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Equation of state of diamond under shock compression up to 2 TPa HIROFUMI NAGAO, KEN-ICHI KONDO, Materials and Structures Laboratory, Tokyo Institute of Technology, NORIMASA OZAKI, Laboratorie pour l'Utilisation des Lasers Intenses, Ecole Polytechnique, TAKATOSHI ONO, KIKUO TAKAMATSU, KEIJI NAGAI, MITSUO NAKAI, KAZUO A. TANAKA, Faculty of Engineering and Institute of Laser Engineering, Osaka University, KUNIHIKO WAKABAYASHI, KEN OKADA, MASATAKE YOSHIDA, Research Center for Explosion Safety, National Institute of Advanced Industrial Science and Technology (AIST) — The equation of state of diamond was studied using laser-driven shock waves in the terapascal region between 0.5 and 2 TPa. Strong single shock waves were generated by direct-irradiation of laser beams from the GEKKO/HIPER glass laser system of the ILE. The shocked targets consisted of a 20 um-thick single crystalline diamond and a 20 um-thick aluminum foil, both of which were on a 50 um-thick aluminum base plate. The shock wave velocity was measured directly by observation of the self-emission or change of reflectivity. Using the impedance-matching method, the pressures and particle velocities of diamond were obtained.

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