

Small particles, big opportunities
Nanoscience Awareness Day showcases successes of LHU nano students and alumni

Lock Haven University's 2011 Nanotechnology Awareness Day was a success. Students, faculty and guests gathered in Ulmer Planetarium, on Monday October to learn about nanotechnology and how it can open the door to a wide range of educational and career opportunities.

Guest speaker Terry Kuzma of the Pennsylvania State University gave a presentation on behalf of the Nanofabrication, Manufacturing, and Technology (NMT) capstone semester taken by LHU students. Kuzma explained that "nanotechnology" is a broad term for manipulating matter at the atomic level. Because nanotechnology is fundamental, the study of nanotechnology provides a core foundation for all of the scientific disciplines. And because nano encompasses so many scientific disciplines and has a strong impact on daily life in innumerable ways, nano students have great choices and flexibility in their future careers. Nano teaches problem solving skills that can be used in any field, said Kuzma. He cited over 100 employers in Pennsylvania who have hired NMT nano graduates in the past few years.



Four graduates of the LHU nano program gave first-hand accounts of their own experiences and urged students to study Nanoscience.

Nick Drayer graduated from LHU in 2009 with a B.S. in Biology/Chemistry and a minor in Nanotechnology. He described how, as an undergraduate, he knew that he wanted to do research, he wanted to become a doctor, and he wanted to be successful. He believed that the nano program would enable him to fulfill all of

his goals – and he was right. Getting into medical school is not easy, he said, noting that when he applied, Drexel had 12,000 applicants for 120 places. Drayer found that his nano research at LHU set him apart. He is now in medical school at Commonwealth Medical College.

Christopher Grablutz, who earned his B.S. in Applied Physics-Nanotechnology from LHU in 2011, is employed as a project engineer with Pfister Energy of Baltimore, a renewable energy company in New Jersey. His company creates solar systems for commercial properties, including flexible, thin-skinned photo-electric film that can be applied directly to roofs and even curved surfaces. His nano research at LHU enabled him to build his professional portfolio, so that when he applied for his job, he was hired over 100 other applicants. Employers, he said, are always asking, "What makes this person different from all the others?" In his case, the answer was Nanotechnology.

Dr. Justin Ingram earned his B.S. in Biology/Chemistry and A.A.S from LHU in 2005 and his Ph.D. in Neuroscience from Penn State in 2011. He is currently a post-doctoral student at Penn State, where he is doing research at the Center for Neural Engineering. In his presentation, entitled “Beyond the Classroom: Real-Life Biological Applications for a Nanoscientist,” Ingram explained how his knowledge of nanotechnology enabled him to develop new cancer treatment delivery systems and a means of measuring oxygen levels to predict epileptic seizures. He echoed Kuzma’s emphasis on the problem-solving skills provided by his study of nano, saying that his successes are the result of a “critical mind.”

Dr. Stephen Swiontek, B.S. in Applied Physics-Nanotechnology from LHU in 2010 and Ph.D. in Engineering Sciences from Penn State in 2010, summed up the opportunities available to those who study nano in his presentation, “There’s Room (for You) at the Top.” As an LHU undergraduate, he worked with Professor Marian Tzolov on an alternative method of fabricating cathodes utilized in Polymer Light Emitting Diodes (PLEDs); as a result of their research Swiontek and Tzolov have been granted a patent as co-inventors of the process. While at Penn State, he received a grant from the National Science Foundation which enabled him to do research in Korea for four months.

Following the presentations by LHU nano alumni, the audience heard presentations by five current nano students who received prestigious SURF and REU grants for summer study at some of the premier institutions in the county. Summer Research Fellowship Programs (SURFs) are highly competitive, intensive research opportunities in a variety of fields. Research Experience for Undergraduates (REUs) are opportunities for students to actively participate in a professor’s research project. The National Science Foundation funds many of these programs which span the topics of natural sciences, mathematics, computer science and others.



Seniors Austin J. Mohny, Karisa Bowersox, Chelsi Kwitoski, Jacob Cox and Eric Driscoll described their research and shared some of their personal experiences at their host institutions over the summer. Host schools ranged from the nearby (two studied at Penn State) to the far-away (Georgia Institute of Technology in Atlanta, Georgia; Upstate Medical University, a SUNY institution in Syracuse, New York; and Harvey Mudd College in Claremont, California.)

After the formal presentations, prospective students and their families took the opportunity to meet with LHU nano students and nano alumni. With graduate school and future careers on their minds, they took advantage of the chance to learn more about the LHU Nano Program and to ask questions about scholarship opportunities.

The LHU nano program has been recognized by the National Science Foundation through its multiple funding awards to the program since 2008. The program has been particularly

successful in attracting first generation college students. If the program's 2012-16 grant from NSF is renewed next year, some outstanding students entering LHU in fall 2012 will be eligible to receive scholarships of up to \$10,000 year, depending on their unmet need, for the four years they will take to graduate from the nano program.