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**Magnetic and Electronic Properties of  $\text{Ln}_{1-x}\text{Sr}_x\text{CoO}_3$**  D. STAUFFER, C. LEIGHTON, Dept. of Chemical Engineering and Material Science, University of Minnesota — The magnetic and electronic properties of bulk, polycrystalline,  $\text{Ln}_{1-x}\text{Sr}_x\text{CoO}_3$  (Ln=La, Nd and Pr,  $0 \leq x \leq 0.6$ ) were investigated. The La and Nd systems show a crossover from insulating glassy behavior to metallic ferromagnetism at  $x=0.18$ . The only differences between the two systems are the lower transition temperatures for Nd (due to reduced bandwidth) and the antiferromagnetic alignment of Nd and Co, inducing ferrimagnetism.  $\text{Pr}_{1-x}\text{Sr}_x\text{CoO}_3$  however, is radically different. A similar cluster glass to ferromagnet crossover occurs at low doping but at higher doping the system exhibits a second magnetic transition [1], well below  $T_C$ . Through a systematic investigation as a function of composition we have discovered that this effect is maximized at half-doping, vanishing completely at  $x < 0.40$  and  $x > 0.60$ . Possible explanations (including ferrimagnetism, spin-state transitions, phase competition, and charge/orbital ordering) are discussed in light of the neutron diffraction, transport and magnetometry results. We acknowledge support from the ACS Petroleum Research Fund. [1] R. Mahendiran and P. Schiffer, Phys. Rev. B. **68** 024427 (2003).

D. Stauffer  
University of Minnesota

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