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Imaging of twinning defects in Au nanoparticles with Bragg Coherent Diffraction Imaging[1] DMITRY KARPOV, Department of Physics, New Mexico State University & Physical-Technical Institute, National Research Tomsk Polytechnic University, DOUGLAS BROWN, Department of Physics, New Mexico State University, Las Cruces, NM 88003, EDWIN FOHTUNG, Department of Physics, New Mexico State University Alamos National Laboratory — In condensed matter physics and material sciences phase transitions are usually accompanied by creation, annihilation and propagation of topological defects. For transition-metal nanoparticles the presence of such defects can mediate structure-property relation, leading to strain engineering of plasmonic, electronic and magnetic functionality. Here we use Bragg Coherent Diffraction Imaging (BCDI) to map 3D distribution of defect in gold nanoparticle. BCDI is a technique capable of imaging 3D electron density distribution along with atomic and ionic displacement fields at nanoscale resolution through recording and iterative reconstruction of far-field patterns of the sample. In the current work we used improved reconstruction technique to refine for solving for highly strained nanocrystals.

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