Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Investigation of Acceptor States and Landau Levels in (In,Mn)As by Scanning Tunneling Spectroscopy YOUNG JAE SONG, NIST-CNST/UMD-NanoCenter, NIKOLAI ZHITENEV, JOSEPH STROSCIO, Center for Nanoscale Science and Technology, NIST, Gaithersburg, MD, GREGORY RUTTER, PHILLIP FIRST, Georgia Tech., Atlanta, GA — Increased interest in spin-based electronics as a replacement for charge-based electronics has led to significant scientific attention on dilute magnetic semiconductors (DMS). Magnetically doped III-V semiconductors are a strong research focus, with the aim of achieving higher Curie temperatures by understanding the microscopic nature of ferromagnetism in these DMS materials. In this presentation, we discuss our recent study of single Mn acceptor states in InAs(110). Mn impurities deposited at low temperature are substituted by using STM atom manipulation techniques to exchange a Mn atom with a surface In atom [1]. Voltage-dependent imaging and scanning tunneling spectroscopy (STS) reveal a number of electronic states associated with the Mn acceptor state and the Landau levels in the 2D subbands of an accumulation layer as a function of applied magnetic field. This work has been supported in part by the NIST-CNST/UMD-NanoCenter Cooperative Agreement, NSF grant ECS-0404084, and Dept. of Commerce/NIST grant 60NANB7D6166. [1] Dale Kitchen *et al*, Nature 442, 436 (2006)

Young Jae Song
NIST-CNST/UMD-NanoCenter

Date submitted: 27 Nov 2007 Electronic form version 1.4