

Separation Of Polydisperse Particles In Plasma of Radio-Frequency Discharge

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Abstract

In this paper the method of polydisperse particles separation in plasma of radio-frequency discharge for obtaining of monodisperse particles are considered. Difference of proposed method from other one is external influence absence of impurity, because the separation process goes in a plasma reactor, also it is possible to use a different kind of materials for separation [1]. Mechanism of this method based on using a special form of plasma (electric field, which allows to select and collect dusty particles by mass from crystal-like structure of dusty plasma. A condition for obtaining monodisperse particles is spherical form of particles, in other cases we can only speak about the smallness dispersions of separated particles. The experiment was carried out in argon plasma at constant pressure of argon gas 0.3 Torr and different power of discharge. For separation polydisperse spherical particles of glass (SiO₂) with diameters 1 – 100 μm have been used. After separation obtained particles had diameters 5 μm. Range of separation is 600 nm - 50 μm.

[1] V. Gente, F.L. Marca, F. Lucchi, P. Massacci, Waste Management 23, 951–958 (2003)