Stanford



Christopher J. Miller

Postdoctoral Scholar, Photon Science, SLAC

Bio

BIO

I am a chemist and Postdoctoral Scholar at SLAC National Accelerator Laboratory, where my research focuses on the core challenges of electrochemical energy conversion and sustainable chemistry. Working within the DOE BETO CO2RUe consortium, I investigate the dynamic behavior of catalysts in CO# electrolyzers. My primary approach involves using advanced operando characterization techniques, particularly X-ray Absorption Spectroscopy (XAS), to build comprehensive models that link a catalyst's atomic-scale structure to its real-world device performance.

My philosophy is that progress requires bridging fundamental science with practical systems engineering. To that end, my expertise includes the ground-up design, construction, and automation of experimental systems. I specialize in building fully integrated electrochemical test stations and gas delivery infrastructure, tailored to deliver high-quality, reproducible data with robust safety features and remote-operation capabilities. Complementing this hardware, I develop custom MATLAB software suites to automate data processing and analysis, significantly accelerating the path from raw data to actionable scientific insight.

In addition to my research, I am deeply committed to education and professional service. As a recent fellow in Stanford's Preparing Future Professors (PFP) program, I received formal training in pedagogy and gained direct mentorship experience at San Jose State University. This commitment extends to the broader scientific community through my long-standing leadership roles within the American Chemical Society (ACS), where I contribute to governance, chemical safety initiatives, and professional development for younger chemists. I am always interested in discussing new collaborations at the intersection of spectroscopy, catalysis, and system design.

STANFORD ADVISORS

- Dimosthenis Sokaras, Postdoctoral Research Mentor
- Britt Hedman, Postdoctoral Faculty Sponsor

Publications

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