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**Mapping of Strain Inhomogeneity within a Single Ni-NiO Core-Shell Nanoparticle using Bragg Coherent Diffraction Imaging**[1] ERANDI WIJERATHNA, NMSU, R. HARDER, APS, Argonne National Laboratory, J. CLARK, SLAC National Accelerator Laboratory, B. KIEFER, NMSU, E. FULLERTON, O. SHPYRKO, UCSD, E. FOHTUNG, NMSU — We report on recent progress in mapping strain inhomogeneity within a single core/shell ferromagnetic/antiferromagnetic Ni-NiO nanoparticle (NP) using Bragg Coherent X-ray Diffraction Imaging (CXDI). By collecting CXD maps from the NP in the vicinity of two different reciprocal lattice points we observe variations in the sign and maximum displacement gradients within the core and shell regions indicative of anisotropy and inhomogeneity. We utilize computations with atomic resolution to model a guess of the deformations within the core structure. This serves as guide for apriori support. Finite difference analysis is used alongside CXDI to reconstruct the core-shell regions. This approach opens further avenues in studying buried structures and multifunctional properties using CXDI.

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Erandi Wijerathna
New Mexico State Univ

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