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Gel versus aerogel to collect high velocity ejecta from laser shockloaded metallic targets for post-recovery analyses EMILIEN LESCOUTE, CEA, DAM, DIF, 91297 Arpajon, France, THIBAUT DE RESSEGUIER, Institut PPRIME (UPR 3346), CNRS, ENSMA, 1 ave. Clément Ader, 86961 Futuroscope Cedex, France, JEAN-MARC CHEVALIER, CEA-CESTA, BP 2, 33114 Le Barp Cedex, France — Soft recovery of fast objects is an issue of considerable interest for many applications involving shock wave loading, such as ballistics, armor design, or more recently laser-driven inertial confinement fusion, where the characterization of the debris ejected from metallic shells subjected to intense laser irradiation conditions the design of the experiments. In this paper, we compare the recovery efficiency of two materials : aerogel (density 0.03 g/cm3), which has been used as fragment collector for many years, and 'varagel' (density 0.9 g/cm3), which we have tested recently (E. Lescoute et al., Shock Compression of Condensed Matter 2009). Experiments have been performed on the Alisé laser facility in the Centre d'Etudes Scientifiques et Techniques d'Aquitaine (CESTA, CEA) on 20 μ m-thick aluminium targets. Transverse shadowgraphy provides quasi-instantaneous, successive pictures of the debris clouds and mean ejection velocities. Ejected fragments have been recovered in both types of collectors, then, samples have been analysed by x-ray tomography at the European Synchrotron Radiation Facility (ESRF). Three-dimensional reconstructions of the fragment populations have been achieved, and quantitative comparisons between both collecting materials, used in the same conditions, could be performed.

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