

第31回フロンティア材料研究所講演会

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2月14日(火) 15時30分~17時 すずかけホール
集会室2にて

演題: High pressure synthesis and physical properties of new perovskite oxides

Co-based oxides show fascinating physical properties such as colossal magnetoresistance, unconventional superconductivity, large linear magnetoelectric effect, and high-performance thermoelectricity *etc.* Different from other 3d transition metals, the family member of ACoO_3 perovskite is very limited. By using high-pressure and high-temperature synthesis methods, we obtained two new Co-based perovskites CaCoO_3 and PbCoO_3 . The metallic CaCoO_3 has a pseudo-cubic crystal structure and shows two magnetic phase transitions (one FM and another AFM). The insulating PbCoO_3 shows unusual A- and B-site charge orders. High pressure may induce charge transfer in PbCoO_3 based on our primary pressure dependent measurements. In addition to these two simple ABO_3 perovskites, we also prepared A-site ordered perovskites $\text{La/BiMn}_3\text{Cr}_4\text{O}_{12}$ with $Im-3$ cubic space group. Magnetoelectric multiferroicity with large electric polarization and strong magnetoelectric coupling was found. This is the first observation of multiferroicity in cubic perovskite systems.

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