

Abstract Submitted
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Generation of Energetic Particles in Intense Laser Matter Interaction¹ BHUVANESH RAMAKRISHNA, Department of Physics, Indian Institute of Technology Hyderabad, India., TAYYAB MUHAMMAD, SUMAN BAGCHI, TIRTHA MANDAL, JUZER CHAKERA, PRASAD NAIK, PARSHOTAM DASS GUPTA, Laser Plasma Division, Raja Ramanna Centre for Advanced Technology, Indore, India., DEPARTMENT OF PHYSICS, INDIAN INSTITUTE OF TECHNOLOGY HYDERABAD, INDIA. COLLABORATION, LASER PLASMA DIVISION, RAJA RAMANNA CENTRE FOR ADVANCED TECHNOLOGY, INDORE, INDIA. COLLABORATION — The acceleration of high energy ion beams up to several tens of MeV per nucleon following the interaction of an ultra-short ($t < 50$ fs), intense ($I\lambda^2 > 10^{18}$ W.cm⁻². μm^{-2}) laser pulse with solid targets, is one of the burgeoning fields of research in the last few years. Mechanisms leading to forward-accelerated, high quality ion beams, operating at currently accessible laser intensities (up to 10^{21} W/cm²) in laser-matter interactions, are mainly associated with large electric fields set up at the target rear interface by the laser-accelerated electrons leaving the target. In this paper, we present our recent experimental results on MeV ion generation by mildly relativistic (10^{19} W/cm⁻²) short-pulse (45 fs) laser interaction with foil targets of varying thicknesses, structured / uniform targets (e.g. nano structures on thin metallic foils, sandwich targets). Spectral modification / bunching, and divergence from structured targets will be discussed.

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