



American Nuclear Society Nevada Section

Technical Member Meeting

Friday, May 1, 2015 at 5:30 P.M.

Desert Research Institute, 755 E. Flamingo Blvd.

Conference Room 181 (two story building east of the NATM)

Speaker: Evan Sengbusch

Accelerator-Based Neutron Generator to Drive Sub-Critical Medical Isotope Production System



Phoenix Nuclear Labs (PNL) is an early stage technology design and manufacturing company that has developed a proprietary neutron generator technology. Over the past eight years, PNL scientists and engineers have designed and built several generations of neutron generators. PNL's novel gas target neutron generator technology has achieved a D-D fusion neutron yield of 3×10^{11} n/s. This state-of-the-art neutron generator technology is essential for many applications of critical global importance including neutron radiography, medical isotope production, detection of explosives and nuclear material, materials characterization, and others. The production of medical isotopes has been a particularly important objective for PNL. Phoenix Nuclear Labs spun off a new company (SHINE Medical Technologies) to utilize its patented neutron generator technology to produce medical isotopes in 2010. The SHINE system employs an accelerator-driven, low-enriched uranium (LEU) solution in a geometry optimized for high-efficiency isotope production. Neutrons produced by deuterium-tritium fusion reactions in the accelerator target drive fission in the subcritical LEU solution.

Dr. Evan Sengbusch is the Vice President of Phoenix Nuclear Labs. He received a BS in Physics and in Mathematics from the University of Iowa and an MS and PhD in Medical Physics, and an MBA in Technology Management, from the University of Wisconsin-Madison. His doctoral work focused on particle accelerator design and dose distribution optimization for proton radiation therapy for cancer treatment. Evan has extensive experience with computational modeling of radiation dose distributions in cancer patients, ion beam transport simulations, and particle accelerator design. He is a past recipient of a DoD National Defense Science and Engineering Graduate Research Fellowship, an NSF Graduate Research Fellowship, and a National Institutes of Health Biotechnology Training Grant. He has technical experience working in accelerator physics at CERN, plasma physics at the University of Iowa, and medical physics at the University of Wisconsin-Madison. He also previously spent several years working in the venture capital industry evaluating early stage technology companies.

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