

Chuck Melcher
University of Tennessee, Knoxville

Title: New Scintillators for Nuclear Security

Abstract:

This presentation will summarize novel approaches to the design and synthesis of new scintillation materials for radiation detection. New materials can be grown from the melt as single crystals via various directional freezing techniques including Czochralski, Bridgman, and micro-pulling-down. In addition, transparent optical ceramics can be achieved through densification of powders by application of heat and pressure to form net-shape polycrystalline bodies. Scintillation mechanisms will be briefly discussed, and strategies for controlling point defects and optimizing electronic band structure will be explored.