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Study of lead behavior features at shock-loading and further unloading ALEXEY FEDOROV, ANATOLY MIKHAILOV, STANISLAV FINYUSHIN, DMITRY NAZAROV, EVGENY CHUDAKOV, DENIS KALASHNIKOV, EVGENY BUTUSOV, None — The determination of mass, size, shape and velocity of particles, which appear as a result of microcumulative ejection from the metal surface at the moment of shock wave outlet, is a very complicated and multivariate problem. The presentation object is to value lead melting area boundaries and to measure velocity of particle cloud ejected from the surface under shock loading. The free surface and ejecting particle cloud velocities were simultaneously recorded using the method of heterodyne-interferometer (PDV). The solid surface velocity of lead is recorded on spectrogram at the shock pressure amplitude of 22 GPa and less; while the particle cloud motion is recorded in front of the surface. The lead melting occurs after shock loading with the pressure of 25 GPa and more, and the further unloading. As it is estimated, the density of melted particle cloud is greater (by an order of magnitude) than the density of particle cloud ejected from the solid surface. The material seems to be in the composite state (liquid-solid phase) at the pressure of 22÷25 GPa. It is shown that the maximum velocity of melted particle cloud (3.3-3.8 km/s) is higher than the velocity of particles ejected from the solid surface (2-2.5 km/s).

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None

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