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Ubiquitous gamma ray imaging and characterization for nuclear forensics, nuclear nonproliferation and radiological emergency response ROBERT HAYES, North Carolina State University — Using solid state dosimetry methodologies such as electron paramagnetic resonance, thermoluminescence and optically stimulated luminescence, this work shows how all insulator materials can be used for a wide variety of detection modalities. These include retrospective gamma ray spectrometry, historical gamma ray source imaging and low level radiation detection. Proof of concept demonstrations have been made for population dosimetry in emergency response applications, nuclear nonproliferation treaty verification measurements and confirmation declaration evidence as a forensics technique.

Robert Hayes
North Carolina State University

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