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Using Bragg Coherent Diffraction Imaging to See Strain in a Tensile Loaded Copper Film TIMOTHY S. O'LEARY, SARYU J. FENSIN, REEJU POKHAREL, Los Alamos National Laboratory, MATTHEW J. CHERUKAWA, Argonne National Laboratory, ROSS HARDER, RICHARD L. SANDBERG, Los Alamos National Laboratory — Coherent Diffraction Imaging (CDI) is a novel imaging technique using coherent light sources and iterative phase retrieval (IPR) algorithms instead of lenses to form high resolution images. Bragg coherent diffraction imaging (BCDI) is a variation of CDI that measures coherent diffraction near a Bragg peak of a crystalline sample. Since the Bragg peak contains information about lattice strain, the IPR retrieves nanometer scale images of crystalline strain. We present three dimensional BCDI reconstructions of the strain in a single grain in polycrystalline copper thin films under tensile loading measured at sector 34 of the Advanced Photon Source.

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