

Abstract Submitted  
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**In-situ X-Ray Diffraction of Shock-Compressed Boron Carbide,  $B_4C$**  BENNY GLAM, Soreq NRC, SALLY JUNE TRACY, Princeton University, RAY SMITH, LLNL, JUNE WICKS, Johns Hopkins University, THOMAS DUFFY, Princeton University — In situ x-ray diffraction measurements under laser-induced shock compression of polycrystalline  $B_4C$  were carried out up to 145 GPa at the Matter in Extreme Conditions end-station of the Linac Coherent Light Source. There is no evidence for a major crystallographic phase transition over this range, but we do find evidence for possible partial amorphization of the sample. Possible splitting of (021) peak to two peaks with the same texture at pressures of 80 and 114 GPa, implying for a fault or a subtle phase transition. Our shock compression data on lattice parameters dependence on pressure is different than static compression. Our diffraction data is consistent with previous shock continuum measurements which found compressibility changes along the pressure-density Hugoniot, confirming they are not a result of a large-scale structural phase change. Density after release was found to be lower than ambient density, probably as a result of residual temperature. The HEL stress for  $B_4C$  was found to be 15.9-19.5 GPa, in a good agreement with previous continuum measurements.

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