

Abstract Submitted
for the MAR12 Meeting of
The American Physical Society

Estimation of spectral characteristics of particles ejected from free surfaces of metals and liquids under shock wave effect ALLA GEORGIEVSKAYA, VICTOR RAEVSKY, RFNC-VNIIEF — The authors present approximated relations for estimations of the basic characteristics of flow of particles ejected from free surface of substance after shock wave arrival (shock-wave ejecta). The problem is considered as a particular case of the Richtmayer-Meshkov instability. Periodic perturbations on free surface, which are sinusoidal and having triangular shape, are considered as the initial perturbations causing formation of jets and particles. The medium is assumed to be liquid with surface tension. The role of viscosity is estimated. In the work, the authors obtained equations for estimations of the following characteristics of the particle flow: - dependence of integral mass of ejected substance on time; - space-time distribution of density of ejected substance; - space-time distribution of velocity of ejected substance; - distribution of particles in sizes; - correlation of sizes and velocities of particles. Estimations are presented concerning influence of shear strength and plasticity on substance ejecta. Analytical relations are compared with results of numerical calculations and experiments.”

Alla Georgievskaya
RFNC-VNIIEF

Date submitted: 11 Nov 2011

Electronic form version 1.4