

3D X-Ray Diffraction in the Diamond Anvil Cell

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Three dimensional x-ray diffraction was developed for characterizing the orientation and constitution of single grains in a polycrystalline aggregate. The technique allows for extracting single-crystalline diffraction data out of a polycrystalline signal and despite numerous achievements under ambient conditions, the application of the technique remains confidential under pressure. In this presentation, I will describe the fundamentals of 3D-XRD and how it can be applied to sample confined in a diamond anvil cells. Examples will be given for MgGeO₃ post-perovskite at 90 GPa and other materials. Advantages and applications of the technique for high pressure mineral physics and studies relevant to the Earth deep interior will also be discussed.