Microphysics of Coulomb explosions

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Research description

The droplet breakup, taking place when the repulsive electrostatic forces overcome the surface tension is a phenomenon known since Coulomb days (Coulomb explosion). However, it has been described in the language of continuous medium, which overlooks effects taking place at the interface at nano- and molecular level. The objective of the research is to analyze the phenomena at the air-liquid interface, look in detail for discrepancy with the continuous medium description and propose a new one. We plan to study the dynamics of evaporation of charged composite droplets of various liquids with suspended charged inclusions (surfactant, dielectric and metallic nanospheres).