Abstract Submitted
for the MAR10 Meeting of
The American Physical Society

Dilution Studies of Multiferroic $ReFeO_3$ with Bi[1] ARTHUR RAMIREZ, UC Santa Cruz — $BiFeO_3$ possesses simultaneous ferroelectric (T_c = 1100 K) and antiferromagnetic (T_N = 640 K) order but weak coupling between the states. The Fe moments in $DyFeO_3$order at T_N = 645 K and the Dy spins order below 4K, accompanied by an induced ferroelectric state. We study the interplay between Dy multiferroism in $DyFeO_3$and Bi ferroelectricity in $BiFeO_3$by measuring the magnetization of single crystals of the solid solution series (Dy,Bi)FeO_3. We find, for a limited range of Bi concentrations, an anomalous increase in the Dy ferromagnetic Curie temperature and cancellation of ferromagnetism on the Dy and Fe sublattices. We also study the effects of Bi substitution in $ReFeO_3$ for Re = Sm, Gd, Er, and Tm.

[1]funded by NSF DMR-0554796

Arthur Ramirez
UC Santa Cruz

Date submitted: 20 Nov 2009 Electronic form version 1.4