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PDV experiments on shock-loaded particles GABRIEL PRUDHOMME, PATRICK MERCIER, CEA, DAM, DIF, LAURENT BERTHE, PIMM, UMR 8006 CNRS-Arts et Métiers ParisTech, 151 bd de l'Hôpital, F-75013 Paris, DAVINA SIHACHAKR, CHRISTIAN RION, CEA, DAM, DIF — We present results from PDV experiments in which particles are ejected from shock-loaded metallic plates. The shocks in the samples were generated using either a pulsed laser or high-explosive plane-wave generators. In a first series of experiments, we deposited size-calibrated particles (around 10- μm in diameter) on the target surface. We analyzed the back-reflected light to infer the free surface and particle velocities (up to several km/s), as well as the cloud structure, as a function of the variable parameters: the particle material (tin, copper, gold, etc.), the particle diameters (a few microns) and the thicknesses of the deposited particle layer. In the second series of experiments, we observed the particles created by microjetting, microspalling or melting at the free surface of tin plates. The slowing down of the particles in air has been measured and, in some experiments, the interaction of secondary shockwave with the particle cloud has also been observed. Finally, we compare these results to those obtained with simple models and with a hydrodynamic code (Hésione).

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