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Persistent Photocontrolled Magnetism in Core-Shell Prussian Blue Analogues[1] ELISABETH S. KNOWLES, MATTHIEU F. DUMONT, MARCUS K. PEPRAH, MARK W. MEISEL, Dept. Phys. and NHMFL, Univ. Florida, CARISSA H. LI, DANIEL R. TALHAM, Dept. Chem., Univ. Florida — Cubic heterostructured (**BA**) particles of Prussian blue analogues, composed of shells of ferromagnetic $K_jNi_k[Cr(CN)_6]_l \cdot nH_2O$ (**A**), $T_c \sim 70$ K, surrounding bulk cores (~ 350 nm) of photoactive ferrimagnetic $Rb_aCo_b[Fe(CN)_6]_c \cdot mH_2O$ (**B**), $T_c \sim 20$ K, have been studied. Below $T_c \sim 70$ K, these samples exhibit a persistent photoinduced decrease in low-field magnetization, resembling results from previous core-shell particles[2] and analogous **ABA** films.[3] This net decrease suggests that the photoinduced lattice expansion in the **B** layer generates a strain-induced decrease in the magnetization of the **A** layer, similar to a pressure-induced decrease observed by others in a pure **A** material[4] and by us in the **BA** cubes. To quantify the length scale over which the photoinduced strain dissipates into the **A** layer, a series of **B** and **BA** cubes of varying shell thickness have been characterized.

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[2]M.F. Dumont *et al.*, Inorg. Chem. **50** (2011) 4295.
[3]D.M. Pajerowski *et al.*, J. Am. Chem. Soc. **132** (2010) 4058.
[4]M. Zentková *et al.*, J. Phys.: Condens. Matter **19** (2007) 266217.

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