Preparing Yourself for a Career in Applied Nuclear Engineering: A Personal Perspective

Eric Chris, UNEP Student, will start the seminar with a presentation on his 2010 summer internship with Rapiscan Laboratories. Following him will be Dr. Dan Strellis and his presentation:

One of the largest threats facing our nation and the free world today is nuclear terrorism. The current US Administration\(^1\) and international bodies\(^2\) consider nuclear proliferation a high priority challenge. The education and training students receive today in engineering disciplines prepare them well for addressing this challenge in the future. The US Government (through the DOE, DOD, and DHS) is funding research projects to counter the nuclear terrorism threat. New radiation detectors, new detection techniques, and new enabling subsystems are being developed for a variety of deployment scenarios and missions. At Rapiscan Laboratories, we are heavily involved in this effort with current research projects ranging from developing novel neutron detectors to developing an aircraft screening system to developing tunable x-ray sources for active interrogation. In this talk, I will present a sampling of the related DHS Domestic Nuclear Detection Office (DNDO) projects and the underlying physics behind them. I will present specific examples of how my training in nuclear engineering prepared me for researching current challenges related to homeland security.

Biography

Dr. Dan Strellis is the Director of R&D Technical Programs at Rapiscan Laboratories, the research arm of Rapiscan Systems. Rapiscan Systems is a major supplier of security screening systems throughout the world with over 70,000 units deployed. He oversees the current Government-funded R&D projects for the company in an effort to develop new techniques and capabilities for the Rapiscan Systems products. He received his B.S. and M.S. in Nuclear Engineering from the University of Illinois and his Ph.D. in Nuclear Engineering from University of California, Berkeley. He has always had an interest in the nuclear fission process and its many uses. At Illinois, he used the university TRIGA fission reactor to perform neutron activation analysis studies on Midwestern coal, Antarctic air samples, and aquifer water. His doctoral dissertation was on studying the fission properties of neutron-deficient americium isotopes. He is currently investigating fission signatures for detecting smuggled Special Nuclear Material. He has published several journal articles on the use of neutron-based interrogation techniques for detecting explosives and nuclear materials. He is member of the American Nuclear Society and was a US delegate to the IAEA Workshop on Nuclear Resonance Radiography in 2009.

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\(^1\) Speech by US President Barak Obama, Prague, Czech Republic, April 5, 2009

\(^2\) IAEA Mission Statement: http://www.iaea.org/about/mission.html