



## **Ion field emission from carbon dust grains**

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Dust grains of micrometer-sized coexist with plasma of various parameters in the space as well as in laboratories and industrial facilities. The mutual interactions of plasma particles with dust grains lead to their charging. One of charging processes is collection of ions. The flux of energetic ions can charge dust grains to high surface potentials that leads to a strong electric field above the grain surface. When the electric field is strong enough, accumulated charge becomes spontaneously released. This process is known as ion field emission and can limit a maximum charge of the grain exposed to plasma environment. We study this process experimentally in laboratory conditions using micron-sized spherical carbon dust grains charged by argon ions. We investigated an influence of the grain size, time of treatment, primary ion energy, and pressure in the experimental chamber on ion field emission. We found that a particular dose of ions impinging the grain surface leads to irreversible changes of the emission process.