Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Phase Diagram and Magnetic Dynamics in $\mathbf{Er_{1-x}Y_xMnO_3}$ TOM HEITMANN, YUAN WANG[1], JAGATH C. GUNASEKERA, OWEN P. VAJK, University of Missouri — We have grown single-crystal samples of the hexagonal multiferroic $Er_{1-x}Y_xMnO_3$ at different compositions. $YMnO_3$ orders in a P6'$_3$cm' phase, while $ErMnO_3$ orders in a P6'$_3$c'm phase. The boundary between these phases is of interest because of the strong coupling between ferroelectricity and magnetism observed at the spin reorientation transition between these phases in $HoMnO_3$. We find that $Er_{1-x}Y_xMnO_3$ transitions completely from the P6'$_3$cm' to the P6'$_3$c'm phase over a very narrow composition range on the Y-rich side of the phase diagram. We have also performed inelastic neutron scattering measurements on these samples, and find quasielastic scattering similar to that found in $YMnO_3$. However, as for $Ho_{1-x}Y_xMnO_3$, this scattering exhibits out-of-plane correlations and is centered at locations other than the fundamental magnetic Bragg peak.

[1]Missouri University Research Reactor

Tom Heitmann
University of Missouri

Date submitted: 20 Nov 2009 Electronic form version 1.4