

Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Cobaltite thin films: ^{59}Co NMR in epitaxial $\text{La}_{0.5}\text{Sr}_{0.5}\text{CoO}_3$ (001)

MICHAEL HOCH, NHMFL, Florida State University, ELIZABETH PRETTNER, NHMFL, Florida State University, PHILIP KUHNS, ARNEIL REYES, NHMFL, Florida State University, MANISH SHARMA, CEMS, University of Minnesota, CHRIS LEIGHTON, CEMS, University of Minnesota — Considerable progress has been made in investigating bulk samples of CMR transition metal oxides and attention has turned to epitaxially grown thin films whose physical properties are considerably modified compared to bulk. Strain-induced effects in cobaltite films have been shown to be important. The present work involves low temperature ($T \sim 1$ K) zero field ^{59}Co NMR measurements on stacks of eight epitaxial thin film $\text{La}_{0.5}\text{Sr}_{0.5}\text{CoO}_3$ (001) samples, grown on SrTiO_3 (001) (1.9% lattice mismatch), with film thicknesses 60, 20 and 10 nm, and on an $x = 0.5$ polycrystalline sample for comparison. All of the film spectra show a large hyperfine field distribution with a half-height width to peak frequency ratio of 0.3 and are shifted in frequency by 50% compared to bulk. The dramatic increase in the hyperfine field in films compared to bulk is due to changes in electronic structure linked to strain and/or oxygen defects.

Michael Hoch
NHMFL

Date submitted: 22 Nov 2009

Electronic form version 1.4