

Abstract Submitted
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The pressure impulse of a laser-induced underwater shock wave¹
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HARU KAMEDA, Tokyo Univ of Agri Tech — We investigate the pressure im-
pulse, the time integral of pressure evolution, of a laser-induced underwater shock
wave. We simultaneously observe plasma formation, shock-wave expansion, and
pressure in water using a combined measurement system that obtains high-resolution
nanosecond-order image sequences. Remarkably, pressure impulse is found to dis-
tribute symmetrically for a wide range of experimental parameters even when the
shock waves are emitted from an elongated plasma. In contrast, distribution of pres-
sure peak is found to be non-spherically-symmetric. We rationalize aforementioned
results by considering the structure of the underwater shock wave as a collection of
multiple spherical shock waves originated from point-like plasmas in an elongated
region.

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