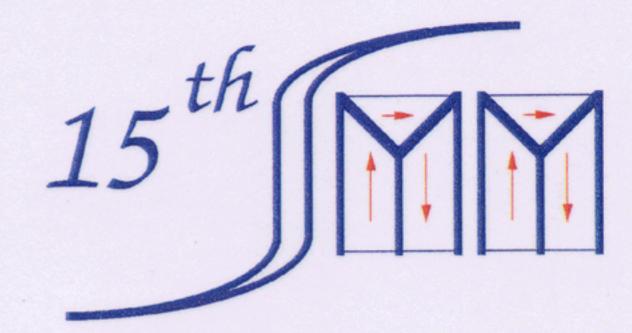
Bilbao, 5-7 September 2001

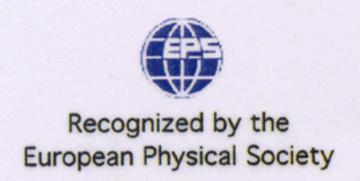


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## BOOK OF ABSTRACTS





## Some Effects of Fe/Mo Disorder in Double Perovskite Ba<sub>2</sub>Fe<sub>1-x</sub>Mo<sub>1+x</sub>O<sub>6</sub>

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Some effects of disorder between the Fe and Mo sites on magnetic properties and magnetoresistance(MR) in double perovskite Ba<sub>2</sub>FeMoO<sub>6</sub>(BFMO) have been investigated. BFMO has been prepared by the conventional solid-state reaction in a stream of 5%H<sub>2</sub> at 1100°C. The x-ray data indicates that symmetry is cubic, and the data is compatible with the Fm3m space group. The fact that superlattice lines such as (111) and (311) are observed in the diffraction pattern for would suggest the high degree of Fe/Mo ordering in BFMO. The Fe/Mo ordering is about 90% for x=0, while it is about 60% for x=0.2. The saturation magnetization is  $2.3\mu_B/f.u.$  for x=0.2 which is much lower than the value of  $3.1\mu_B/f.u.$  for x=0. The magnitude of MR is 36 and 3% with the magnetic field of 0.7T at 20K for x=0 and 0.2, respectively. The large variation of magnetization and MR between x=0 and 0.2 arises from the disorder at the Fe and Mo sites. The observed MR is proportional to the square function of (M/M<sub>s</sub>) at small magnetization region. This correlation indicates that the MR is due to the enhanced intergrain tunneling by reducing the relative angle of magnetization directions at the grain boundaries.