

# Stanford

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## Taigyu Joo

Postdoctoral Scholar, Chemical Engineering

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#### BIO

Taigyu Joo (TJ) is a postdoctoral researcher in Professor William Tarpeh's group. His research focuses on designing membranes for separating ions and gases from wastewater, with an emphasis on electrochemical separation techniques.

#### PROFESSIONAL EDUCATION

- Doctor of Philosophy, Massachusetts Institute of Technology (2024)
- Master of Science, Massachusetts Institute of Technology (2021)
- Doctor of Philosophy, Massachusetts Institute of Technology , Chemical Engineering (2024)
- Master of Science, Massachusetts Institute of Technology , Chemical Engineering Practice (2021)
- Bachelor of Science, Carnegie Mellon University , Chemical Engineering (2018)

#### STANFORD ADVISORS

- William Tarpeh, Postdoctoral Faculty Sponsor

### Publications

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#### PUBLICATIONS

- **High-Selectivity CO<sub>2</sub> Mixture Separations by a Guanlyated Polymer of Intrinsic Microporosity (PIM-G) Membrane** *MACROMOLECULES*  
Kaser, S. J., Dean, P., Jean-Baptiste, P., Mattewal, S., Joo, T., Yeo, J., Smith, Z. P.  
2024
- **Fine-tuning ultramicroporosity in PIM-1 membranes by aldehyde functionalization for efficient hydrogen separation** *JOURNAL OF MATERIALS CHEMISTRY A*  
Lee, T., Joo, T., Jean-Baptiste, P., Dean, P. A., Yeo, J., Smith, Z. P.  
2024
- **Single Layer Silk and Cotton Woven Fabrics for Acoustic Emission and Active Sound Suppression.** *Advanced materials (Deerfield Beach, Fla.)*  
Yang, G. H., Lin, J., Cheung, H., Rui, G., Zhao, Y., Balachander, L., Joo, T., Lee, H., Smith, Z. P., Zhu, L., Ma, C., Fink, Y.  
2024: e2313328
- **Penetrant-induced plasticization in microporous polymer membranes.** *Chemical Society reviews*  
Mizrahi Rodriguez, K., Lin, S., Wu, A. X., Storme, K. R., Joo, T., Grosz, A. F., Roy, N., Syar, D., Benedetti, F. M., Smith, Z. P.  
2024; 53 (5): 2435-2529
- **Free Volume Manipulation and In Situ Oxidative Crosslinking of Amine-Functionalized Microporous Polymer Membranes** *Chemistry of Materials*  
Joo, T., Lee, T., Kaser, S. J., Wu, W., Wi, S., Yeo, J., Smith, Z. P.  
2024; 36 (9): 4275-4290

- **The role of free volume, hydrogen bonds, and crosslinks on physical aging in polymers of intrinsic microporosity (PIMs)** *JOURNAL OF MATERIALS CHEMISTRY A*  
Joo, T., Rodriguez, K., Lee, H., Acharya, D., Doherty, C. M., Smith, Z. P.  
2023; 11 (29): 15943-15957
- **Revisiting group contribution theory for estimating fractional free volume of microporous polymer membranes** *JOURNAL OF MEMBRANE SCIENCE*  
Wu, A. X., Lin, S., Rodriguez, K., Benedetti, F. M., Joo, T., Grosz, A. F., Storme, K. R., Roy, N., Syar, D., Smith, Z. P.  
2021; 636
- **Free volume manipulation of a 6FDA-HAB polyimide using a solid-state protection/deprotection strategy** *POLYMER*  
Lin, S., Joo, T., Benedetti, F. M., Chen, L. C., Wu, A. X., Rodriguez, K., Qian, Q., Doherty, C. M., Smith, Z. P.  
2021; 212
- **On the origin of deactivation of reversal-tolerant fuel cell anodes under voltage reversal conditions** *JOURNAL OF POWER SOURCES*  
Joo, T., Hu, L., Hong, B., Oh, J., Litster, S.  
2020; 472
- **CoO nanoparticles deposited on 3D macroporous ozonized RGO networks for high rate capability and ultralong cyclability of pseudocapacitors** *CERAMICS INTERNATIONAL*  
Bhattacharya, P., Joo, T., Kota, M., Park, H.  
2018; 44 (1): 980-987