１．査読つき論文

(2021)

1. M. Takenaka, H. Nagasawa, T. Tsuru, M. Kanezashi: Hydrocarbon permeation properties through microporous fluorine-doped organosilica membranes with controlled pore sizes. Journal of Membrane Science, 619: 118787, 2021.
2. N. Moriyama, H. Nagasawa, M. Kanezashi, T. Tsuru: Improved performance of organosilica membranes for steam recovery at moderate-to-high temperatures via the use of a hydrothermally stable intermediate layer. Journal of Membrane Science, 620: 118895, 2021.
3. J. Xu, H. Nagasawa, M. Kanezashi, T. Tsuru: TiO_2 coatings via atmospheric-pressure plasma-enhanced chemical vapor deposition for enhancing the UV-resistant properties of transparent plastics. ACS Omega, 6: 1370-1377, 2021.
4. H. Nagasawa, T. Kagawa, T. Noborio, M. Kanezashi, A. Ogata, T. Tsuru: Ultrafast synthesis of silica-based molecular sieve membranes in dielectric barrier discharge at low temperature and atmospheric pressure. Journal of the American Chemical Society, 143: 35-40, 2021.
5. N. Moriyama, Y. Kawano, Q. Wang, R. Inoue, M. Guo, M. Yokoji, H. Nagasawa, M. Kanezashi, T. Tsuru: Pervaporation via silicon-based membranes: Correlation and prediction of performance in pervaporation and gas permeation. AIChE Journal, 67: e17223, 2021.
6. T. Miyazaki, H. Nagasawa, T. Tsuru, M. Kanezashi: Design of a SiOC network structure with oxidation stability and application to hydrogen separation membranes at high temperatures. Journal of Membrane Science, 625: 119147, 2021.
7. U. Anggarini, L. Yu, H. Nagasawa, M. Kanezashi, T. Tsuru: Metal-induced microporous aminosilica creates a highly permeable gas-separation membrane. Materials Chemistry Frontiers, 5: 3029-3042.
8. X. Ren, M. Kanezashi, M. Guo, R. Xu, J. Zhong, T. Tsuru: Multiple amine-contained POSS-functionalized organosilica membranes for gas separation. Membranes, 11: 194, 2021.
9. K. Nakahiro, L. Yu, H. Nagasawa, T. Tsuru, M. Kanezashi: Pore structure controllability and CO_2 permeation properties of silica-derived membranes with a dual-network structure Industrial & Engineering Chemistry Research, 60: 8527-8537, 2021.
10. S. Anisah, M. Kanezashi, H. Nagasawa, T. Tsuru: Effect of the Ti/Zr ratio on the hydrothermal and chemical stability of TiO_2-ZrO_2 nanofiltration membranes. Separation and Purification Technology, 274: 119060, 2021.
11. S. O. Lawal, H. Nagasawa, T. Tsuru, M. Kanezashi: Facile development of microstructure-engineered, ligand-chelated SiO_2-ZrO_2 composite membranes for molecular separations, Molecular Systems Design & Engineering, 6: 429-444, 2021.
12. U. Anggarini, L. Yu, H. Nagasawa, M. Kanezashi, T. Tsuru: Microporous nickel-coordinated aminosilica membranes for improved pervaporation performance of methanol/toluene separation. ACS Applied Materials & Interfaces, 13: 23247-23259, 2021.
13. M. Kanezashi, N. Hataoka, R. Ikram, H. Nagasawa, T. Tsuru: Hydrothermal stability of fluorine-induced microporous silica membranes: Effect of steam treatment conditions. AIChE Journal, 67: e17292, 2021.
14. S. Suzuki, N. Shoji, T. Tsuru: Performance evaluation of water vapor permeation through perfluorosulfonic acid capillary membranes. Separation and Purification Technology, 266: 118508, 2021.
15. N. Moriyama, H. Nagasawa, M. Kanezashi, T. Tsuru: Steam recovery via nanoporous and subnanoporous organosilica membranes: The effects of pore structure and operating conditions. Separation and Purification Technology, 275: 119191, 2021.
16. H. Nagasawa, R. Yasunari, M. Kawasaki, M. Kanezashi, T. Tsuru: Facile low-temperature route toward the development of polymer-supported silica-based membranes for gas separation via atmospheric-pressure plasma-enhanced chemical vapor deposition, Journal of Membrane Science, 638: 19709, 2021.
17. D. Zhang, M. Kanezashi, T. Tsuru, K. Yamamoto, R. Yakuwa, T. Gunji, Y. Adachi, J. Ohshita: Preparation of polysilsesquioxane reverse osmosis membranes for water desalination from tris[(ethoxysilyl)alkyl]amines by sol-gel process and interfacial polymerization. Applied Organometallic Chemistry, 35: e6374, 2021.
18. S. Suzuki, T. Tsuru: Analysis and prediction of water vapor permeation through perfluorosulfonic acid membranes via the solution-diffusion model in a single-membrane dehumidifier module. Separation and Purification Technology, 279: 119694, 2021.

(2022)

19. T. Sato, H. Nagasawa, M. Kanezashi, T. Tsuru: Enhanced production of butyl acetate via methanol-extracting transesterification membrane reactors using organosilica membrane: Experiment and modeling. Chemical Engineering Journal, 429: 132188, 2022.
20. T. Terao, H. Nagasawa, M. Kanezashi, H. Yanagishita, T. Tsuru: Controlled organosilica networks via metal

doping for improved dehydration membranes with layered hybrid structures. Separation and Purification Technology, 278: 119561, 2022.

21. U. Anggarini, H. Nagasawa, M. Kanezashi, T. Tsuru: Structural two-phase evolution of aminosilica-based silver-coordinated membranes for increased hydrogen separation. Journal of Membrane Science, 642: 119962, 2022.
22. S. O. Lawal, H. Nagasawa, T. Tsuru, M. Kanezashi: Enhancement of the H_2-permselectivity of a silica-zirconia composite membrane enabled by ligand-ceramic to carbon-ceramic transformation. Journal of Membrane Science, 624: 119948, 2022.
23. H. Nagasawa, R. Yasunari, M. Kawasaki, M. Kanezashi, T. Tsuru: Atmospheric-pressure PECVD synthesis of polymer-supported molecular sieving silica membranes for gas separation: Effect of pore size of polymeric support. Materials Letters, 308: 131211, 2022.
24. M. Guo, J. Qian, R. Xu, X. Ren, J. Zhong, M. Kanezashi: Boosting the CO_2 capture efficiency through aromatic bridged organosilica membranes. Journal of Membrane Science, 643: 120018, 2022.
25. M. Guo, Y. Zhang, R. Xu, X. Ren, W. Huang, J. Zhong, T. Tsuru, M. Kanezashi: Ultrahigh permeation of CO2 capture using composite organosilica membranes. Separation and Purification Technology, 282: 120061, 2022.
26. H. Guan, Y. Li, G. Gong, R. Xu, Y. Hu, T. Tsuru: Enhancing dehydration performance of isopropanol for flexible hybrid silica composite membranes with spray coated active layer on polymers. Separation and Purification Technology, 283: 120230, 2022.
27. R. Ikram, H. Nagasawa, K. Yamamoto, T. Gunji, T. Tsuru, M. Kanezashi: Effect of fluorine doping on network pore structure of non-porous organosilica bis(triethoxysilyl)propane (BTESP) membranes for use in molecular separation. Journal of Membrane Science, 644: 120083, 2022.
28. 鈴木翔, 都留稔了，パーフルオロスルホン酸中空膜を用いた除湿モジュールの性能評価およびシミュレーション，化学工学論文集，48: 42-48, 2022.
29. Guanying Dong, Yatao Zhang, Takaaki Sato, Hiroki Nagasawa, Masakoto Kanezashi, and Toshinori Tsuru, Reverse osmosis and pervaporation of organic liquids using organosilica membranes: Performance analysis and predictions, *AIChE Journal*, 68: e17585, 2022
30. Norihiro Moriyama, Misato Ike , Hiroki Nagasawa, Masakoto Kanezashi, and Tosinori Tsuru, Network Tailoring of organosilica membranes via aluminum doping to improve the humid-gas separation performance, RSC Advances, 12: 5834-5846, 2022.

２．著書

３．総説，一般記事など

1. C. Liu, G. Dong, T. Tsuru, H. Matsuyama: Organic solvent reverse osmosis membranes for organic liquid mixture separation: A review. Journal of Membrane Science, 620: 118882, 2021.
2. W. Raza, J. Wang, J. Yang, T. Tsuru: Progress in pervaporation membranes for dehydration of acetic acid. Separation and Purification Technology, 262: 118338, 2021.
3. M. Guo, M. Kanezashi, Recent progress in a membrane-based technique for propylene/propane separation. Membrane, 11: 310, 2021.
4. 長澤寛規, 大気圧プラズマ CVD 法による分子ふるいシリカ膜の低温・高速製膜, 化学工学, 85: 466-469, 2021.

４．学会などからの招待講演，基調講演

1. Hiroki Nagasawa, Atmospheric-pressure plasma-assisted synthesis of silica membranes for gas separation, 2020 Dalian University of Technology – Overseas Partner Universities Series Online Exchange Conference, 2021/01/08 (Invited).
2. Masakoto Kanezashi, Tailoring the amorphous microporous silica structure for gas separation membrane, 2020 Dalian University of Technology-Overseas Partner Universities Series Online Exchange Conference, 2021/01/08 (Invited).
3. Toshinori Tsuru, Silicon-Based Membranes with Molecular-Net-Sieving Properties: Application to gas and liquid phase separation, 2020 Dalian University of Technology-Overseas Partner Universities Series Online Exchange Conference 2021/1/30
4. 都留稔了, アモルファス構造を有するシリコン系サブナノ多孔膜による高度分離, 東京大学公開セミナー, 2021/9/10
5. 金指正言，シリカネットワークエンジニアリングによる構造安定化と気体分離膜の開発, 第 21 回反好会講演会（主催：化学工学会反応工学部会）, オンライン開催（2021.9.21）, 招待講演

6. 都留稔了, シリカ系多孔質膜による気相系分離, ニューメンブレンテクノロジー2021, 2021/10/5
7. 長澤寛規, セラミック膜を用いたオイル含有水のろ過とファウリング, ニューメンブレンテクノロジーシンポジウム 2021, 2021/10/07 (依頼講演).
8. 都留稔了, シリカ系ナノおよびサブナノ多孔膜をもちいた有機溶液分離, 分離技術会” ここまでできる！"膜"で有機溶媒を分ける, 回収する！ ”, 2021/10/15
9. T. Tsuru, Silicon-Based Membranes with Molecular-Net-Sieving Properties: Application to gas and liquid phase separation, Guest Lecturer Series (GLS) at the Department of Chemical Engineering of ITS Surabaya, 2021/11/25
10. T. Tsuru, Silicon-Based Amorphous Membranes with Molecular-Net-Sieving: Application to Molecular Separation in Gas and Liquid Phase Separation, The Material Research Meeting 2021 (MRM2021) 2021/12/13
11. M. Kanezashi, Microstructure engineering of ligand-modified ceramic membranes derived from network-forming precursors, 14th Pacific Rim Conference on Ceramic and Glass Technology (PACRIM14), 2021/12/16 (Invited).
12. T. Tsuru, Molecular-Net-Sieving via amorphous Silicon-based membranes: Fabrication, characterization, and application to gas and liquid phase separation, Department of Chemical Engineering, University of Bath, 2022Feb22

５．受賞

1. 金指正言, 広島大学 Distinguished Researcher, 広島大学 (2021/12)
2. 金指正言, 令和 3 年度 Phoenix Outstanding Research Award, 広島大学 (2021/11)
3. 長澤寛規, 令和 3 年度 Phoenix Outstanding Research Award, 広島大学 (2021/11)
4. 長澤寛規, 広島大学工学部教育顕彰, 広島大学 (2021/11)

以下学生賞

1. 川崎貢功, エクセレント・スチューデント・スカラーシップ (2021/01)
2. 森山教洋, 広島大学大学院工学研究科学生表彰 (2021/03)
3. 竹中麻里, 広島大学大学院工学研究科学生表彰 (2021/03)
4. 園田昌弘, 広島大学工学部学生表彰 (2021/03)
5. 園田昌弘, 中国地区化学工学懇話会学生奨励賞 河村祐治記念賞 (2021/03)
6. 青山舜, 中国地区化学工学懇話会学生奨励賞 河村祐治記念賞 (2021/03)
7. 土井貴正, 化学工学会中国四国支部支部長賞 (2021/03)
8. 高橋由弥, 日本化学会中国四国支部支部長賞 (2021/03)
9. 登尾拓史, 日本化学会中国四国支部支部長賞 (2021/03)
10. 青山舜, 分離技術会年会 2021 学生賞 (2021/11)
11. 池美里, 膜シンポジウム 2021 学生賞 (2021/11)
12. 田邉大輝, 膜シンポジウム 2021 学生賞 (2021/11)
13. 佐藤宇亮, エクセレント・スチューデント・スカラーシップ (2021/12)

６．開催した講演会

1. 東京工業大学科学技術創成研究院 原享和 教授, 50°C で水素と窒素からアンモニアを合成する触媒, 中国地区化学工学懇話会第 213 回講演会, 2021/11/11.
2. 産業技術総合研究所化学プロセス研究部門 長谷川泰久 氏, ゼオライト分離膜の開発と利用, 中国地区化学工学懇話会第 214 回講演会, 2021/12/06.

７．その他の特記事項

８．学位取得者

博士（工学）

1. Sulaiman Lawal, Tailoring the microporous structure of a ceramic composite for development of molecular sieving membranes

修士（工学）

1. 竹中麻里, 細孔径制御したフッ素ドープオルガノシリカ膜の炭化水素透過特性
2. 寺尾隆志, 金属ドープによる layered-hybrid 膜の有機溶液脱水性能の向上
3. 中廣恵大, Dual-Network 構造を有するシリカ系膜の細孔構造制御と CO_2 透過特性
4. 登尾拓史, 誘電体バリア放電を用いた大気圧プラズマ CVD によるシリカ膜の超高速製膜
5. 宮崎智之, 耐酸化性を有する SiOC 構造設計と分子ふるい膜への応用

学士（工学）
1. 青山舜, 大気圧プラズマを用いたオルガノシリカ膜の表面改質による透過特性制御
2. 池美里, 水蒸気の中高温分離のためのオルガノシリカ膜の開発
3. 園田昌弘, Si-H 基を有するナノ細孔形成と無電解めっきによる緻密 Pd 膜の作製
4. 高橋由弥, イットリウムドープによる SiO_2-ZrO_2 マイクロポーラス構造制御と安定性評価
5. 田邉大輝, Allylhydridopolycarbosilane (AHPCS) を用いた SiC 系分離膜の作製と耐水蒸気性評価
6. 土井貴正, ナノファイバーを利用した薄膜製膜と水蒸気透過特性評価
7. 友田圭亮, 細孔構造制御したオルガノシリカ膜の低温気体透過特性
8. 原田祥空, 大気圧プラズマ CVD シリカ膜の耐熱性及び耐水蒸気性評価

科目等履修生
1. 福重圭介, 液体原料を用いた大気圧プラズマ重合によるチタニア MF/UF 膜の製膜