

REGISTRATION OF THE EMISSION OF PLASMA AND FINE PARTICLES BY THE LANGMUIR PROBE

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The paper presents the results of experiments on recording the exit of plasma and fine particles from a free surface using an electric Langmuir probe. Comparison of the results with experiments where optical methods and piezoelectric sensors were used has been carried out. An experimental assembly for measuring probe signals has been developed, in which, after the strike of the impactor on the target, a flow of fine particles and plasma of the target metal is formed. This flow is formed when the shock wave reaches the free surface and is directed towards the probe. The electrical signal that appears when the flow approaches the Langmuir probe is recorded in a scheme with a probe offset $V = -12.4$ V in the mode of collecting ion current in a wide dynamic range. The previously used electrical circuit was modernized with compensation for the parasitic component of the signal and for a clearer registration of the useful signal from the Langmuir probe. The signals from the piezoelectric sensors and the radiation intensity were synchronized with the signal from the Langmuir probe, which confirmed the hypothesis of the distribution of particles in terms of velocities and sizes. The calculated plasma parameters were estimated for the experimental conditions taking into account the addition of ions of the target material (copper).