

Stanford



Mathis Heyer

Ph.D. Student in Energy Science and Engineering, admitted Autumn 2024

Bio

BIO

Mathis Heyer, from Kiel, Germany, is pursuing a Ph.D. in Energy Science & Engineering at the Stanford Doerr School of Sustainability. He holds a bachelor's degree in Mechanical Engineering and a master's degree in Process Systems Engineering from RWTH Aachen University, Germany, as well as a master's degree in Management Science and Engineering from Tsinghua University in Beijing.

His research in the Environmental Assessment and Optimization Group at Stanford (<https://eao.stanford.edu/>) focuses on advancing the understanding of complex energy and process systems through mathematical modeling and optimization. Mathis' work builds on his previous research experiences at the Climate Policy Lab at ETH Zurich and the Sustainable Reaction Engineering Group at Cambridge University. Outside of his academic pursuits, Mathis enjoys volunteering with organizations such as "Engineers Without Borders" and "Europe Meets School" both involved in promoting intercultural exchange.

Mathis has been recognized as a Klaus-Murmann Fellow by the Foundation of German Business (sdw) while at RWTH Aachen and is currently an ERP Fellow with the German Academic Scholarship Foundation and a recipient of the SGF Fellowship.

EDUCATION AND CERTIFICATIONS

- B.Sc., RWTH Aachen University , Mechanical Engineering (2021)
- M.Sc., RWTH Aachen University , Process Systems Engineering (2024)
- M.Sc., Tsinghua University , Management Science and Engineering (2024)

LINKS

- Environmental Assessment and Optimization (EAO) Group: <https://eao.stanford.edu/>

Publications

PUBLICATIONS

- **Automated generation of mechanistic models for chemical process digital twins using reinforcement learning part II: Compartmentalization and learning-based recalibration** *COMPUTERS & CHEMICAL ENGINEERING*
Laub, J., Zhang, J., Heyer, M., Lapkin, A. A.
2026; 204
- **Automated generation of mechanistic models for chemical process digital twins using reinforcement learning part I: Conceptual framework and equation generation** *COMPUTERS & CHEMICAL ENGINEERING*
Heyer, M., Zhang, J., Sugisawa, N., Laub, J., Lapkin, A. A.

2025; 202

- **Decentral and Incentivized Federated Learning Frameworks: A Systematic Literature Review** *IEEE INTERNET OF THINGS JOURNAL*

Witt, L., Heyer, M., Toyoda, K., Samek, W., Li, D.

2023; 10 (4): 3642-3663

- **Multilevel surrogate modeling of an amine scrubbing process for CO₂ capture** *AICHE JOURNAL*

Goldstein, D., Heyer, M., Jakobs, D., Schultz, E. S., Biegler, L. T.

2022; 68 (6)