

Abstract

Elinor Mullin
University of Michigan
elmullin@umich.edu

Stilbene Cube Characterization for a Mini Neutron Scatter Camera

Localizing and identifying radioactive sources and special nuclear material (SNM) are important aspects of nuclear nonproliferation and safeguards for both emergency response and treaty verification. Human portable imaging systems are of increasing interest because of their small, compact design, making them viable for emergency responders and inspectors to use in the field. Because neutrons are not found at high rates in background radiation, the detection of neutrons can signify the presence of SNM. Organic scintillators are capable of discriminating between neutrons and gamma rays through pulse shape discrimination, making them suitable detectors for a neutron imaging system. This work details the characterization of stilbene cubes for a mini neutron scatter camera. The characterization includes pulse shape discrimination and time resolution optimization.