Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Magnetic Phase Separation in Oxygen Doped $SrCoO_{3-y}$[1] F.J. RUECKERT, C.K. XIE, Y.F. NIE, B.O. WELLS, J.I. BUDNICK, W.A. HINES, University of Connecticut, B. DABROWSKI, Northern Illinois University — $SrCoO_{3-y}$ forms the perovskite structure with oxygen vacancies and is ferromagnetic for y<0.25. We have performed a study on polycrystalline samples, controlling the oxidation state using electrochemistry. Under these conditions we have found that magnetically the system segregates into separate, stable phases that correspond to $SrCoO_{2.75}$(T_C = 165 K), $SrCoO_{2.875}$(T_C = 220 K), and $SrCoO_3$ (T_C = 280 K), with two phase behavior for intermediate oxygen concentrations. Surprisingly, these same samples show only a single structural phase that evolves smoothly. We have recently learned to grow high quality epitaxial films of $SrCoO_y$, allowing for more typical single crystal diffraction experiments. Our initial results indicate that magnetic phase separation is suppressed in the films.

[1]The work is supported by the NSF through contract # DMR-0907197 (UConn) and DMR-0706610 (NIU).

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Date submitted: 29 Dec 2010 Electronic form version 1.4