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EPR Study of SiC Defects Related to Device Processing SARAH THOMAS, MARY ELLEN ZVANUT, University of Alabama at Birmingham — SiC is a promising replacement for Si in future high power, high temperature electronic devices. The surface of SiC is particularly important to MOSFETs, where the active region is on the surface. Previous research, which used electron paramagnetic resonance (EPR) spectroscopy to study electronically active defects in SiC, suggested that a defect, likely a broken C-Si bond, was created by oxidation. Our research focuses on identifying the cause and location of defects in as-grown SiC substrates using EPR. Samples underwent isochronal anneals from 400 to 1000 °C in high purity dry (0.9 ppm) N_2 and O_2. Room temperature EPR spectra showed two signals, one broad (10 G) and one narrow (4 G). Because the results from the N_2 and O_2 anneals were similar, we conclude that the defects are not affected by the reaction with oxygen. That the heat of annealing decreases the broad EPR signal suggests the defect is removed, rather than passivated. During the talk we will discuss the heat treatment results, as well as the location of the defect, as discovered through reactive ion etching and forming gas anneals.

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