

Abstract Submitted
for the MAR08 Meeting of
The American Physical Society

Ferroelectricity in an Ising Chain Magnet V. KIRYUKHIN, Y.J. CHOI, H.T. YI, S. LEE, S-W. CHEONG, Rutgers Univ., Q. HUANG, NIST — The concept of magnetism-driven ferroelectricity has recently drawn significant attention. Among the simplest model systems showing this effect are magnetic spiral compounds, and frustrated collinear chain magnets with alternating charge order. While many experimental realizations of the former systems exist, no undisputed examples of the latter have been reported so far. Herein, we report discovery of an experimental realization of this model in an Ising chain compound with an up-up-down-down magnetic order. Unlike in the spiral magnetoelectrics where anti-symmetric exchange coupling is active, the symmetry breaking in this system occurs through exchange striction associated with symmetric superexchange coupling. Since the latter can be large, this observation may help identify candidate systems with large magnetoelectric coupling and significant magnetoelectric effects.

Valery Kiryukhin
Rutgers University

Date submitted: 25 Nov 2007

Electronic form version 1.4