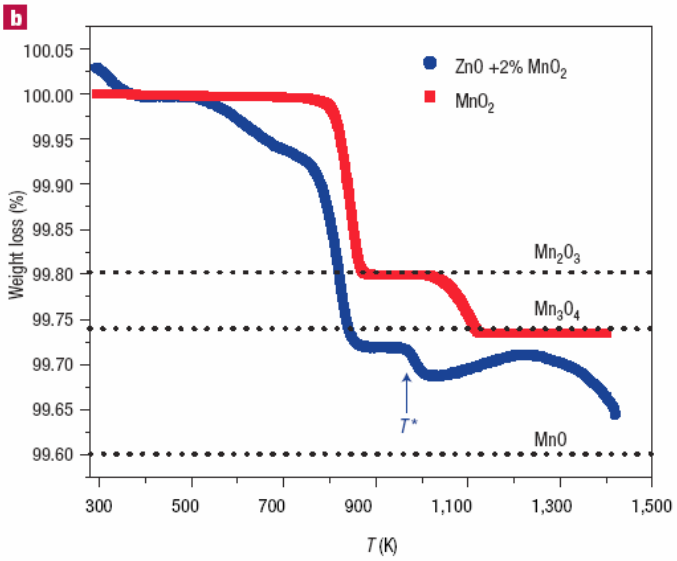
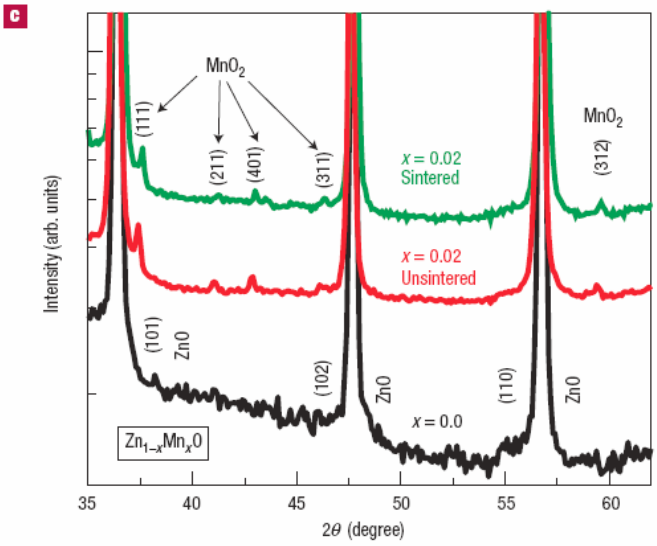
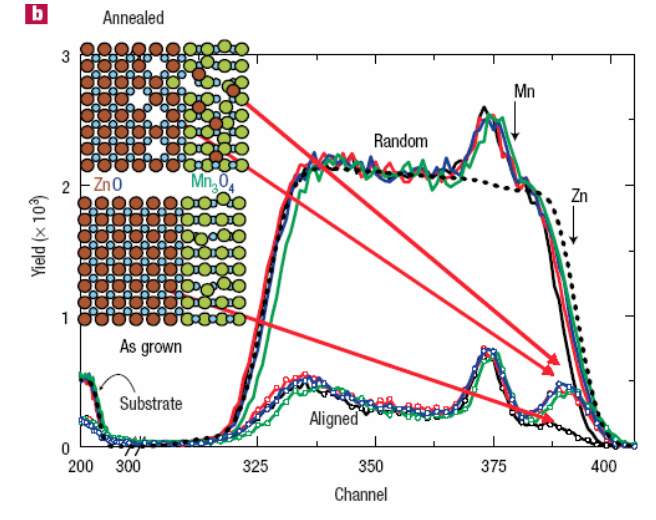
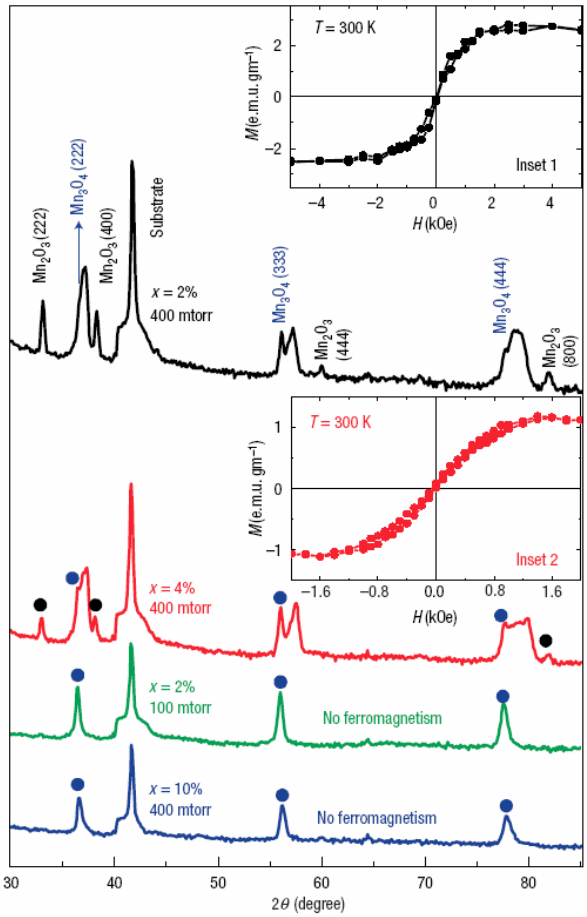
On the origin of high-temperature ferromagnetism in the low-temperature processed Mn–Zn–O system







Using Thermo-gravimetric analysis (top left panel), x-ray diffraction (left middle and lower right panels) and Rutherford backscattering channeling (left bottom panel) techniques, we showed that the recently reported ferromagnetism (FM) in low temperature processed Mn-Zn-O system (Sharma et al. Nature Materials 2, 673 (2003)) is not an intrinsic FM, but originates in a new vacancy stabilized metastable phase $Zn_xMn_{2-x}O_{3-d}$. In this work both bulk and film studies were performed. The bulk studies established that the ferromagnetism is located in an interface phase and is not a uniform DMS as originally claimed by Sharma et al. The thin film studies established that the moving specie in the interface reaction is Zn.



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