

Abstract Submitted
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Measurements of Sound Velocity of Diamond at the Pressure Around the Melt K. SHIGEMORI, ILE, Osaka Univ., K. SHIMIZU, Y. ASAKURA, D. HAYASHI, Y. NAKAMOTO, T. KAGAYAMA, KYOKUGEN, Center for Quantum Science and Technology under Extreme Conditions, Osaka Univ., T. SAKAIYA, T. KONDO, Department of Earth and Space Science, Osaka Univ., H. SUMIYA, Sumitomo Electric Industries Inc, T. IRIFUNE, Geodynamics Research Center, Ehime Univ., K. KUROSAWA, S. SUGITA, Department of Complexity Science and Engineering, Univ. of Tokyo, T. KADONO, Y. HIRONAKA, ILE, Osaka Univ. — We have measured the sound velocity of the diamond foils at around the melting pressures (500 – 1500 GPa). Experiments were done on GEKKO-XII glass laser system with HIPER irradiation facility. Single crystal diamond foils (Ia) of 30~40 μm thickness were irradiated at intensities of $0.2 - 1.5 \times 10^{14} \text{ W/cm}^2$. We measured the sound velocity by side-on x-ray backlighting technique. Trajectories of foil surfaces were observed by x-ray streak camera. We also measured the shock velocity by two VISARs (velocity interferometer system for any reflector), and shocked temperature by an SOP (streaked optical pyrometer) in order to determine the pressure and the temperature at around the melting. Experimental data were compared with the previous theoretical studies and the percolation theory.

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