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Chunyi Li, Ph.D.

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Professional Profile

Chunyi Li is a chemical engineer specializing in sustainable energy production and gas separation processes. Li has expertise in carbon capture from pre-combustion and post-combustion processes in fossil fuel power plants, biogas and natural gas upgrading, and hydrocarbon gas separation for petrochemical production. Li combines the fundamental understanding of thermodynamics and mass transfer of small molecule adsorption and diffusion in microporous solids with engineering experience in designing adsorption and membrane processes.

Li's doctorate study at Georgia Institute of Technology was centered around reducing atmospheric Greenhouse Gas emissions through biomethane production from biogas. Specifically, Li's work focused on developing adsorption materials using microporous solids such as metal-organic framework (MOF) materials, designing structured contactors for low-pressure drop adsorption processes using fiber sorbents, and fabricating mixed-matrix membranes combining polymer and MOF for natural gas separation.

Li is proficient in designing and constructing testing setups involving flammable and toxic gas flows at the lab scale, including troubleshooting and leak testing to mitigate the risk of fire or toxic gas exposure. She has experience with characterization techniques including Quadrupole Mass Spectrometry (MS), X-ray Diffraction (XRD), Pore Size Distribution Analysis, BET Surface Area Analysis, Fourier Transform Infrared Spectroscopy (FTIR), Diffuse Reflectance Infrared Fourier Transform Spectroscopy (DRIFTS), Thermogravimetric Analysis (TGA), Scanning Electron Microscopy (SEM), and Proton Nuclear Magnetic Resonance Spectroscopy (1H-NMR).

Academic Credentials & Professional Honors

Ph.D., Chemical Engineering, Georgia Institute of Technology, 2024

B.S., Chemical Engineering, Ohio State University, 2018

German Academic Exchange Service (DAAD) Research Grant Recipient, 2021-2022

Prior Experience

Graduate Research Assistant, Georgia Institute of Technology, 2018-2024

Visiting Researcher, Karlsruhe Institute of Technology, 2021-2022

Professional Affiliations

American Institute of Chemical Engineers

Publications

Hannah E. Holmes, Shreya Ghosh, Chunyi Li, Jayashree Kalyanaraman, Matthew J. Realff, Simon C. Weston, Ryan P. Lively. Optimum Relative Humidity Enhances CO2 Uptake in Diamine-Appended M2(dobpdc). J. Chem. Eng. 2023; 477, 147119

Chunyi Li, Zhenzi Yu, Kai Cui, J.R. Schmidt, David S. Sholl, Ryan P. Lively. Assessment of Acid Gas Adsorption Selectivities in MIL-125-NH2. J. Phys. Chem. C. 2022; 126, 50, 21414-21425.

Haley D. White, Chunyi Li, Ryan P. Lively. Tailoring the Structure of Carbon Molecular Sieves Derived from an Aromatic Polyamide. Ind. Eng. Chem. Res. 2022; 61, 15, 5314-5323.

Fanhe Kong, Chunyi Li, Yitao Zhang, Yu Gu, Mandar Kathe, Liang-Shih Fan, Andrew Tong. Hydrogen Production from Natural Gas Using an Iron-Based Chemical Looping Technology: Process Modeling, Heat Integration, and Exergy Analysis. Energy Technology 2019, 1900377.

Presentations

Chunyi Li, Zhenzi Yu, Kai Cui, J.R. Schmidt, David S. Sholl, Ryan P. Lively. Assessment of Acid Gas Adsorption Selectivities in MIL-125-NH2. Gordon Research Conference, poster, Ventura, CA, 2022

Chunyi Li, Kai Cui, J.R. Schmidt, Ryan P. Lively. Determining the H2S/CO2 Binary Adsorption Selectivities in Metal-organic Frameworks for Biogas Purification. Fundamental of Adsorption, poster, Broomfield, CO, 2022

Chunyi Li, Zhenzi Yu, Kai Cui, J.R. Schmidt, David S. Sholl, Ryan P. Lively. Determining the H2S/CO2 Binary Adsorption Selectivities in Metal-organic Frameworks for Biogas Purification. AIChE Annual Meeting, Phoenix, AZ, 2022

Chunyi Li, Ryan P. Lively. Binary Adsorption Equilibria Measurement for Biogas Separation using a Zero-length Column Method. AIChE Annual Meeting, virtual, 2020