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The Discovery of Ferroelectricity in NH4CuCl3, a Gapless Quantum Magnet JARED KINYON, Florida State University, EUN SANG CHOI, National High Magnetic Field Laboratory, RON CLARK, Florida State University, HAIDONG ZHOU, University of Tennessee, ZHENXING WANG, National High Magnetic Field Laboratory, KWANG-YONG CHOI, Chung-Ang University, HANS VAN TOL, National High Magnetic Field Laboratory, NARESH DALAL, Florida State University — Alkali metal trichlorocuprates (M_3CuCl_3: $M = K^+, Tl^+$ and NH_4^+) have received considerable attention as a unique system of gapped/gapless quantum magnets. However, their possible multiferroelectricity, as both magnets and ferroelectrics, have not been reported. Such a finding would add a new dimension to their utility as memory storage elements. Here we report the discovery of ferroelectricity in NH_4CuCl_3, and several of its mixed lattices with K. In this talk, we present details of our crystal growth, x-ray diffraction studies of lattice authenticity and purity, dielectric, specific heat with and without fields, magnetic susceptibility, pulsed fields, and EPR characterization of these novel materials. Theoretical studies of the new findings should be fruitful.

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