

Stanford



Dongjae Shin

Postdoctoral Scholar, Photon Science, SLAC

Bio

BIO

My current research focuses on the design of catalytic materials. I have studied atomistic phenomena on catalytic surfaces to develop materials with improved catalytic capability under the philosophy of rational design. To achieve this goal, I use computational approaches, e.g., first-principles calculations and artificial intelligence (AI). Applications include heterogeneous catalysis for exhaust emission control, hydrogen production, and utilization of emission gas to realize carbon neutralization.

PROFESSIONAL EDUCATION

- M.S., Korea Advanced Institute of Science and Technology (KAIST) , Energy, Environment, Water and Sustainability (2018)
- Ph.D., Pohang University of Science and Technology (POSTECH) , Chemical Engineering (2023)

STANFORD ADVISORS

- Thomas Jaramillo, Postdoctoral Faculty Sponsor
- Kirsten Winther, Postdoctoral Research Mentor

LINKS

- Personal Site: <https://dongjae-shin.github.io/>
- Google Scholar: <https://scholar.google.co.kr/citations?user=-9HK8-AAAAAJ&hl=en>
- LinkedIn: https://www.linkedin.com/in/dongjae-shin-01095313a/?locale=en_US

Publications

PUBLICATIONS

- **Highly Durable Rh Single Atom Catalyst Modulated by Surface Defects on Fe-Ce Oxide Solid Solution.** *Angewandte Chemie (International ed. in English)*
Kim, G., Choung, S., Hwang, J. E., Choi, Y., Kim, S., Shin, D., Han, J. W., Lee, H.
2025; 64 (10): e202421218
- **Unmatched Redox Activity of the Palladium-Doped Indium Oxide Oxygen Carrier for Low-Temperature CO₂ Splitting.** *ACS nano*
Park, S., Oh, D., Jang, M. G., Seo, H., Kim, U., Ahn, J., Choi, Y., Shin, D., Han, J. W., Jung, W., Kim, I. D.
2024; 18 (37): 25577-25590
- **Atomically dispersed Rh catalysts formed on defective CeO₂ surfaces with hydroformylation activity** *CHEMICAL ENGINEERING JOURNAL*
Lee, H., Shin, D., Oh, D., Jeong, B., Kim, K., Hur, C., Han, J., An, K.
2024; 496

- **Accelerated Structural Optimization for the Supported Metal System Based on Hybrid Approach Combining Bayesian Optimization with Local Search.** *Journal of chemical theory and computation*

Bae, S., Shin, D., Kim, H., Han, J. W., Lee, J. M.

2024; 20 (5): 2284-2296