

Structure transformation process of shock-compressed forsterite by time-resolved XFEL diffraction

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We analysed transformation process of shock-compressed forsterite into high-pressure structures by time-resolved diffraction using x-ray free electron laser at SACLA. From the observed results so far, it was indicated that forsterite structure transforms into an intermediate high-pressure structure through a fast slip deformation process, which has implication on the origin of high pressure structure such as ringwoodite which was frequently found in heavily-shocked meteorites.

Keywords: forsterite, x-ray free electron laser, laser-driven shock compression, shock metamorphism