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Electrical properties of MOS devices fabricated on the 4H-SiC Cface.<sup>1</sup> ZENGJUN CHEN, A.C. AHYI, J.R. WILLIAMS, 206 Allison lab, Auburn University, Auburn, AL 36849 — The electrical characteristics of MOS devices fabricated on the carbon face of 4H-SiC will be described. The C-face has a higher oxidation rate and a higher interface trap density compared to the Si-face. The thermal oxidation rate and the distribution of interface traps under different oxidation conditions will be discussed in this presentation. Sequential post-oxidation anneals in nitric oxide and hydrogen effectively reduces the interface density (D<sub>it</sub>) near the conduction band edge. However, deeper in the band gap, the trap density remains higher compared to the Si-face. Time-dependent dielectric breakdown (TDDB) studies have also been performed to investigate oxide reliability on the C-face, and current-voltage measurements show that a low barrier height against carrier injection likely contributes to oxide degradation. Nevertheless, the effective channel mobility and threshold voltage for n-channel C-face lateral MOSFETs compare favorably with similar Si-face devices.

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