Abstract Submitted
for the GEC06 Meeting of
The American Physical Society

**Passivation of the SiC gate-oxide interface using remote microwave plasmas**[1] S.F. ADAMS, J.D. SCOFIELD, C.A. DEJOSEPH, JR., Air Force Research Laboratory, Wright-Patterson AFB, OH, J.M. WILLIAMSON, Innovative Scientific Solutions, Inc., Dayton, OH, J.D. UMBEL, UES, Inc., Dayton, OH — A well-known challenge in fabricating a SiC MOSFET switch is attaining a low density of defects on the gate oxide/SiC interface. The typical high temperature thermal oxide process leaves carbon impurities at the $SiC/SiO_2$ interface which cause high densities of defect states. The result is a decrease in channel conductivity, thus decreasing device efficiency. We have investigated two approaches to this problem involving treatment with atomic species generated by remote microwave plasma. First, a plasma passivation technique was analyzed employing atomic nitrogen to extract the carbon impurities from the interface. Second, an $O_2$ plasma was used to grow an initial highly-structured $SiO_2$ layer on the SiC surface using a low temperature slow-growth process. Results will be presented including the effects of these plasma processes on SiC MOSFET optimization along with the role that atomic nitrogen and oxygen plays in each plasma process.

[1]This work supported by the Air Force Office of Scientific Research.

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Date submitted: 14 Jun 2006 Electronic form version 1.4