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Study on the dynamic behavior of matters using laser-driven shock waves in the water confinement HYEONJU YU, JACK J. YOH[1], Seoul Natl Univ — The strain rates achievable in laser-driven shock experiments overlap with gas gun and can reach much higher values. The laser-based method also has advantages in terms of system size, cost, repeatability, and controllability. In this research, we aim to measure equation of state, Hugoniot elastic limit, strain rate, and compressive yield strength of target samples by making use of the velocity interferometer or the VISAR. High pressure shock wave is generated by a Q-switched Nd:YAG laser operating at 1.064 μm wavelength with pulse energy up to 3 joules and 9 ns pulse duration. All the experiments are conducted in the water confinement to increase the peak stresses to an order of GPa. Furthermore, quantitative comparisons are made to the existing shock data in order to emphasize the novelty of the proposed setup which is relatively simple and reliable.

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