

Abstract Submitted  
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**A study of the origin of large magnetic field coupled electric polarization in  $\text{HoAl}(\text{BO}_3)_4$**  TIAN YU, HAN ZHANG, TREVOR TYSON, New Jersey Institute of Technology, ZHIQIANG CHEN, State University of New York at Stony Brook, MILINDA ABEYKOON, CHRISTIE NELSON, Brookhaven National Laboratory, LEONARD BEZMATERNYKH, L. V. Kirensky Institute of Physics — The multiferroic system  $\text{RAI}(\text{BO}_3)_4$  is known to exhibit a strong coupling of magnetic field to the electrical polarization. Recently a giant magnetoelectric effect was found in  $\text{HoAl}_3(\text{BO}_3)_4$  system. This phenomenon is considered quite interesting because the value discovered is significantly higher than reported values of linear magnetoelectric or even multiferroic compounds. We are conducting detailed structural measurements to understand the coupling. We are exploring the local and long range structure in these systems using x-ray PDF, XAFS and single crystal diffraction measurement between 10 K and 400 K. Structural parameters including lattice parameters and ADPs are being determined over the full temperature range. This work is supported by DOE Grant DE-FG02-07ER46402.

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