Abstract Submitted
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In situ x-ray diffraction of shock-driven deformation and phase transformation in titanium CYNTHIA BOLME, Los Alamos National Laboratory, AMY LAZICKI, Lawrence Livermore National Laboratory, DON BROWN, ARIANNA GLEASON, ELLEN CERRETA, BEN MORROW, Los Alamos National Laboratory, SUZANNE ALI, DAMIAN SWIFT, Lawrence Livermore National Laboratory, BOB NAGLER, ERIC GALTIER, EDUARDO GRANADOS, DESPINA MILATHIANAKI, PHIL HEIMANN, SLAC National Laboratory — Titanium alloys are employed in demanding engineering applications due to their high strength-to-weight ratio and their resistance to corrosion. Pure titanium and titanium with high levels of oxygen impurities were studied under laser-driven shock compression at the Matter in Extreme Conditions endstation at the Linac Coherent Light Source. In situ x-ray diffraction data were acquired during compression, showing the lattice-level response of titanium as it underwent plastic deformation and phase transformation. The kinetics of these processes and the influence of oxygen impurities on the deformation behavior will be presented.

Cynthia Bolme
Los Alamos National Laboratory

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