

Zizwe Chase, Ph.D.

An interview with 2022 IRTE participant, Zizwe Chase, Ph.D.

Zizwe was shared between IRTE and a related program at the National Institute for Materials Science (NIMS), where he both conducted a research project and, as the senior member of the cohort, acted as *ad-hoc* team leader and mentor for the junior members of the cohort.



Zizwe, please tell us a bit about yourself.

I'm a Bridge-to-Faculty Scholar in the Electrical Engineering department at the University of Illinois at Chicago where I will be a tenure track faculty member in Fall 2023. I got my Ph.D. in Chemical Engineering from Washington State University studying bulk and surface interactions of aqueous phase organic solutions with supported metal (mono and bimetallic) catalysts. I'm familiar with both X-ray absorption Fourier Transform spectroscopy and Sum Frequency Generation (SFG).

Thanks. Can you tell us a bit about your IRTE research experience?

I had the pleasure to work with Dr. Hidenori Noguchi on understanding the role of pyridine in the Electrochemical Reduction of CO₂ on Pt electrodes in the summer of 2022 at NIMS in Tsukuba, Japan. Dr. Noguchi is a group leader of the Interfacial Energy Conversion group in the Center for Green Research on Energy and Environmental Materials (GREEN) at the NIMS Namiki site. Noguchi-san's group has extensive optical spectroscopy resources for measuring reaction dynamics.



What did your research project entail?

The purpose of my project was to understand the surface interactions of the chemical species at the platinum electrode surface. We used a surface sensitive technique, Sum Frequency Generation (SFG), and found that intermediate species for organic product formation were not on the surface showing conclusive evidence that pyridine didn't aid in this endeavor.

You lived in Tsukuba for 10 weeks. Can you tell us about the laboratory and your experience living in Tsukuba.

NIMS is a top rate institution with wonderful lab facilities. Not many places in the world have SFG equipment so it's unique in that aspect. The city of Tsukuba is beautiful and the people wonderful. They have a good basic understanding of English if you don't speak Japanese. We each had a room in Ninomiya House, a wonderful place to live. It was spacious and conveniently located.



Please tell us about your weekend travel experiences.

We were able to travel extensively on the weekends, either to Tokyo or farther. The train is an excellent mode of transportation. It's clean and safe. There's a lot to do in Tokyo and many places to eat especially if you like seafood. See as many places as you possibly can. Take your time and walk around. Enjoy the scenery.



What about COVID?

We traveled before Japan opened to the general public so, logistically, it was more complex than normal. But it started to open up more shortly after we arrived. Nonetheless, masks were worn by everyone everywhere in public. Other than that, we were able to travel freely.

Can you share any overall impressions of your experience.

This one of the best experiences one could have. I'd do it again if I ever got the opportunity.

