

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Magneto-transport properties of boron-incorporated Si-based nanostructures SUNGMU KANG, JUGDERSUREN BATTOGTOKH, ANDREW C. BUECHELE, DAVID A. MCKEOWN, The Catholic University of America, ROBERT DIPIETRO, DONALD HEIMAN, Northeastern University, IAN L. PEGG, JOHN PHILIP, The Catholic University of America, THE VITREOUS STATE LABORATORY TEAM, DEPARTMENT OF PHYSICS TEAM — Boron-incorporated Mn_5SiC nanowires were grown using chemical vapor deposition. Cluster of these nanowires exhibit magnetic hysteresis loops at room temperature and the strength of the magnetic behavior depend on the concentration of the boron incorporation. In the presence of an external magnetic field, Mn_5SiC nanowire-based devices exhibit tunable spin dependent transport properties. Huge magnetoresistance and metallic behavior were observed in lightly boron-incorporated nanowires, on the other hand, low magnetoresistance and semiconducting behavior were observed with higher boron content in Mn_5SiC nanostructures.

Sungmu Kang
The Catholic University of America

Date submitted: 17 Nov 2009

Electronic form version 1.4