Kawano, Liang Yu, Hiroki Nagasawa, Masakoto Kanezashi, Toshinori Tsuru, Development of high-performance SiC-based membranes derived from polytitanocarbosilane, *Journal of Membrane Science*, accepted. doi: 10.1016/j.memsci.2019.117688.
- 3) Xiuxiu Ren, Masakoto Kanezashi, Hiroki Nagasawa, Rong Xu, Jing Zhong, Toshinori Tsuru, Ceramic supported POSS-organosilica nanocomposite membrane for efficient gas separation, *Industrial & Engineering Chemistry Research* 58 (2019) 21708-21716. doi: 10.1021/acs.iecr.9b05251.
- 4) Meng Guo, Masakoto Kanezashi, Hiroki Nagasawa, Liang Yu, Kazuki Yamamoto, Takahiro Gunji, Joji Ohshita, Toshinori Tsuru, Development of composite organosilica membranes with controlled pore size for C₃H₆/C₃H₈ separation, *AIChE Journal*, accepted. doi: 10.1002/aic.16850.
- 5) Tomohisa Yoshioka, Akihiro Nakata, Kuo-Lun Tung, Masakoto Kanezashi, Toshinori Tsuru, Molecular dynamics simulation study of solid vibration permeation in microporous amorphous silica network voids, *Membranes* 9 (2019) 132. doi: 10.3390/membranes9100132.
- 6) Liang Yu, Masakoto Kanezashi, Hiroki Nagasawa, Toshinori Tsuru, Phase inversion/sintering-induced porous ceramic microsheet membranes for high-quality separation of oily wastewater, *Journal of Membrane Science* 595 (2020) 117477. doi: 10.1016/j.memsci.2019.117477.
- 7) Xiuxiu Ren, Toshinori Tsuru, Organosilica-based Membranes in Gas and Liquid-Phase Separation, *Membranes*, 9 (2019) 107. doi: 10.3390/membranes9090107.
- 8) Norihiro Moriyama, Hiroki Nagasawa, Masakoto Kanezashi, and Toshinori Tsuru, Selective permeation of water vapor via organosilica membranes at moderate-to-high temperatures, *Journal of Membrane Science*, 589 (2019) 117254. doi: 10.1016/j.memsci.2019.117254.
- 9) Odtsetseg Myagmarjav, Jin Iwatsuki, Nobuyuki Tanaka, Shinji Kubo, Yoshiyuki Inagaki Mikihiro Nomura, Shin-ichi Sawada, Tetsuya Yamaki, Xin Yu, Masakoto Kanezashi, Toshinori Tsuru, Masato Machida, Tatsumi Ishihara, Masahiko Mizuno, Yasuo Hosono, Keita Miyajima, Makoto Inomata, Yoshiro Kuriki, and Nariaki Sakaba, Research and Development Program of Membrane IS Process for Hydrogen Production using Solar Heat, *International Journal of Hydrogen Energy*, 44 (2019) 19141-19152. doi: 10.1016/j.ijhydene.2018.03.132.
- 10) Sofiatun Anisah, Masakoto Kanezashi, Hiroki Nagasawa, Toshinori Tsuru, TiO₂-ZrO₂ membranes of controlled pore sizes with different Ti/Zr ratios for nanofiltration, *Journal of Sol-Gel Science and Technology*, 92 (2019) 12-24. doi: 10.1007/s10971-019-05075-3.
- 11) Genghao Gong, Mamoru Murata, Hiroki Nagasawa, Masakoto Kanezashi, Toshinori Tsuru, Flexible and extremely thin organosilica membrane for vapor-permeation dehydration of isopropanol, *Journal of Membrane Science*, 588 (2019) 117226. doi: 10.1016/j.memsci.2019.117226.
- 12) Hiroki Nagasawa, Kosuke Eguchi, Masakoto Kanezashi, Toshinori Tsuru, Infrared-spectroscopic porosimetry: Development and application for characterization of hundred-nanometer-thick thin films, *Thin Solid Films* 685 (2019) 299-305. doi: 10.1016/j.tsf.2019.06.038.
- 13) 長澤 寛規, 村田 守, 金指 正言, 都留 稔了, 高分子多孔膜を支持体とするオルガノシリカ layered hybrid膜のゾル-ゲル製膜における縮重合温度の影響と蒸気透過特性, *化学工学論文集*, 45 (2019) 177-183. doi: 10.1252/kakoronbunshu.45.177
- 14) Xin Yu, Lie Meng, Nagasawa Hiroki, Masakoto Kanezashi, Masato Machida, Toshinori Tsuru, Evaluating the chemical stability of metal oxides in SO₃ and applications of SiO₂-based membranes to O₂/SO₃ separation in the IS process, *Journal of the American Ceramic Society*, 102 (2019) 6949-695969. doi: 10.1111/jace.16594.
- 15) Guanying Dong, Sofiatun Anisah, Kazuyuki Shimizu, Takayuki Sakaue, Naoya Kosugi, Kawai Yu, Hiroki Nagasawa, Masakoto Kanezashi, Toshinori Tsuru, Free glycerol removal from monoglyceride using TiO₂-ZrO₂ nanofiltration membranes, *Separation and purification technology*, 224 (2019) 366-372. doi: 10.1016/j.seppur.2019.05.043.
- 16) Meng Guo, Masakoto Kanezashi, Hiroki Nagasawa, Liang Yu, Kazuki Yamamoto, Takahiro Gunji, Joji Ohshita, Toshinori Tsuru, Tailoring the microstructure and permeation properties of bridged organosilica membranes via control of the bond angles, *Journal of Membrane Science* 584 (2019) 56-65. doi: 10.1016/j.memsci.2019.04.072.
- 17) Masakoto Kanezashi, Yuki Tomarino, Hiroki Nagasawa, Toshinori Tsuru, Tailoring the molecular sieving properties and thermal stability of carbonized membranes containing polyhedral oligomeric silsesquioxane (POSS)-polyimide via the introduction of norbornene, *Journal of Membrane Science*, 582

- (2019) 59-69. doi: 10.1016/j.memsci.2019.04.003.
- 18) Tomohisa Yoshioka, Rina Kunimori, Ikumi Hisaoka, Hiroki Nagasawa, Masakoto Kanezashi, Toshinori Tsuru, Molecular dynamics simulation study on the mechanisms of liquid-phase permeation in nanopores, *Separation and Purification Technology*, 220 (2019) 259-267. doi: 10.1016/j.seppur.2019.03.014.
 - 19) Tsukasa Tanaka, Masakoto Kanezashi, Hiroki Nagasawa, Toshinori Tsuru, Effects of calcination condition on the network structure of triethoxysilane (TRIES) and how Si-H groups influence hydrophobicity under hydrothermal conditions, *Industrial & Engineering Chemistry Research*, 58 (2019) 3867-3875. doi: 10.1021/acs.iecr.8b06390.
 - 20) Liang Yu, Masakoto Kanezashi, Hiroki Nagasawa, Meng. Guo, Norihiro Moriyama, Kenji Ito, Toshinori Tsuru, Tailoring ultramicroporosity to maximize CO₂ transport within pyrimidine-bridged organosilica membranes, *ACS Applied Materials & Interfaces*, 11 (2019) 7164-7173. doi: 10.1021/acsami.9b01462.
 - 21) Sofiatun Anisah, Masakoto Kanezashi, Hiroki Nagasawa, Toshinori Tsuru, Hydrothermal stability and permeation properties of TiO₂-ZrO₂ (5/5) nanofiltration membranes at high temperatures, *Separation and Purification Technology*, 212 (2019) 1001-1012. doi: 10.1016/j.seppur.2018.12.006.

2. Book Chapters

- 1) 都留 稔了, 第1章 分離プロセス設計のための基礎物性の測定と活用, 第4節 速度差・輸送現象, 「分離精製工程の操作条件最適化とスケールアップ」, 技術情報協会, (2019)
- 2) 金指 正言, 都留 稔了, 水素の製造, 輸送・貯蔵技術, 第5章 水素製造利用における水素キャリアからの水素分離技術, 第3節 シリカ系多孔膜の細孔構造制御と水素分離への応用, 132-139, 技術情報協会 (2019).
- 3) Masakoto Kanezashi and Toshinori Tsuru, Transport mechanism and modeling of microporous silica membranes, in Elsevier series on “Current Trends and Future Developments on (Bio-) Membranes” Editor: Angelo Basile (2019)
- 4) Lie Meng and Toshionri Tsuru, Microporous silica membrane reactors, in Elsevier series on “Current Trends and Future Developments on (Bio-) Membranes” Editor: Angelo Basile (2019)
- 5) *Advanced Materials for Membrane Fabrication and Modification*, Edited by Dr. Stephen Gray, Dr. Toshinori Tsuru, Dr. Yoram Cohen, and Dr. Woei Jye Lau, CRC Press (2019)

3. Review Articles

- 1) 長澤 寛規, 大気圧プラズマCVD法によるハイブリッドシリカ膜の常温常圧製膜, 膜 44 (2019) 10-15.
- 2) 金指 正言, マイクロポーラス構造制御による高透過性分子ふるい膜の開発, 膜 44 (2019) 121-125.

4. Invited and Keynote Lectures

- 1) 都留 稔了, シリカ系分離膜のMolecular-Net-Sieving制御と液相および気相系分離の高度化, 化学工学会年会, 2020/03/17.
- 2) Masakoto Kanezashi, Gas permeation properties and pore size controllability for microporous silica membranes, China-Japan Bilateral Symposium on Advanced Materials, Tiangong University, Tianjin, China, 2019/11/5.
- 3) Hiroki Nagasawa, Plasma-assisted low temperature facile synthesis of silica membranes and their application in gas separation, China-Japan Bilateral Symposium on Advanced Membranes, Tiangong University, Tianjin, China, 2019/11/5.
- 4) (Plenary) Toshinori Tsuru, Silica-Based Membranes with Molecular-Net-Sieving Properties: Application to gas and liquid phase separation for Sustainable Development Goals (SDGs), The 26th Regional Symposium on Chemical Engineering (RSCE 2019), Kuala Lumpur, Malaysia, 2019/10/30.
- 5) Masakoto Kanezashi, Tailoring molecular sieving property and thermal stability of organic inorganic hybrid membranes for gas separation, 13th Pacific Rim Conference of Ceramic Societies (PACRIM13), Okinawa, 2019/10/30.

- 6) 金指正言, ゼルゲル法によるシリカ系分子ふるい膜の細孔構造制御と透過特性, 日本ゼルゲル学会第17回討論会, 東京理科大学, 2019/8/6.
- 7) 金指正言, ゼルゲル法によるシリカ系分子ふるい膜の開発と各種ガス分離プロセスへの応用, JPIJS関西地区討論会, 広島大学, 2019/7/25.
- 8) (Keynote) Toshinori Tsuru, Thermal and oxidation stability of bis(triethoxysilyl)ethane (BTESE)-derived membranes for SO₃ decomposition at high temperature in iodine-sulfur (IS) process, The 14th International Conference on Catalysis in Membrane Reactors (ICCMR14), Eindhoven, The Netherlands, 2019/7/11.
- 9) (Plenary) Toshinori Tsuru, Development of Silica-based membranes and Applications to Catalytic Membrane Reactors, The 14th International Conference on Catalysis in Membrane Reactors (ICCMR14), Eindhoven, The Netherlands, 2019/7/8.
- 10) Masakoto Kanezashi, Development of highly permeable molecular sieving membranes via controlling microporous structure, 9th International Symposium on Inorganic Membranes (ISIM9), Jeju, 2019/7/1.
- 11) Hiroki Nagasawa, Plasma-assisted low-temperature fabrication of silica-based membranes for gas separation, 9th International Symposium on Inorganic Membranes, Jeju, Korea, 2019/7/1.
- 12) 長澤寛規, ネットワークサイズを制御したオルガノシリカ膜の開発とOSROへの応用, 先端膜工学研究推進機構春季講演会・膜工学サロン, 神戸大学, 2019/3/20.
- 13) 都留稔了, 様々な水源に対応できるRobust膜の開発と環境・エネルギーへの展開, 研究拠点プロジェクト「革新的な水・バイオマス循環システムの構築」, 高知大学, 2019/2/23.
- 14) 長澤寛規, 大気圧プラズマCVDシリカ膜の作製および透過特性, 中国地区化学工学懇話会 第205回講演会, 広島大学, 2019/1/31.
- 15) 余亮, Development of Amine Functionalized Organosilica Membranes and Role of Amine Type in CO₂ Separation Performance, 中国地区化学工学懇話会 第205回講演会, 広島大学, 2019/1/31.

5. Prize

- 1) 金指正言, 令和元年度 Phoenix Outstanding Researcher Award, 広島大学 (2019.11)
- 2) 長澤寛規, 令和元年度 Phoenix Outstanding Researcher Award, 広島大学 (2019.11)
- 3) Outstanding Paper Award of 2018, Journal of Chemical Engineering of Japan (2020.3)
Hiroki Nagasawa, Yuta Yamamoto, Masakoto Kanezashi, Toshinori Tsuru, Atmospheric-Pressure Plasma-Enhanced Chemical Vapor Deposition of Hybrid Silica Membranes, Journal of Chemical Engineering of Japan 51 (2018) 732-739.
- 4) Excellent Poster Award APCCHE 2019 (2019.9) Makoto Yokoji, Hiroki Nagasawa, Masakoto Kanezashi, Toshinori Tsuru, Preparation of silicon carbide-based membranes for gas separation, The 18th Asian Pacific Confederation of Chemical Engineering Congress (APCCHE2019).