

Abstract Submitted
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The Effect of Nuclear Cross-Section Data on the Measurement of Elemental Densities in Explosives Threat Analysis¹ M.E. NICHOLS, P.C. WOMBLE, A. BARZILOV, E. HOUCHINS, J.R. MOORE, J. BOARD, J. PASCHAL, L. HOPPER, Western Kentucky University Applied Physics Institute — With the impending threat of terrorist attacks in the modern age, it is important to neutralize these threats as quickly and efficiently as possible. One critical means of doing this is to detect high explosives. Our research principally deals with the detection and quantification of the elements hydrogen, oxygen, nitrogen and carbon to differentiate between explosives and non-explosives and presents an effective means of detection via quantification of these elemental densities. Materials can be separated into innocuous and threat categories based on their elemental densities. For nuclear-based measurements, however, the nuclear cross-sections erode this segregation. We have been developing threat algorithms in which the nuclear cross-section has been coupled with the elemental density.

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