

Abstract Submitted
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Strength effect on the Hugoniot-compression curves of some metals (Cu, W and Au) KEIICHI OKA, TSUTOMU MASHIMO, YUYA GOMOTO, HIDEYUKI TAKASHIMA, XUN LIU, Kumamoto University, KUNIHITO NAGAYAMA, Kyushu University, EUGENE ZARETSKY, Ben-Gurion University of the Negev, Isreal — To derive true EOS of matter from the Hugoniot data or to discuss the Grüneisen parameter, we need the precise Hugoniot data, and must access the strength under shock compression to draw the hydrostatic compression curve. For this, we have refined the measurement facility and analysis procedure. The measurement accuracy of Hugoniot data had increased by constructing the high-time resolution streak photographic system consisting of rotating-mirror type streak camera and pulsed dye laser, and considering the effects of impact inclination. The Hugoniot data of copper (Cu) and tungsten (W) were measured in the pressure range up to >200 GPa by the symmetric-impact experiment using a one-stage powder gun and two-stage light gas gun. It was found that the zero-intercept values (C_0) of U_S - U_P relation ($U_S = C_0 + SU_P$) of Cu and W were larger than the bulk sound velocities (3.867 and 4.023 km) by 0.14 and 0.13 km/s, respectively, which showed the effect of shear strength in plastic region. The hydrostatic-compression curves were drawn using the strength values reported by Chhabildas et al., and the equation of state (EOS) parameters were discussed. The result on gold (Au) will be also presented at the conference.

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