

## NanoJapan Follow-on Project Report

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**NanoJapan Program Year:** 2012

**Home University:** The University of Tulsa

Due to my on-campus job as a Resident Assistant, I had to slightly adapt my original follow-on project. My initial plan was to visit my high school and speak to various science and math classes to encourage them to consider summer research programs, especially those as prestigious as NanoJapan. I especially wanted to address any feelings of inadequacy; I didn't want students to sell themselves short and not apply for these programs because they felt underqualified. I also wanted to demonstrate some of the fascinating benefits of studying in a STEM field. However, I never got the chance to meet with my high school because my job took away the first and last parts of my breaks and by the time I was home, my school was already out of session.

Because I couldn't address high school students, I chose the next-best target audience: freshmen physics students. Professor Jerry McCoy (one of my NanoJapan recommenders) allowed me to speak with his "World of Physics" class; a class dedicated to preparing new college students to study physics. I introduced students to the NanoJapan program, explained why they should consider applying, and shared my personal NanoJapan experience. I have attached the presentation as a PDF (for formatting compatibility). There are many pictures in the presentation because I had those cycling through in the background rather than keeping text on the screen the entire time. I really tried to capture the excitement that the program brings, and pictures seemed to be the best way to do that. There were about twenty students in the class, and some of them asked me questions after my presentation. Unfortunately, I received no follow-up emails about the program.

I also assisted with our Study Abroad Fair that semester. I worked at a table with Eri for a few hours, where I answered questions and encouraged students to apply for the program. I put together a presentation of just pictures to play off of my laptop at the table so that passing students would be able to see some of the things I did as a program participant. The fair was held in our student activity center, so our audience consisted mostly of students walking around the building at that time. Fortunately, the center is right next to our engineering halls, so many of the students walking through at the time had some relation to a STEM field. It is difficult to judge how many people stopped by our table, but we seemed to generate a good amount of interest for the program.

The next semester, I helped with a NanoJapan info-session and gave a presentation similar to the one that I gave Professor McCoy's class. Dr. Matherly coordinated the session and gave information about the logistics of the program and the application process. She was kind enough to give me the majority of the time for my presentation. As with the "World of Physics" presentation, I explained why the students should be interested and I provided a quick summary of my activities in Japan. There was a significant amount of interest at the meeting, but I still did not have any students email me after the session (although they may have contacted Dr. Matherly).

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That same semester, I tried to organize my own information session as a Resident Assistant (flier attached). Due to the lower number of STEM majors in my building, I didn't generate enough interest to hold a meeting or invite a guest speaker, but I did contact each interested resident individually. Eventually, Jordan Hoyt emailed me about the program and I helped guide him through the application process. Even though the majority of my efforts did not result in sustained interest, I take pride in the fact that I eventually succeeded with one student. Jordan made it into the 2013 program and ended up working in the same lab as Preeya, and it was exciting to see Jordan experience the NanoJapan program as I did.

After NanoJapan, I started doing research at The University of Tulsa with Dr. Justin Chalker in organic chemistry. We investigated the synthetic utility of a new ligand for palladium in the Suzuki-Miyaura cross coupling reaction. I prepared our catalyst system in a variety of solvents and helped to show that our new catalyst was effective for a wide variety of substrates. The following summer, I participated in the Tulsa Undergraduate Research Challenge, where I continued my work with Dr. Chalker. That summer, I co-invented a solid-supported version of my catalyst to be used in flow chemistry. (I actually gave a presentation about this at Rice last fall and won an "Outstanding Presentation" award!) Unfortunately, my job as an RA prevents me from doing any research during the academic year, but I have applied for a Goldwater scholarship so that I can continue my research with Dr. Chalker during my senior year.

This summer, I am applying for a variety of summer REU's, one of which is international. My experience in NanoJapan and my passion for chemistry have guided me to the field of material science, and I plan to attend graduate school in this subject. I hope to find a summer program that not only allows me to explore material chemistry, but also become acquainted with a potential graduate school. Being a past participant of NanoJapan has had a large impact on my career goals and my academic interests. It has also given me valuable experience in working with other cultures and recognizing key differences in how people behave or communicate. I was fascinated with graphene before the program, but now I have an even deeper understanding of the complexity of and potential for this material. The NanoJapan program gave me hands-on experience with nanomaterials like graphene, and this experience will help make me a much more competitive applicant for future programs and graduate schools.