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Structure of Multiferroic $\text{RAl}_3(\text{BO}_3)_4$ and $\text{RFe}_3(\text{BO}_3)_4$ in the Region of High Electric Polarization HAN ZHANG, TIAN YU, New Jersey Institute of Technology, ZHIQIANG CHEN, Center for High Pressure Science and Technology Advanced Research, China, CHRISTIE NELSON, Brookhaven National Laboratory, LEONARD BEZMATERNYKH, L.V. Kirensky Institute of Physics, YU-SHENG CHEN, Advanced Photon Source, Argonne National Laboratory, MILINDA ABEYKOON, Brookhaven National Laboratory, TREVOR TYSON, New Jersey Institute of Technology — The multiferroic system $\text{RAl}_3(\text{BO}_3)_4$ is known to exhibit a strong coupling of magnetic field to the electrical polarization at low temperature (below ~ 100 K). A giant magnetoelectric effect was found in this system. Recent work by us (PRB B **92** 104108) reveals evidence for changes in the local structure at low temperature. In this work we explore the structural changes using single crystal diffraction and other structural probes. Comparisons between the Fe and Al based systems will be made. This work is supported by DOE Grant DE-FG02-07ER46402.

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