

Abstract Submitted  
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**Simulating the electrohydrodynamics of a viscous droplet**

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— We present a novel numerical approach for the simulation of viscous drop placed in an electric field in two and three spatial dimensions. Our method is constructed as a stable projection method on Quad/Octree grids. Using a modified pressure correction we were able to alleviate the standard time step restriction incurred by capillary forces. In weak electric fields, our results match remarkably well with the predictions from the Taylor-Melcher leaky dielectric model. In strong electric fields the so-called Quincke rotation is correctly reproduced.

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