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Molybdenum Sound Velocity and Shear Strength Softening[1] JEFFREY NGUYEN, MINTA AKIN, RICKY CHAU, DAYNE FRATANDOUNO, PAT AMBROSE, Lawrence Livermore National Laboratory, OLEG FAT'YANOV, PAUL ASIMOW, California Institute of Technology, NEIL HOLMES, Lawrence Livermore National Laboratory — We recently carried out a series of light-gas gun experiments to measure molybdenum acoustic sound speed up to 5 Mbars on the Hugoniot. Our measured sound speeds increase linearly with pressure up to 2.6 Mbars and taper off near the melting pressure. The gradual leveling off of sound speed suggests a possible loss of shear strength near the melt. A linear extrapolation of our data to zero pressure is in good agreement with the sound speed measured at ambient condition. The results indicate that molybdenum remains in the bcc phase on the Hugoniot up to the melting pressure. There is no bcc solid phase transition on the Hugoniot as previously reported.

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