

Abstract Submitted
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Defect studies of Vanadium doped 4H-SiC using optical admittance spectroscopy¹ WONWOO LEE, MARY E. ZVANUT, University of Alabama at Birmingham — Semi-insulating SiC is an excellent candidate for a variety of applications, including microwave FET's and other devices for high power and high temperature applications. Vanadium acts as an amphoteric impurity in 4H-SiC with a $V^{3+/4+}$ acceptor level thought to be within 1 eV of the conduction band edge and a $V^{4+/5+}$ donor level known to be 1.6 eV below the conduction band edge. Vanadium is an efficient carrier trap and recombination center. We have studied vanadium doped 4H-SiC with the optical admittance spectroscopy (OAS) at room temperature. After taking into account phonon-assisted optical transitions, the estimated threshold energies can be compared with defect levels measured using thermal techniques. Compared with data reported in the literature, our results show that the defect level $E_c - 1.5$ eV is close to the vanadium donor level and the other level $E_c - 0.67$ eV is within the range of the value attributed to the vanadium acceptor level.

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