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Hugoniot measurement of silicon up to 1.1 TPa TOMOKAZU SANO, AKIO HIROSE, Division of Materials and Manufacturing Science, Osaka University, Japan, NORIMASA OZAKI, TOMOAKI KIMURA, KOHEI MIYANISHI, TAKASHI ENDO, TATSUYA JITSUI, Division of Electrical, Electronic and Information Engineering, Osaka University, Japan, RYOSUKE KODAMA, Division of Electrical, Electronic and Information Engineering, Institute of Laser Engineering, Osaka University, Japan, YOUICHI SAKAWA, Institute of Laser Engineering, Osaka University, Japan, TSUTOMU MASHIMO, Shock Wave and Condensed Matter Research Center, Kumamoto University, Japan, TOSHIMORI SEKINE, National Institute for Materials Science, Japan — Crystalline structures of silicon under pressure has been studied intensively over the last five decades. Semiconducting diamond structure of silicon transforms to metallic phases above 11.7 GPa at room temperature. Melting curve of silicon as a function of pressure is not determined above 16 GPa. Hugoniot of silicon up to 200 GPa has already been known. However, no obvious kink due to shock melting on the known Hugoniot is observed. Here we report that Hugoniot measurement of silicon from 0.4 to 1.1 TPa using laser-driven shock waves. Onset pressure of shock melting will be addressed in the presentation.

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