

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Influence of oxygen partial pressure on structural, transport and magnetic properties of Co doped TiO₂ films BAKHTYAR ALI, Department of Physics and Astronomy, University of Delaware, Newark DE, 19716, USA, ABDUL RUMAIZ, ARIF OZBAY, S. ISMAT SHAH, EDMUND NOWAK — Crystal structure, transport and magnetic properties of Co doped TiO₂ laser ablated thin films are investigated and are found to have a strong dependence on the oxygen partial pressure. X-ray diffraction reveals the presence of mixed phase material containing anatase and rutile. However, these phases intertransform with the change in the oxygen partial pressure in the chamber during the growth of the films under the same temperature and other growth conditions. Electrical conductivity enhances as more oxygen vacancies are created. Concomitantly, the magnetization increases with increased vacancy concentration. The electrical transport data is suggesting that the conduction is dominated by polarons. The activation energies obtained are in the range from 100 to 150meV, typical for semiconducting oxides. APS Membership: Pending

Bakhtyar Ali
University of Delaware

Date submitted: 11 Dec 2007

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