Time-resolved analysis of shock-driven structure transformation of forsterite single crystals using power laser and x-ray free electron laser

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We analysed time-resolved structure evolution of shock-compressed single crystals of forsterite using power laser and x-ray free electron laser at SACLA, SPring-8. It was indicated from these results that forsterite structure (orthorhombic) transforms into ringwoodite structure (cubic spinel) in very fast time scale of few nanoseconds, which has implication on the origin of ringwoodite observed in meteorites.

Keywords: forsterite, ringwoodite, x-ray free electron laser , laser-driven shock compression, high-speed collision

