

Abstract Submitted
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Design and Performance of Neutron Detector N*¹ IWONA PAWELCZAK, JAN TŐKE, YUN-TSE TSAI, W. UDO SCHRÖDER, University of Rochester Departments of Chemistry and Physics — The design of the N* Detector (“Neutron Sandwich Transmuter/Activation- γ Radiator”) and its response to neutrons are described. The N* is a high efficiency plastic-scintillation detector with sensitivity to neutrons in a wide energy range and multi-hit information. The device consists of a stack of plastic scintillator slabs (Saint Gobain BC-408) alternating with thin radiator films (PDMS), which are loaded with 0.5% (by weight) of Gd. The stack is coupled to a photomultiplier tube. The scintillator plays the dual role of a neutron moderator and a γ -radiation detector. Scintillation light is produced in response to both, the prompt moderation process and the delayed emission of Gd-capture γ -rays. The design and experimental results with respect to light response, energy and time resolution, and detection efficiency will be discussed, along with comparison to Monte Carlo simulations.

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