

Abstract Submitted  
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**Coherent diffractive imaging of gold crystal under high pressure**

XIAOJING HUANG, WENGE YANG, HPSynC, Geophysical Laboratory, Carnegie Institution of Washington, ROSS HARDER, Advanced Photon Source, Argonne National Laboratory, IAN ROBINSON, London Centre for Nanotechnology, University College London; Research Complex at Harwell, Didcot, Oxfordshire OX11 0DE, UK, HPSYNC GEOPHYSICAL LABORATORY, CARNEGIE INSTITUTION OF WASHINGTON TEAM, ADVANCED PHOTON SOURCE, ARGONNE NATIONAL LABORATORY TEAM, LONDON CENTRE FOR NANOTECHNOLOGY, UNIVERSITY COLLEGE LONDON TEAM, RESEARCH COMPLEX AT HARWELL, DIDCOT, OXFORDSHIRE OX11 0DE, UK TEAM — Coherent Diffractive Imaging (CDI) with Bragg geometry is a unique method that is sensitive to strain distributions in crystals. With measured 3D diffraction intensities around Bragg peaks, 3D real-space images can be obtained by inverting these over-sampled diffraction pattern using phase retrieval algorithms. The reconstructed magnitude stands for physical electron density of the measured crystal, while the obtained phase structure represents lattice dislocations. We extend the capability of Bragg CDI to investigate crystal strains under high-pressure environment. We demonstrate the strain evolution of a gold crystal under various pressures. This technique opens the door to visualize strain-introduced phase transition driven by high pressure.

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