

Abstract Submitted  
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**Synthesis and Physical Properties of Double Perovskite  $\text{Pb}_2\text{FeReO}_6$**  KOUSUKE NISHIMURA, MASAKI AZUMA, MIKIO TAKANO, YUICHI SHIMAKAWA, Inst. Chem. Res., Kyoto Univ. — A double perovskite  $\text{Pb}_2\text{FeReO}_6$ , in which Fe and Re are ordered in a rock-salt type configuration, was prepared at a high pressure (6GPa) and high temperature (1000 °C) condition. The crystal structure determined by the synchrotron X-ray powder diffraction was centrosymmetric with a space group  $I4/m$  despite the presence of  $\text{Pb}^{2+}$  ion at the  $A$ -site. The lattice parameters are  $a = 5.6159(1)$  Å and  $c = 7.9455(3)$  Å. No structural transition to a lower symmetry was observed down to 23 K. The resistivity showed semiconducting behavior. This compound exhibited a ferrimagnetic transition at 420 K with saturation magnetizations depending on the degree of  $\text{Fe}^{3+}/\text{Re}^{5+}$  ordering controlled by the cooling rate after the heat treatment.

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