LadHyX Seminar – July 6, 11:00

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Manipulating fluids with electric fields: the case of the Electrospray

In this seminar we focus in the handling of fluids with electric fields. In particular, as paradigm, we will expose the case of the electrospraying of liquids. Under the term electrospraying are collected several regimes having in common that they occur by the disruption of drops (pendant or not) by means of a sufficiently high electric field. We will inspect some of those regimes in which the progeny droplets result from the varicose breakup of a jet anchored in a cusp-like meniscus. Interestingly, these progeny droplets are several of orders of magnitude smaller that the parent drop and are charged which presents technological advantages. We will walk through the steady and unsteady Taylor cone-jet mode; and through the coaxial Taylor cone-jets. We aim to provide a comprehensive view on the role of electrohydrodynamics effects in these modes. In addition, we intend to provide how the full electrokinetic equations can be reduced or simplified into more suitable models as the Leaky Dielectric Model.