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## ABSTRACTS

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# PSMo-G-312 MAGNETORESISTANCE IN DOUBLE PEROVSKITES

## $Ba_{2-x}La_xFeMoO_6$

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We have studied effects of the partial substitution of  $La^{3+}$  for  $Ba^{2+}$  on the magnetoresistance(MR) in double perovskites  $Ba_2FeMoO_6$ . Polycrystalline  $Ba_{2-x}La_xFeMoO_6$  ( $0 \leq x \leq 0.3$ ) samples were prepared by solid-state reaction in a stream of 5%  $H_2/Ar$  gas. The x-ray data are compatible with the cubic  $Fm\bar{3}m$  space group. The substitution of  $La^{3+}$  for  $Ba^{2+}$  results in the decrease of the lattice parameter from 8.075Å for  $x=0$  to 8.045Å for  $x=0.2$ , and considerably enhances the Curie temperature from 316 K for  $x=0$  to 334 K for  $x=0.2$  [1]. The mis-site defect concentration is increased upon La substitution, which results the increase of coercivity, high saturation fields, and reduction of saturation magnetization. The magnitude of MR of  $Ba_2FeMoO_6$  is greatly enhanced by doping La. The MR with low magnetic field of 0.5T for  $x=0$  and 0.3 are as large as 6% and 13% at 15 K, respectively. These phenomena are found to originate from the change of spin-dependent scattering in  $Ba_2FeMoO_6$  after doping La.

[1] H. M. Yang, W. Y. Lee, H. Han, B. W. Lee, and C. S. Kim, J. Appl. Phys. 93, 6987 (2003).