

Abstract Submitted  
for the MAR11 Meeting of  
The American Physical Society

**Structural and magnetic properties of Cr and Co doped indium oxide dilute magnetic semiconductors** K. GHOSH, E. NAHLIK, M. LANGHOFF, R. GUPTA, Missouri State University, Y. KOLEKAR, Pune University, P. KAHOL, Missouri State University — Dilute magnetic semiconductors have attracted considerable attention for development of next generation multifunctional spintronics devices. Indium oxide is a wide band gap semiconductor with unique optical and electrical properties. Here, we investigate the effect of Co and Cr doping on structural and magnetic properties of Indium oxide. Different amounts of Co and Cr were doped in In<sub>2</sub>O<sub>3</sub> using solid state reaction method. Structural and magnetic properties have been measured using standard techniques. X-ray diffraction analysis confirmed single phase Indium oxide with no impurity phases due to addition of Co and Cr. Magnetization (M) as a function of applied magnetic field (H) and temperature (T) were collected on all the samples using a superconducting quantum interference device magnetometer. M vs T measurements for Co doped Indium oxide showed the presence of a hump around 50K which could be due to paramagnetic to ferromagnetic transition and the M vs H field study show the hysteresis behavior which confirms the ferromagnetism. This work is supported by National Science Foundation (Award Number DMR-0907037)

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Date submitted: 08 Dec 2010

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