FP&L Distinguished Nuclear Lecture Series

Presents

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Radiochemistry Center of Excellence: Expanding the Horizons of Nuclear Forensics Analysis

March 17, 2017 | 11:00 AM | AHC4 Room 302

This event is open to the public

Abstract:

Nuclear forensics analysis is a growing area of study that is defined as "*The technical field of interpreting signatures and other clues in or about potential nuclear threats, such as nuclear materials that have slipped outside of regulatory control, nuclear devices that could produce nuclear yield, and other classes of radiological threats such as Radiological Dispersal Devices (RDD) and Radiological Exposure Devices (RED)".* Furthermore, nuclear forensics analysis must be completed in a timely fashion that enables accurate attribution, and must be performed on materials that can come from 1) pre-detonation interdiction sources and 2) post-detonation scenarios.

This talk will focus on the on-going efforts at the University of Tennessee's Radiochemistry Center of Excellence that deal with research in both the pre- and post-detonation research areas. In particular, this talk will highlight research that is focused on the development of surrogate nuclear melt glass, rapid separations for fission products, and metal chronometry efforts. The post-detonation topics will detail the development of surrogate nuclear melt glass materials that can be tailored to meet a number of urban, sub-terrain, and maritime debris scenarios. Upon dissolution of these materials, the fission products can be separated in the novel gas phase separations, which will be discussed. Finally, there will be a focus on the efforts that are taking place to understand the metal diffusion rates in surrogate alloys that are representative of the U-Mo and Pu-Ga alloys commonly found with special nuclear materials.

It should also be noted at all of the research highlighted deals with existing collaborations that are on-going between the UTK and the U.S. Army and/or the United States Military Academy.

Bio:

Howard Hall is a world-renowned expert in the intervention of nuclear terrorism.

Hall is a nuclear chemist who explores ways to detect and control illicit radioactive materials. He also focuses on methods for responding to and recovering from nuclear incidents.

Hall is jointly appointed as part of the faculty of the Bredesen Center for Interdisciplinary and Graduate Education (CIRE). He is a senior fellow in Global Security Policy at the Howard H. Baker Jr. Center for Public Policy and serves as director of the Baker Center's Global Security Policy Program. He also serves as director of the UT Institute for Nuclear Security and leads UT's publication of the *International Journal of Nuclear Security.*