

Nuclear Engineering Seminar

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3:30pm | Webex

Addressing Key Nuclear Technological Gaps via Tensioned Metastable Fluid Detectors

Abstract

The Metastable Fluids and Advanced Research Laboratory (MFARL) at Purdue University conducts research pertaining to transformational nuclear radiation sensors and instrumentation. These sensors, Tensioned Metastable Fluid Detectors (TMFDs), boast high-efficiency, gamma/beta blind, directional, rapid monitoring of fission/alpha/neutron events. MFARL research collaborates extensively with industry, academia and various federal agencies and national laboratories. This talk will showcase the current work being performed at MFARL including: combating nuclear terrorism, nuclear facilities health-safety, nuclear medicine, and dark matter search, as well as developing energetic materials, addressing vapor explosions in nuclear/non-nuclear industries, and radiation tailored “green”, VOC free renewable polymers.

Nathan Boyle is a post-doctoral research assistant at Purdue University specializing in tensioned metastable fluid detectors for addressing key technological gaps in nuclear safety and security. His current work is geared towards combatting nuclear terrorism, nuclear health and safety, actinide spectroscopy, H^{*10} dosimetry, and radiation detection in extreme environments. He was selected as the School of Nuclear Engineering’s Nominee for the CGS Outstanding Dissertation Award and received the Outstanding Student Research Award, Bilsland Fellowship, and NRC Fellowship. He earned his B.S. and Ph.D. degrees in 2015 and 2020 in Nuclear Engineering from Purdue University.