

Abstract Submitted
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Observation of electrical and magnetic property of CaIrO_3 and CaRhO_3 post-perovskite by electrical resistivity measurement under high pressure KOTA ICHIMARU, KENJI OHTA, KATSUYA SHIMIZU, KYOKUGEN, Osaka University, Japan, KENYA OHGUSHI, ISSP, University of Tokyo, Japan, KAZUNARI YAMAURA, NIMS, Japan — Since discovery of MgSiO_3 post-perovskite (PPv) phase, high-pressure polymorph of MgSiO_3 perovskite (Pv), there are extensive studies regarding physical properties of various PPv materials. It is well known that the crystal structure of high- T_c cuprates is based on Pv structure. Material with PPv structure is thus expected to show superconducting behavior with high T_c . Here we investigated electrical properties of CaIrO_3 and CaRhO_3 PPv. These PPv materials are quenchable to ambient condition, and known as a quasi-2D Mott Insulator showing antiferromagnetic transition at low temperature [1,2]. We performed electrical resistivity measurements on the samples under high pressure and low temperature conditions up to 191 GPa, and found that the energy gap of both samples came close to zero with applying pressure. On CaIrO_3 PPv, we observed an abrupt increase in sample resistivity at low temperature, which is likely to correspond to antiferromagnetic transition in the sample. The Néel temperature decreased with applying pressure. In the experiments on CaRhO_3 PPv, we could not observe such resistivity jump likely caused by the magnetic transition.

[1] Yamaura et al., J. AM. CHEM. SOC. 131 2722-2726 (2009)

[2] Ohgushi et al., Physica B 404 3261-3263 (2009)

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