Abstract Submitted
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Detector characterization and spectroscopy with C^7LYC n/gamma scintillators[1] JOSEPH DOPFER, ANDREW ROGERS, PETER BENDER, PARTHA CHOWDHURY, MICHAEL GILES, DANIEL HOFF, University of Massachusetts, Lowell, EDWARD LAMERE, Massachusetts Institute of Technology, CHRISTOPHER MORSE, Lawrence Berkeley National Laboratory, SANJANEE WANIGANETHTHI, University of Massachusetts, Lowell — Fast-neutron detection and spectroscopy is important for both basic and applied Nuclear Science. Inorganic ^{7}Li-enriched $Cs_2^7LiYCl_6$:Ce (C^7LYC) scintillation detectors are an emerging technology that provide unprecedented ($\approx$10%) energy resolution for fast neutrons in the few MeV range, obtained through the ^{35}Cl(n,p) reaction. Additionally, the scintillators are sensitive to gamma rays, having an efficiency and energy resolution similar to NaI. Superior pulse-shape discrimination properties enable extremely clean identification of neutron and gamma events. Measurements using both sources and nuclear reactions generated with a 5.5-MV Van de Graaff accelerator have been carried out at UML to further explore their potential, including scattering experiments as test of their full spectroscopic potential. An overview of C^7LYC digital pulse-shape analysis techniques as well as timing and spectroscopy measurements will be presented.

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