Abstract Submitted
for the MAR09 Meeting of
The American Physical Society

Simultaneous Optical Imaging and Electrical Control of Magnetization in (Ga,Mn)As[1] M.E. NOWAKOWSKI, G.D. FUCHS, D.D. AWSCHALOM, Center for Spintronics and Quantum Computation, University of California, Santa Barbara, CA 93106, A. BALK, M.J. WILSON, N. SAMARTH, Department of Physics and Materials Research Institute, The Pennsylvania State University, University Park, PA 16802 — Spin dependant phenomena in metals and semiconductors promises the development of low-power logic and memory devices based on electrical control of the magnetization. To realize this potential, precise visual information of magnetic domains is required to design and control electrical structures manipulated by the spin transfer torque. We present studies of magnetization behavior in micron-scale (Ga,Mn)As channels using a recently developed video-rate magneto-optical Kerr effect microscope. Measurements record real-time, diffraction-limited, surface magnetization information including magnetic switching and domain wall motion. The optical measurements are correlated with simultaneous electrical measurements to provide insight into pinning and magnetization transport in these structures.

[1]Work supported by ONR

Mark Nowakowski
Center for Spintronics and Quantum Computation, University of California,
Santa Barbara, CA 93106

Date submitted: 01 Dec 2008 Electronic form version 1.4