

Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Photoinduced magnetism in chemical vapor deposited $V(TCNE)_x$, $x \sim 2$ films J.W. YOO, R. SHIMA EDELSTEIN, P.I. POKHODNYA, A.J. EPSTEIN, Dept. of Physics, The Ohio State University, Columbus, OH 43210-1106, JOEL S. MILLER, Dept. of Chemistry, University of Utah, Salt Lake City, UT 84112-0850 — We previously reported[1] that $Mn(TCNE)_x$, $x \sim 2$, exhibits strong photo-induced magnetism. Here, we extend our study of photo-induced magnetism to $V(TCNE)_x$, $x \sim 2$ which is a magnetic semiconductor with $T_C > 350$ K, can be grown as a film by a CVD process[2] and can be incorporated in spinvalve system[3]. We report that the excitation of $(TCNE) \pi \rightarrow \pi_*$ band with blue light (457.9nm) at low temperature(5 K) and low magnetic field(10 Oe) leads to reduction in the magnetization. The photo-excited effects are more substantial at low magnetic field but the saturated magnetization remains the same as that of the ground state. The photo-excited metastable state has a lifetime $> 10^6$ s at low temperatures. Only after warming above ~ 100 K does the system completely relax to the state before illumination. Possible origins of the observed effects will be discussed. *Supported in part by AFOSR Grant No. F49620-03-1-0175 and DOE Grant No. DE-FG02-01ER45931. [1] D. A. Pejakovic *et. al.*, Phys. Rev. Lett. **88**, 057202 (2002) [2] K. I. Pokhodnya *et. al.*, Adv. Mater. **12**, 410 (2000) [3] J. Bergeson *et. al.*, this Bulletin.

Jungwoo Yoo
Dept. of Physics, The Ohio State University, Columbus, OH 43210-1106

Date submitted: 06 Dec 2004

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