

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Photoinduced Magnetism in Nanoparticles of Prussian Blue Derivatives¹ N. E. ANDERSON, J.-H. PARK, M. W. MEISEL, Department of Physics, University of Florida, F. FRYE, D. R. TALHAM, Department of Chemistry, University of Florida — Nanoparticles of the Prussian blue family are of great interest due to the possibility for applications in magnetic memory, biosensing, and magnetic filtering. Nanoparticles also serve to better investigate fascinating phenomena, such as the anisotropic photomagnetic properties seen in thin films of Prussian blue derivatives.² Here, we present results on $\text{Rb}_j\text{Co}_k[\text{Fe}(\text{CN})_6]_l \cdot n\text{H}_2\text{O}$ Prussian blue analog nanoparticles, which exhibit photoinduced magnetism. The nanoparticles are synthesized in a controlled manner, which allows for particle growth in the range of 5-50 nm. Early experiments show that upon irradiation with light at 5 K for a period of 2 hours, the final magnetization increases on the order of 10-100% compared to the initial dark state value. This increase is comparable in magnitude with the results reported for bulk materials. The change in magnetization is also accompanied by an increase in T_c . Furthermore, the effect of the dispersing agent on the photomagnetism, the size effect on characteristic magnetic properties, and ac susceptibility data will be presented.

¹This work was supported, in part, by the National Science Foundation DMR-0305371 (MWM) and NSF DMR-0543362 (DRT).

²J.-H. Park, E. Čižmár, M. W. Meisel, Y. D. Huh, F. Frye, S. Lane, and D. R. Talham, *Appl. Phys. Lett.* **85**, 3797 (2004).

Norman Anderson
University of Florida

Date submitted: 29 Nov 2005

Electronic form version 1.4