Stanford

Tianying Liu

Postdoctoral Scholar, Mechanical Engineering

Bio

BIO

Dr. Tianying Liu is currently a Postdoctoral Scholar at Stanford University, focusing on the development of scalable, low-Iridium loading catalysts for cost-effective and durable PEM water electrolyzers. He earned his Ph.D. in Chemistry from Boston College in 2025, where his dissertation research investigated water oxidation mechanisms on Iridium dinuclear heterogeneous catalysts. During his doctoral studies, he served as an ALS Doctoral Fellow at Lawrence Berkeley National Laboratory, applying synchrotron-based ex situ and in situ soft X-ray absorption spectroscopy to uncover the structural dynamics of Iridium catalyst electrodes during water oxidation.

Before his doctoral work, Dr. Liu completed his M.S. and B.S. degrees in Materials Science and Engineering at Central South University. His earlier research experience includes developing Mo-based electrocatalysts for hydrogen evolution, engineering lithium-ion battery cathodes via atomic layer deposition at ShanghaiTech University, and characterizing molybdenum carbide catalysts as a visiting researcher at Northwestern University. His research interests broadly cover electrocatalysis, photoelectrochemistry, energy conversion, and materials design, with a strong focus on renewable energy applications.

HONORS AND AWARDS

- ALS Doctoral Fellowship in Residence, Advanced Light Source, Lawrence Berkeley National Laboratory (Sep 2024 – Aug 2025)

STANFORD ADVISORS

- Xiaolin Zheng, Postdoctoral Faculty Sponsor

Publications

PUBLICATIONS

- **Modulating coordinate site occupancy in high-entropy spinel electrocatalysts.** *Nature communications*
  Baek, J., Hamkins, K. S., Li, Y., Garcia-Esparza, A. T., Liu, T., Kuo, C. T., Lee, J. S., Potter, A. W., Kim, S., Wang, Y., Ding, H., Li, J., Zhuo, et al
  2026

- **Investigating the Adsorption-Desorption Kinetics of a Molecular Water Oxidation Catalyst at an Electrode Interface** *JOURNAL OF PHYSICAL CHEMISTRY LETTERS*
  Chen, B., Zhang, H., Zhang, R., Liu, T., Shin, D., Wang, D., Waegele, M. M.
  2026

- **Gerischer Electrochemistry Today** *ACS ENERGY LETTERS*
  Sambur, J. B., Kaufman, A. J., Montoya-Castillo, A., Kundman, A., Nozik, A. J., Descarpentrie, A. G., Jana, A., Tews, A., Banik, A., Martindale, B. C. M., Debruine, B., Parkinson, B. A., Frisbie, et al
  2025; 10 (12): 6578-6595

- **Effect of Electrolyte Ions on Iridium Oxide-Based Water Oxidation Catalysis** *ACS CATALYSIS*
  Chen, B., Wang, P., Shin, D., Li, W., Liu, T., Waegele, M. M., Wang, D.
  2025