Abstract Submitted
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Giant magnetovolume effect in a cubic perovskite $Sr_{1-x}Ba_xCoO_3$ with competing magnetic orders[1] SHINTARO ISHIWATA, University of Tokyo and JST PRESTO, SHO YOKOYAMA, University of Tokyo, HIDEAKI SAKAI, Osaka University and JST PRESTO, TAKASHI KORETSUNE, RYOTARO ARITA, RIKEN CEMS, YOSHIYUKI OGASAWARA, MITSUHIRO HIBINO, NORITAKA MIZUNO, MASATAKA KINOSHITA, University of Tokyo, YOSHINORI TOKURA, University of Tokyo and RIKEN CEMS — Perovskite oxides with unusually high valence transition metal ions have been of great interest because of the unique magnetism inherent to the strong p-d hybridization. This is exemplified by the unusual helimagnetism in $SrFeO_3$ and room-temperature ferromagnetism in $SrCoO_3$. However, search for novel functions in these oxides has been hampered by the difficulty in growing crystals. In this work, we synthesized single crystals of a cubic perovskite $Sr_{1-x}Ba_xCoO_3$ by high-pressure and chemical oxidation technique to study the effect of controlling the p-d hybridization on magnetism. By magnetization measurements, we established the phase diagram [H. Sakai et al.], where a novel helimagnetic phase appears at around x = 0.35. To discuss this result from the viewpoint of the lattice change, we applied pressure on the heilmagnetic compound with x = 0.4 and found the helimagnetic to ferromagnetic transition. This novel pressure effect can be regarded as a giant magnetovolume effect, the origin of which will be discussed with showingthe first-principles calculations[S. Yokoyama et al.].

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