Abstract Submitted
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X-Ray Diffraction and Partial Distribution Function Analyses on Barium Hexaferrite[1] ALEJANDRO SALAS, OSCAR JARAMILLO, EDWIN FOHTUNG, New Mexico State Univerisity, DANIEL OLDS, KATHERINE PAGE, Oak Ridge National Laboratory, FOHTUNG RESEARCH GROUP TEAM — There is a growing interest in investigating the structural properties of Barium Hexaferrite (BaFe12O19) because it exhibits both ferroelectric and ferromagnetic phenomena. These properties are expected to aid the performance and efficiency of electronic data storage devices. The mechanism of both ferroelectric and ferromagnetic phenomena would be better understood, and perhaps enhanced, if the structure could be deciphered. The X-ray diffraction pattern was used to investigate the average structure of the material. In addition, pair distribution analysis using neutron scattering as the probe was conducted to investigate the short, medium, and long range order of Barium Hexaferrites atomic structure. The neutron scattering data was analyzed by fitting the experimental data to idealized models. The X-ray diffraction pattern indicated the presence of crystalline phase separation. By combining XRD and PDF analyses we were able to provide an insight into the evolution of BaFe12O19 at different ambient temperatures (300K, 315K). Future studies include The use of coherent X-ray diffraction imaging to understand the functionality of individual nanoparticles and how it correlates to the global structure.

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