

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Sorting Category: 10.1.6 (E)

Effects of Pressure on the Magnetic Properties of Prussian Blue Analogues¹ M.K. PEPRAH, E.S. KNOWLES, M.F. DUMONT, J.S. XIA, M.W. MEISEL, Dept. Physics and NHMFL, Univ. Florida, C.H. LI, D.R. TALHAM, Dept. Chemistry, Univ. Florida — Prussian blue analogues (PBAs) have been shown to exhibit interesting magnetic characteristics under various external stimuli: charge transfer induced spin transition (CTIST),² a temperature effect; persistent photo-induced magnetism (PPIM),³ an optical effect; and pressure induced electron transfer (PIET).⁴ Our research has established that photocontrol of the magnetic response of CoFe-PBA, can be extended to higher temperatures, accompanied by a decrease in magnetization, using heterostructured PBA particles composed of $\text{Rb}_a\text{Co}_b[\text{Fe}(\text{CN})_6]_c \cdot m\text{H}_2\text{O}$ cores surrounded by shells of $\text{K}_j\text{Ni}_k[\text{Cr}(\text{CN})_6]_l \cdot n\text{H}_2\text{O}$.⁵ This effect is attributed to strain in the shell, induced by a lattice expansion in the core during illumination. We report a similar effect in the core-shells accompanied by PIET under application of external pressure and probe the similarities between optical and pressure effects.

¹Supported by NSF DMR-0701400 (MWM), DMR-1005581 (DRT), and DMR-0654118 (NHMFL).

²N. Shimamoto *et al.* Chem. Lett. **31**, (2002) 486.

³O. Sato *et al.* Science **272** (1996), 704-705.

⁴V. Ksenofontov *et al.* Phys. Rev. B **68** (2003) 024415.

⁵M. F. Dumont *et al.* Inorg. Chem. **50** (2011) 4295.

Prefer Oral Session
 Prefer Poster Session

Marcus Kwasi Peprah
mpeprah@phys.ufl.edu
Dept. Physics and NHMFL, Univ. Florida

Date submitted: 12 Jan 2012

Electronic form version 1.4