

Abstract Submitted
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Electron acceleration in ultra-intense laser ($>10^{18}$ Wcm $^{-2}$) interactions with sub-micron structured targets HIDEAKI HABARA, Graduate School of Engineering, Osaka Univ. Japan, LEI AN-LE, Shanghai Institute of Optics and Fine Mechanics, KEITARO ENDO, Graduate School of Engineering, Osaka Univ., TOSHINORI YABUUCHI, UCSD, USA, TAKESHI MATSUOKA, Michigan Univ., USA, HITOSHI SAKAGAMI, NIFS, Japan, FARHAT N. BEG, UCSD, USA, RICHARD STEPHENS, General Atomics, USA, ANTONY MAKSIMCHUK, KARL KRUSHELNICK, Michigan Univ., USA, KAZUO A. TANAKA, Graduate School of Engineering, Osaka Univ. — The use of sub-micron structure targets is an attractive method for Fast Ignition to enhance energy coupling of the laser into the fast electrons. We have studied electron acceleration using sub-micron structured targets including low-density foam and carbon nano-tube (CNT) in ultra-intense laser plasma interactions. We observe low coupling efficiency of the laser energy into high-energy electrons in present experimental conditions in spite of our previous results showing efficient electron accelerations [1]. Detailed modeling using PIC calculations with various sub-micron structured plasma are presented to understand these results. [1] A.L. Lei et al., Phys. Rev. Lett. 96 (2006) 255006.

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