Charging of Grains in Sprite-plasma

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The presence of a charged dust component at a mesosphere substantially determines properties of this atmospheric layer and has manifold manifestations. One of possible sources of free electrons for a charge of grains can be served the electrical discharges in a mesosphere (sprites) [1]. As sprites take huge volume (about 10000 cubic kilometer) and happen approximately 1 time per one second, their role in the charging of grains in a mesosphere necessarily should be taken into account.

In supported work is estimated the value of a charge, which grains obtained in sprite-plasma. The parameters of sprite-plasma (velocity, concentration of an electronic component, duration of existence) make possible a charge of submicron grains up to value, at which in case of sufficient concentration of particles, the sprite-plasmas can to be possessed of the dusty plasma properties [2].

1. V.P. Pasko, U.S. Inan, T.F. Bell, Y.N. Taranenko, “Sprites produced by quasi-electrostatic heating…” *J. Geophys. Res.* **Vol. 102**, No. A3, pages 4529-4561, March 1, 1997.

2. Yu. Serozhkin, “Dusty sprite-plasma and conditions for its formation”. *AIP Conference Proceedings, New vistas in dusty plasmas, (Fourth International Conferences on the Physics of Dusty Plasmas, Orleans, France, 13-17 June 2005),* **Vol.799**, pages 383-386.