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MAGNETORESISTANCE IN DOUBLE PEROVSKITE Sr_2FeMoO_6

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Abstract: Double perovskite Sr_2FeMoO_6 (SFMO) has been prepared by sol-gel process using alkoxide precursors followed by sintering in a stream of 5% H_2/Ar at various sintering temperatures. The fact that superlattice lines are observed in the *X*-ray diffraction pattern for SFMO would suggest the high degree of ordering of Fe and Mo in the perovskite lattice of SFMO. Electrical resistivity $\rho(T)$ and magnitude of magnetoresistance (*MR*) decrease with increasing sintering temperature. SFMO exhibits a sharp low-field *MR* at room temperature. The magnitude of negative *MR* with the magnetic field of 0.8 T at 12 and 300 K is as large as 33 and 2.5%, respectively. The observed *MR* is proportional to the square of magnetization indicating that the *MR* feature in SFMO is explained by spin-polarized tunneling between grains.