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Development of a high resolution ps laser imaging diagnostic for microjetting characterization ARNAUD SOLLIER, EMILIEN LESCOUTE, CEA, DAM, DIF, F-91297 Arpajon, France — When a shock wave emerges at a metal free surface presenting geometrical defects such as pits, scratches, or grooves, ejected matter (ejecta) can be emitted from these defects in the form of thin jets expanding ahead of the main surface and breaking up into small particles. This process is referred to as microjetting. Over the last few years, we have used laser shock loading in order to expand microjetting investigatations over ranges of small spatial scales ($\approx \mu m$), extremely high loading rates ($\approx 10^7 s^{-1}$) and very short pressure pulses ($\approx ns$). A variety of measurement techniques have been used to determine the properties of ejecta clouds. Here, we present the development of a new ps laser imaging diagnostic intended to overcome the limitations of our current transverse optical shadowgraphy setup. We describe our experimental setup and show the results of our first experiments performed using both visible (532 nm) and UV (355 nm) lightning of the sample. These results are compared to those obtained at LANL under high explosive loading using ultraviolet in-line Fraunhofer holography, and also to molecular dynamics (MD) simulations performed by our CEA colleagues at lower space and time scales.

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