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The Development of a n-type GaN Fast Neutron Spectrometer that is also Gamma-Blind NOEL A. GUARDALA, Naval Surface Warfare Center Division Bethesda site, JOHNATHAN D. WENSMAN, Naval Surface Warfare Center and Georgetown Univ., V. K. MATHUR, Naval Surface Warfare Center Division Bethesda site — GaN has attracted a good deal of interest in recent years as an attractive scintillation material based on both its intrinsic electronic and light-emitting properties and its response to a variety of differing types of energetic ionizing radiation and have led to a number of studies devoted to the understanding and practical use of GaN devices for radiation detectors. Some of these studies have focused on the potential use of GaN for thermal neutron detection via the incorporation of nuclides that have large thermal-neutron capture cross sections like: ${}^6\text{Li}$, ${}^{10}\text{B}$ or ${}^{155,157}\text{Gd}$. We have demonstrated for the first time that fast recoil Ga and N ions produced via neutron elastic scattering a fast neutron spectrum related to the energy and intensity of various neutron beams can be obtained for energy and flux determination and in characterizing the fast neutron source. Such a device can have an impact in the areas of: nuclear physics studies, monitoring of nuclear reactor and nuclear materials (in a covert and overt manner), radiation health physics for both area and personnel monitoring and medical applications under therapy conditions where fast neutrons can be emitted as by-products of the incident beam with the patient and surroundings.

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