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Dust particles charge experimental evaluation in laser induced high pressure colloid plasma flows E. YU. LOKTIONOV, YU. YU. PROTASOV, Bauman Moscow State Technical University, STATE LAB FOR PHOTON ENERGETICS TEAM — Generation of the laser-induced dusty gas-plasma flows is possible when matrix substance spectral ionization threshold is lower than dust component evaporation threshold. Such conditions are possible under action of shortwave radiation (λ ~213 nm) on easily ablating polymeric media ($(C_2F_4)_n$) containing transparent dielectric particles (SiO_2). Electron concentration in plasma (n_e ~10^{18} cm^{-3}) and dust particle charge (z~1,5$10^8$ e) achievable in this way enable us to carry out investigations in a previously unstudied range of parameters. The comparative analysis of the known data on the dust particle charge with those obtained in this work shows that there exists a dependence of the dust particle charge (z/R_d^2) on the electron concentration in plasma carrier ranged n_e ~10^8–10^{18} cm^{-3}, which is close to that for the power (with the exponent equal to ~0.25).

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