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Engineering & Scientific Consulting

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Professional Profile

Lindsey Wadsworth, Ph.D., is a chemical engineer and technical consultant in Exponent's Thermal Sciences practice, serving the greater Chicago area and the Midwest. Her expertise in thermodynamics, transport phenomena, phase behavior, and high-pressure systems provides a foundation for evaluating engineering questions across chemical processes, energy applications, and industrial systems.

Dr. Wadsworth's dissertation research at the Colorado School of Mines examined carbon dioxide (CO_2) gas hydrate phase equilibria and crystallization kinetics under low-temperature, high-pressure conditions relevant to carbon capture, utilization, and storage (CCUS) applications. She measured the water composition of CO2 in equilibrium with hydrate to inform drying requirements for industrially transported CO_2, work relevant to pipeline integrity and operational safety. She also used high-pressure microfluidic devices and spectroscopic techniques to investigate fundamental gas hydrate crystallization mechanisms. Dr. Wadsworth developed skills in communicating complex technical concepts to diverse audiences through mentoring undergraduate students, serving as a teaching assistant for graduate-level thermodynamics, and earning a college teaching certification. She also organized social and professional development events as a Chemical Engineering Graduate Association board member and participated in outreach events for elementary students.

Dr. Wadsworth earned her B.S. in chemical engineering at Montana State University, where she also graduated with distinction from the Honors College. During her undergraduate studies, she completed two Research Experiences for Undergraduates that broadened her chemical engineering background through interdisciplinary research: one at the Colorado School of Mines, investigating mineral extraction from source-separated urine using hydrothermal treatment with a civil and environmental engineering team; and another at the University of Minnesota, applying computational fluid dynamics (CFD) to a fuel injector used in gasoline direct injection (GDI) engines with a mechanical engineering team.

Academic Credentials & Professional Honors

Ph.D., Chemical Engineering, Colorado School of Mines, 2026

M.S., Chemical Engineering, Colorado School of Mines, 2023

B.S., Chemical Engineering, Montana State University, 2021

Publications

Wadsworth LA, Balke JG, Hartman RL, Koh CA. "Carbon dioxide hydrate crystallization thickening & morphology in a micro-confined environment for carbon capture & sequestration processes," Applied Energy, vol. 371, 2024.

Wadsworth LA, Wells JD, Sloan ED, Koh CA. "T–x diagrams for the CO2–H2O system: The importance of water content in CO2 transportation for carbon capture and storage," AIChE Journal, vol. 70, no. 6, 2024. https://doi.org/10.1002/aic.18415 (note: featured on the cover of this issue of AIChE Journal)

Presentations

Wadsworth LA, Balke JG, Hartman RL, Koh CA. Gas Hydrate Film Growth in Microfluidic Channels for Carbon Dioxide Capture and Sequestration Applications. Oral Presentation, AIChE Annual Meeting, Boston, MA, 2025.

Wadsworth LA, Liu Y, Majid AAA, Koh CA. Water content of CO2 streams from CCUS processes. Research Committee Meeting at GPA Midstream Convention, San Antonio, TX, 2025.

Wadsworth LA, Balke JG, Hartman RL, Koh CA. CO2 hydrate crystal thickening, morphology, and Raman spectroscopy in a microfluidic device. Oral Presentation, ACS Virtual Symposium, 2025.

Wadsworth LA, Balke JG, Hartman RL, Koh CA. Microfluidic Measurements of CO2 Hydrates: Film Thickening and Raman Spectroscopy. Oral Presentation, 22nd Symposium on Thermophysical Properties & 18th ICPWS, Boulder, CO, 2024.

Wadsworth LA, Majid AAA, Sloan ED, Koh CA. Mutual Solubility and Solids Formation in LPG-Water-Methanol System. Research Committee Meeting at GPA Midstream Convention, San Antonio, TX, 2024.

Wadsworth LA, Wells JD, Majid AAA, Hartman RL, Sloan ED, Koh CA. Raman Spectroscopy and Microfluidics for the Measurement of Carbon Dioxide Hydrates. Oral Presentation, 10th International Conference on Gas Hydrates, Singapore, 2023.

Peer Reviews

Reviewer for Journal of Chemical & Engineering Data.