Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Epitaxial Growth and Characterization of Void-Free 3C-SiC Films on Germanium-Modified Si Substrates using RTCVD DOMINGO FERRER, SHAGANDEEP KAUR, SAYAN SAHA, SEYOUNG KIM, EMANUEL TUTUC, SANJAY BANERJEE, Microelectronics Research Center, The University of Texas at Austin, NILRATAN MAZUMDER, Department of Applied Physics, IERCEM Institute of Information Technology (WBUT) — Cubic silicon carbide (3C-SiC) is an attractive wide band gap semiconductor, frequently employed under extreme conditions such as high temperature, high frequency and high power, due to its superior physical and chemical properties. The electronic properties of epitaxial graphene grown on SiC integrated on silicon substrates also offer great potential as a viable candidate for "*beyond CMOS*" devices. A detailed understanding of both the structure and growth of epitaxial graphene, and the SiC/Si interfaces is very important for designing feasible devices. To this end, the work will analyze the growth and characterization of 3C-SiC on Si(100) and Si(111) substrates. 3C–SiC epitaxial crystal growth was carried out at temperatures as low as 750°C using Rapid Thermal CVD. A thin germanium buffer layer was deposited on Si substrates prior to epitaxial growth of SiC to suppress the formation of voids. The precursors utilized were (CH3)3SiH and GeH4, for silicon carbide and germanium deposition, respectively.

Domingo Ferrer
The University of Texas at Austin, Microelectronics Research Center

Date submitted: 29 Nov 2008 Electronic form version 1.4