

Selection of dust particles in a standing stratum in glow discharge in inert gases with different ionization potentials

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In this work, we experimentally study the selection of the parameters of dust particles levitating in a stratum in a glow discharge in inert gases: helium and xenon. Statistics of captured particles is collected, the average particle size and the shape are determined. The design of the discharge chamber, the method for extracting of particles and the method for evaluating their parameters, have been proposed by us earlier. A comparison of the extracted particles in terms of size and discharge parameters has been carried out. To estimate the parameters of particles, the concept of the discharge of low currents and low pressure in inert gases is used, which corresponds to the application of the conditions of nonlocal kinetics. The performed study shows the possibility of obtaining samples of selection of dust particles in very different inert gases under similar conditions. The results obtained make it possible to choose the conditions under which the parameters of the dust trap can be controlled and the “plasma filter” can be tuned to select the special particle size. The study that has begun can be continued by varying the gas mixture with the control of electron temperature in the process of particles selection.

The work was supported by RSF, grant No. 22-22-00154.