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Strain Fields in Zeolite Microcrystals by Coherent X-ray Diffraction¹ HYUNJUNG KIM, Sogang University, WONSUK CHA, SANGHOON SONG, NAK CHEON JEONG, KYUNG BYUNG YOON, Sogang University, Korea, ROSS HARDER, Advanced Photon Source, ANL, IAN K. ROBINSON, , University College London, United Kingdom — We measured coherent X-ray diffraction (CXD) on zeolite microcrystals in order to get information on internal density distribution and to map deformation field of stress or strain during the fabrication process. The experiments were performed at the beamline 34-ID-C in Advanced Photon Source and employed monochromatic radiation with x-ray energy of 9 keV. The sample size was about $\sim 2\mu\text{m}$. The diffraction patterns were obtained at (200) Bragg condition with unfocused beam. We inverted the diffraction patterns to obtain three dimensional images of the shapes and internal strain fields of zeolite microcrystals using phase retrieval algorithms of error reduction and hybrid input-output method. The internal density and strain distribution as a function of temperature will be discussed.

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