

Abstract Submitted
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Semiconducting boron carbide polymers devices for neutron detection ELENA ECHEVERRIA, University of Nebraska-Lincoln, FRANK L. PASQUALE, ROBINSON JAMES, University of North Texas, JUAN A. COLÓN SANTANA, SHIREEN ADENWALLA, University of Nebraska-Lincoln, JEFFRY A. KELBER, University of North Texas, PETER A. DOWBEN, University of Nebraska-Lincoln — Boron carbide materials, with aromatic compounds included, prove to be effective materials as solid state neutron detector detectors. The I-V characteristic curves for these heterojunction diodes with silicon show that these modified boron carbides, in the presence of these linking groups such as 1,4-diaminobenzene (DAB) and pyridine, are p-type. Cadmium was used as shield to discriminate between neutron-induced signals and thermal neutrons, and thermal neutron capture is evident, while gamma detection was not realized. Neutron detection signals for these heterojunction diode were observed, a measurable zero bias current noted, even without complete electron-hole collection. This again illustrates that boron carbide devices can be considered a neutron voltaic [1].

[1] N. Hong, J. Mullins, K. Foreman, S. Adenwalla, J. Phys. D-Appl. Phys. 43 (2010) 275101

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