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Two-colors-laser-plasma interaction for enhancing hot electron generation to drive strong shock in a dense matter[1] SHINSUKE FUJIOKA, SEUNGHO LEE, HIDETAKA KISHIMOTO, HIROKI MORITA, YUJI FUKUYAMA, SYOHEI SAKATA, KAZUKI MATSUO, KING FAI FARLEY LAW, YUGO OCHIAI, KEISUKE KOGA, YASUNOBU ARIKAWA, KEISUKE SHIGEMORI, AKIFUMI YOGO, HIROAKI NISHIMURA, ILE, Osaka Univ, Japan, KUNIOKI MIMA, GPI, Japan, HIROSHI AZECHI, NATSUMI IWATA, TAKAYOSHI SANO, HIDEO NAGATOMO, YASUHIKO SENTOKU, RYOSUKE KODAMA, ILE, Osaka Univ, Japan — Localized heating of an overdense plasma by hot electrons is being studied as a scheme to drive strong shock in a matter. One of the challenges in this scheme is efficient energy conversion from laser light to hot electrons through laser-plasma interactions. Here we have demonstrated experimentally that mixture of 1.053 μm and 0.53 μm intense laser beams results in one order of magnitude enhancement of this efficiency. Number and energy distribution of hot electrons were measured by using two spectrometers of Bremsstrahlung X-ray and characteristic X-ray from Cu tracer embedded targets. Dependences of the energy conversion on laser intensity ratio and relative polarization were clearly observed. Spectrum of the backscattered light indicates change of electron plasma waves by the two-color lasers irradiation. Comparison between the experiment and simulation will also be presented.

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Shinsuke Fujioka
Osaka Univ

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