

Abstract Submitted
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Magnetic control of electric polarization in $(\text{Cu,Ni})\text{B}_2\text{O}_4$ ¹ KHANH NGUYEN, Tohoku Univ, NOBUYUKI ABE, MITSURU AKAKI, MASASHI TOKUNAGA, University of Tokyo, KYOTA KUBO, TAKAHIKO SASAKI, Tohoku Univ, TAKA-HISA ARIMA, University of Tokyo — We report the generation and control of electric polarization using an external magnetic field in a noncentrosymmetric system nickel doped copper metaborate $(\text{Cu,Ni})\text{B}_2\text{O}_4$ and discuss the origin of this effect. In this material, weak ferromagnetic moment can be rotated by applying an electric field. While this implies spin-driven ferroelectricity, the previous study via examining the structure parameters and dielectric constant showed no clear evidence for this effect, which is successfully observed in this study. Applying a magnetic field along the $[110]$ or $[1 - 10]$ axis induces electric polarization along the $[001]$ axis. The polarization is reversed by switching the magnetic field direction between the $[110]$ and $[1 - 10]$ axes. The result can be well explained in the framework of spin-dependent metal-ligand hybridization.

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