



Donning a German lab coat, Kurtis Malecha, undergraduate chemistry student, worked in a lab in the new Ford Hall at Minnesota State Mankato. Malecha received the coat when he conducted nuclear research in Germany during the summer of 2011. He traveled to Germany on a research fellowship.

Understanding something in theory is much different than practicing it.

Kurtis Malecha, Minnesota State Mankato undergraduate student, knew there were many ways to approach research, but approaching it from German culture made the lesson come to life. During summer 2011, Malecha spent two months conducting research on nuclear waste in Germany.

“In addition to making me more aware that there are different ways to go about research,” said Malecha, “the experience gave me a global perspective about what it means to be a student in Mankato and in the U.S. and the importance of collaborating with people in other cultures.”

An Honors student majoring in chemistry with minors in math and German, Malecha constantly looks for ways to build his portfolio for graduate school. As a first-year student, his German professor presented him with information on Deutscher Akademischer Austausch Dienst (DAAD), the German academic exchange service that offers students the chance to work with research groups at universities and institutions across Germany. At the time, Malecha set it aside.

As he entered his sophomore year, he began seriously looking for research opportunities. Malecha pulled out the

DAAD information and talked with his advisors, who encouraged him to apply.

Malecha completed his application in January 2011 and in March was awarded the Research Internships in Science & Engineering (RISE) fellowship to Johannes Gutenberg Universität in Mainz, Germany. He was one of 305 undergraduates to receive a DAAD award, out of 1,670 students who applied.

During the summer, Malecha assisted German chemist Nils Stöbener with his doctoral research on the mobility of a specific nuclear waste product, Neptunium. Currently, Malecha explained, Germany is trying to decide what to do with its nuclear waste. One of the proposals is to bury it in salt repositories.

Neptunium—a radioactive by-product of nuclear fission—exhibits two oxidation states or species. Neptunium’s ability to leach is mainly determined by the species and its interaction with the host material—in this case, salt and the surrounding clay.

Malecha assisted Stöbener with the development of a method to identify different Neptunium species at the ultratrace level. The purpose of the research is to eventually determine whether or not measurable amounts of radioactive waste leak out of the salt-buried Neptunium.

In addition to a prestigious internship feather in his cap, the summer provided Malecha with unique research credentials. “Due to U.S. regulations nuclear research is not an option for undergraduate students here,” he said. “Working fairly independently, I gained invaluable analytical and practical skills. I wanted to be sure what I dumped down the drain was OK to dump down the drain.”

The benefits of Malecha’s summer in Germany extend beyond the lab. As a self-described introvert who often chose studying over socializing, the experience pushed him out of his comfort zone.

“Sometimes it is good to go out of your comfort zone. Sometimes you have to push yourself. Sometimes you need the push from outside,” he said. “When I talked to my professors, they encouraged me to go for it. In Germany, I was far away from my established support system and I needed to figure things out for myself, which translated into a pragmatic approach in both my professional and personal life.”

When asked if he had any advice for other students interested in international research, Malecha said, emphatically, “Do it! It makes you look at the world in a different way.”

OUTSIDE HIS COMFORT ZONE

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