

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Electronic properties of Si-C interfaces¹ XIANG-GUO LI, HAI-PING CHENG, Department of Physics, University of Florida, USA — In this work, we report our investigations of interfacial properties of Si-C systems. Electronic properties of Fe-doped carbon on silicon surfaces, Si-Fe-C layered structures and Si-graphene-Si junctions have been studied using first-principles calculations. Charge transfer at the interfaces, densities of states, and magnetization are fully analyzed. These problems are important because recent experiments show that Fe@C-Si materials have giant electro-resistance and magneto-resistance highly sensitive to the external magnetic field. The non-magnetic feature leads to very small magnetic noise. In addition, photovoltaic effects were also observed in some of these systems.

¹Acknowledgement: funding support from DOE/BES/DE-FG02-02ER45995 and computing resource from NERSC and UF/HPC

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Date submitted: 19 Nov 2010

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