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Subject: Experimental Physics

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## **Final RISE Report**

I feel so fortunate to have had such a wonderful experience working and living in Germany this summer. RISE really allowed me to marry my desire to travel and discover a new culture with my wish to gain hands-on experience in my field of study.

I had made brief visits to Germany before this summer but I surprised myself with how much I learned from living in Germany for an extended period of time. It really allowed me to gain an insight that I realized is impossible to acquire during a whirl-wind tourist's tour. I found myself gaining a deeper and more nuanced understanding of German people and German culture and was so pleased to have a wonderful resource in my co-workers, whom I often enlisted to answer my questions.

I knew rather little about Germany universities and research in Germany before my arrival in Paderborn but I walked away with a very positive impression of both. I realized that university degree programs in Germany tend to be more structured and focused than the degree programs at my own liberal arts college. German masters programs also seem a bit more structured than the ones I am familiar in with the states and some seemed so appealing that I am even considering returning to Germany for graduate work!

One of the things that left me really pleasantly surprised is how researchers seem to work with industry and my own mentor pointed out all of the patents that had been created or were in the works in just our one working group. I also really enjoyed the social dynamic in the group I was working with this summer. Everyone from undergraduates to technicians to the P.I. would socialize in and even outside of the lab. I think that this made for a very productive and positive work environment.

Academically, I was very excited to get started with my internship this summer because I would be exploring a whole new area of physics. I had only done a little work in optics before and now I would be working had a chance to work with photonic crystals and gain some expertise and hands-on experience in a whole new field with really exciting real-world applications. I especially appreciated the presence of photonic crystals and photonic crystal research in industry, as I have recently been thinking about pursuing a career in industry myself.

Since I didn't know a lot of the scientific background behind photonic crystals, my mentor sent me some great introductory materials to familiarize me with the field. I would usually spend some time during my days reading a research paper or an excerpt from a textbook and building my theoretical knowledge so that I would better understand the work we were doing in the lab. Unfortunately we were rather plagued by equipment failure and delays this summer so we didn't get quite as far in the project as was originally planned but I did learn how to synthesize nanoparticles, which would make up our photonic crystals. I also learned about some of the other work going on in the lab, like the conversion of carbon into silicon carbide, a very hard substance with a plethora of industry applications ranging from car brakes to ceramic plates in bulletproof vests. One of the neatest things I think I got to do was work with a scanning electron microscope. I had never done electron microscopy before and it was really exciting to gain a better understanding of how the microscope worked and capture some images of the nanoparticles we had synthesized to confirm their sizing and uniformity. I was even able to gain some experience working with modeling software near the end of the internship.

On a personal level, a highlight of my stay in Germany was most certainly just being able to get out into the city and explore on weekends. I used my trusty bike to get around, even sometimes with no particular destination in mind. It was wonderful to walk down the main street alongside Germans and visit all of the lovely shops in the historic town center. I almost felt like a voyeur; an outsider in disguise, capturing a glimpse of everyday life as it looks in Paderborn.

I really walked away from my experience this summer with wonderful impressions of Germany, its people and its higher education system. It was at times difficult to be so far away from home and to be surrounded by the unfamiliar but I can say that I look back with only fond memories and would recommend the experience to everyone.

“I agree that my report and accompanying pictures are used by the DAAD in printed materials, presentations and on the website in order to inform funding organizations, sponsors, and students about the RISE program.”