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Dynamic compression of magnesium hydride in ultrahigh pressure regime using high intensity laser SHINTARO MORIOKA, NORIMASA OZAKI, Graduate School of Engineering, Osaka Univ, TAKUO OKUCHI, Inst., for Study of the Earths Interior, Okayama Univ, TAKAYOSHI SANO, KOHEI MIYANISHI, Institute of Laser Engineering, Osaka Univ, YUHEI UMEDA, KENTO KATAGIRI, NOBUKI KAMIMURA, RYOSUKE KODAMA, Graduate School of Engineering, Osaka Univ — Hydrogen is the most abundant atom in the universe. It has many fascinating features. It is also known that hydride has interesting physical properties. In fact, it has been reported that hydrogen sulfide (H_2S) undergoes structural change under static super-high pressure (approximately 150 GPa) and shows an extremely high Tc (203 K). Studies of hydride can lead to understand not only hydride but also hydrogen. In order to understand behavior of hydride in extreme conditions, the experimental data of hydride in the high-pressure region is necessary. In this study, we present the first high-pressure experiment on MgH_2 hydride using laser-driven shock wave. The shock velocity and temperature were measured by VISAR and SOP. We obtained shock Hugoniot data of MgH_2 up to 350 GPa using laser-driven shock waves. The obtained data were analyzed with following method to determine more reliable EOS data. Firstly, the mean velocity was calculated from the measurements of the initial sample thickness and shock transit time as a primitive shock velocity. Secondly, the shock velocity was updated by taking account of the effect of decay shock in MgH_2 using the polystyrene as a witness and the rear-Qz.

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