

Erosion of particles in the plasma of an RF Discharge

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It is known [1] that particles in gas discharge plasma are modified and can acquire a metallic coating. It is also known [2] that in DC glow discharge plasma, the size and surface of particles forming the dust system can change. That is, the processes of both deposition and erosion of macroparticles can occur simultaneously in a gas-discharge plasma. The occurrence of such processes can affect both the charge of the particles themselves and the composition of the plasma and the distribution of fields in it. As a result, particles can change their dynamic properties over time, which, in turn, can lead to changes in the state of dust-plasma systems.

The results of an experimental study of the size distribution and structure of the surface of polymer particles and particles with a metal shell during their exposure to the plasma of a capacitive high-frequency discharge are presented. It is shown that uncoated particles are eroded to a greater extent than copper-coated particles as a result of exposure to high-frequency capacitive discharge plasma. In this case, the uncoated particles develop large surface irregularities, while the coated particles develop a fine-dispersed surface structure. The research was supported by the Russian Science Foundation (project No. 19-12-00354).

[1] Kononov E A, Vasiliev M M, Vasilieva E V and Petrov O F 2021 *Nanomaterials* **11** 2931

[2] Karasev V Y, Dzlieva E S, Gorbenko A P, Mashek I C, Polishchuk V A and Mironova I I 2017 *Technical Physics* **62** 496–498