

Abstract Submitted
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Field induced fluctuations in percolation in granular-heterogeneous La-Ag-Mn-O/ MnO NING ZHANG¹, G. SRINIVASAN, Oakland University — Several materials in the granular form, such as transition metals and manganese perovskites, show a giant magnetoresistance (GMR) that is attributed to field induced percolation effects [1]. We discuss here the observation of GMR in the solid solution $\text{La}_{1-x}\text{Ag}_x\text{MnO}_3$ ($x = 0.05 - 0.50$), possibly due to magnetic field induced fluctuation in percolation (MFP). Samples with x in steps of 0.05 were fabricated by the sol-gel method. We found Ag disassociation and run-off when the sample sintering temperature exceeded 800° , resulting in a composite of La-Ag-Mn-O and manganese oxide. Analysis of $x=0.35$, for example, revealed a composite composition of $(\text{La}_{0.926}\text{Ag}_{0.074}\text{MnO}_3)_{0.698}(\text{MnO}_2)_{0.302}$. Studies on such samples showed GMR that could be attributed to field-induced enhancement in percolation [1]. [1] Ning Zhang, Weiping Ding, and Wei Zhong et al., Phys Rev B 56, 8139 (1997). -Work supported by the National Science Foundation (DMR-0302254)

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