

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Magnetoelectric and magnetoelastic effects in a triangular lattice antiferromagnet CuFeO_2 T. KIMURA, A.P. RAMIREZ, Bell Laboratories, Lucent Technologies, J.C. LASHLEY, Los Alamos National Laboratory — Magnetoelectric and magnetoelastic effects related to a phase transition into noncollinear magnetic phase have been investigated for single crystals of CuFeO_2 with a frustrated triangular lattice. CuFeO_2 exhibits several long-wavelength magnetic structures related to the spin frustration, and it is found that finite electric polarization, namely inversion symmetry breaking, occurs with noncollinear but not at collinear magnetic phases. This result demonstrates that the noncollinear spin structure is a key role to induce electric polarization, and suggests that frustrated magnets which often favor noncollinear configurations can be plausible candidates for magnetoelectrics with strong magnetoelectric interaction.

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Date submitted: 24 Nov 2005

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