

Veronica Show

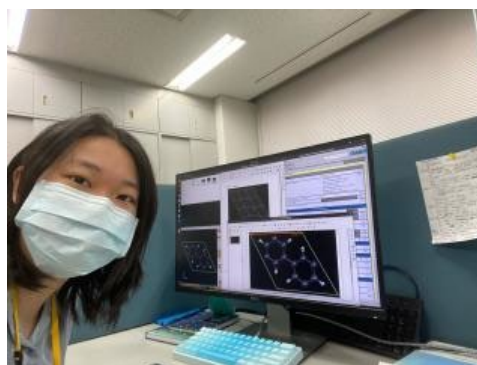
An interview with 2022 IRTE participant, Veronica Show.

Veronica, please tell us a bit about yourself.

I participated in the PARADIM REU program at Cornell in summer 2021. I received my B.S. in Chemistry from Harvey Mudd College in December 2021. At Harvey Mudd, I completed research in metalloorganic, computational, and analytical chemistry. Specifically, I synthesized titanium-based catalysts in an air-free environment, modelled terahertz vibrational modes of water for humidity detection, and characterized thin films which were synthesized via molecular beam epitaxy. I will be attending Caltech's PhD program in Materials Science in the fall (2022).

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

This summer, I participated in the Global Quantum Leap IRTE in Tsukuba, Japan for 10 weeks. I worked with Dr. Toshikaze Kariyado at the National Institute for Materials Science to calculate the band structure of bilayer graphene/graphene nanomesh and find how the stacking symmetry of the bilayer affects the band structure of the material. Our cohort consisted of 2 students and a postdoc in the IRTE program, plus 5 undergraduates in a related NNCI undergraduate research program, each working on individual projects.



What did your research project entail?

I worked with Kariyado-san to calculate the band structure of bilayer graphene/graphene nanomesh and find how the stacking symmetry of the bilayer affects the band structure of the material. Using Quantum Espresso, I found that AA stacked graphene/nanomesh bilayers exhibit semiconductor behavior whereas AB stacked graphene/nanomesh bilayers exhibit conductor behavior.

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

Tsukuba is a beautiful city; everything is lush with hydrangeas and greenery from the sides of the streets to local parks. The food is great, especially the sushi and tonkatsu; however, there is definitely a lack of raw vegetables. We lived in a housing complex run by the national science agency in Japan – the accommodations were very nice and the staff were extremely helpful. I worked in an office, since I was just performing computations, and I was given a computer to complete my work.

Please tell us about your weekend travel experiences.

We traveled most weekends, sometimes individually but often in small groups. Highlights of the trip involved visiting Tokyo numerous times, with longer trips to Osaka and Kyoto. We reached Osaka and Kyoto using the Shinkansen, whereas local trips to Tokyo could be done just by using the



Tsukuba Express – which drops you right off in Akihabara. My favorite place was Arashiyama, a bamboo forest/mountain side in Kyoto. I hiked, visited shrines, went to many hobby stores, and found lots of good restaurants during these trips.

Can you share any overall impressions of your experience?

I enjoyed the experience as I got to explore a field of science I would typically not see myself in. I also enjoyed getting to know the other scientists, who were from numerous different countries around the world, and hear about their journey to NIMS.