

Nuclear Engineering Doctoral Student Wins International Award

As a second-year doctoral student in NC State's Nuclear Engineering Department, Brian Hehr has spent the past eight years developing and applying theories, one of which won him the Best Student Paper Award at the International Conference on the Physics of Reactors in Interlaken, Switzerland this fall.

Hehr's paper, co-authored by director of the Nuclear Reactor Program and adviser Dr. Ayman Hawari, was chosen from about 65 student papers at the conference.

Their paper, *Calculation of the Thermal Neutron Scattering Cross Section of Alpha Quartz*, addresses the "coupling between neutron radiation from nuclear material buried underground (e.g. waste storage casks) and the surrounding earth." His research provides data that have numerous applications in the field, encompassing any neutronic simulation of an environment containing quartz, which includes sand and most types of soil.

"Our result was obtained through the most fundamental principles of physics," Hehr said, explaining the practicality and utility of his research. "And, of course, it focuses on a material very commonly encountered on Earth."

According to Hehr, this work fits well into his main doctoral research – "computational simulations of the behavior and properties of graphite."

In addition to his doctoral work at the University, Hehr also received baccalaureates in physics and nuclear engineering and master's in the latter field from NC State.

However, Hehr said that attending NCSU was not always a given. When choosing an in-state institution that offered a high-quality, good-value education, he had two schools in mind.

"In the end, it was between Chapel Hill and NC State," Hehr said. "NC State had a more scientific, technological aura."

So, Hehr left his home in Stallings, North Carolina, for Raleigh, where he finished his undergraduate degrees and pursued graduate studies under the advisement of Hawari, professor in nuclear engineering.

"Dr. Ayman Hawari approached me with a proposed project after a senior design meeting," he said. "I was particularly interested because this project engaged both my nuclear engineering and physics backgrounds."

The research opportunity and others like it, including two summers at Los Alamos National Laboratory, a fellowship through the U.S. Department of Energy's Advanced Fuel Cycle Initiative, and several conferences and American Nuclear Society meetings, have fueled Hehr to continue his work.

"I am a theoretical-type person," he said. "I prefer running simulations on a computer to hands-on work."



Prof. Nam Zin Cho presents Brian Hehr with Best Student Paper Award (1st Prize), September 2008.

*From The Graduate School's Grapevine
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