

Comparison of rate of all-round degradation of spherical melamine-formaldehyde dust particles in glow discharge in neon and krypton

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For a detailed study of dusty plasma today, calibrated particles made of melamine-formaldehyde are used, a size range of which is usually from 1 μm to 15 μm . In a series of experimental studies carried out with such particles injected in a DC discharge in neon, effects of size degradation and modification of the particle surface have been discovered [1–3]. Now, we present results of an experiment in which changes of particles sizes in a glow discharge in krypton are observed. The dependence of the degradation of the particle size on time is obtained and compared with the one obtained in lighter inert gas (Ne). The comparison performed qualitatively fits the degradation model, which takes into account the process of knocking out the material of particles under the action of bombardment by ions continuously moving to the surface of a dust particle in the process of maintaining its stationary charge. This work is supported by Russian Science Foundation (grant No. 18-12-00009).

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