

Abstract Submitted
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Single crystal x-ray structure studies of multiferroic CuBr₂ near its Néel transition¹ STELLA SUN, SANGJUN LEE, GILBERTO DE LA PENA MUNOZ, Univ of Illinois - Urbana, BIAOYAN HU, YUAN LI, Peking Univ, PETER ABBAMONTE, Univ of Illinois - Urbana — CuCl₂ was the first reported multiferroic in the halogen family². CuBr₂ was later reported to be a multiferroic in the same family, but with a high transition temperature, $T_N = 73.5\text{K}$ ³. Although it has been reported to have spontaneous spin-driven ferroelectricity according to its polarization data, the reported temperature dependence of the dielectric constant lacks a sharp peak when crossing T_N , as is observed in CuCl₂. In order to probe the ionic displacements that are the origin of ferroelectricity in these materials, we performed hard X-ray diffraction studies of CuBr₂ as a function of temperature through T_N . Our data reveal no change in the lattice periodicity, however a change in the symmetry of the unit cell is clearly observed in the variation of the Bragg peak intensities with temperature. We will discuss the implications of these structure changes for the mechanism behind the magnetoelectric properties of CuBr₂.

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²S. Seki et al., **Phys. Rev. B** 82, 064424 (2010)

³L. Zhao et al., **Adv. Mat.** 24, 2469-2473 (2012)

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