

Abstract Submitted
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Ferromagnetic behavior in Cr- and Mn-doped indium-tin oxide thin films JOHN PHILIP¹, MIT, SCOTT LAYNE, MIT, TIFFANY SANTOS, MIT, JAGADEESH MOODERA, MIT — High-temperature ferromagnetism is demonstrated in Cr- and Mn-doped indium-tin oxide (ITO) films deposited using reactive thermal evaporation. These films were grown on sapphire (0001), Si/SiO₂, as well as Si(001) substrates with the highest magnetic moment observed around $\sim 1\mu_B/\text{Mn}$. The electrical conduction is n type, an anomalous Hall effect was observed, showing that the carriers in this system are spin polarized. Mn-doped samples were single-phase, whereas at high Cr concentrations, there was CrO₂ present. The carrier concentration can be varied independent of the Mn concentration in this transparent ferromagnetic semiconductor for its easy integration into magneto-optoelectronic devices. Supported by the CMI project at MIT and NSF

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