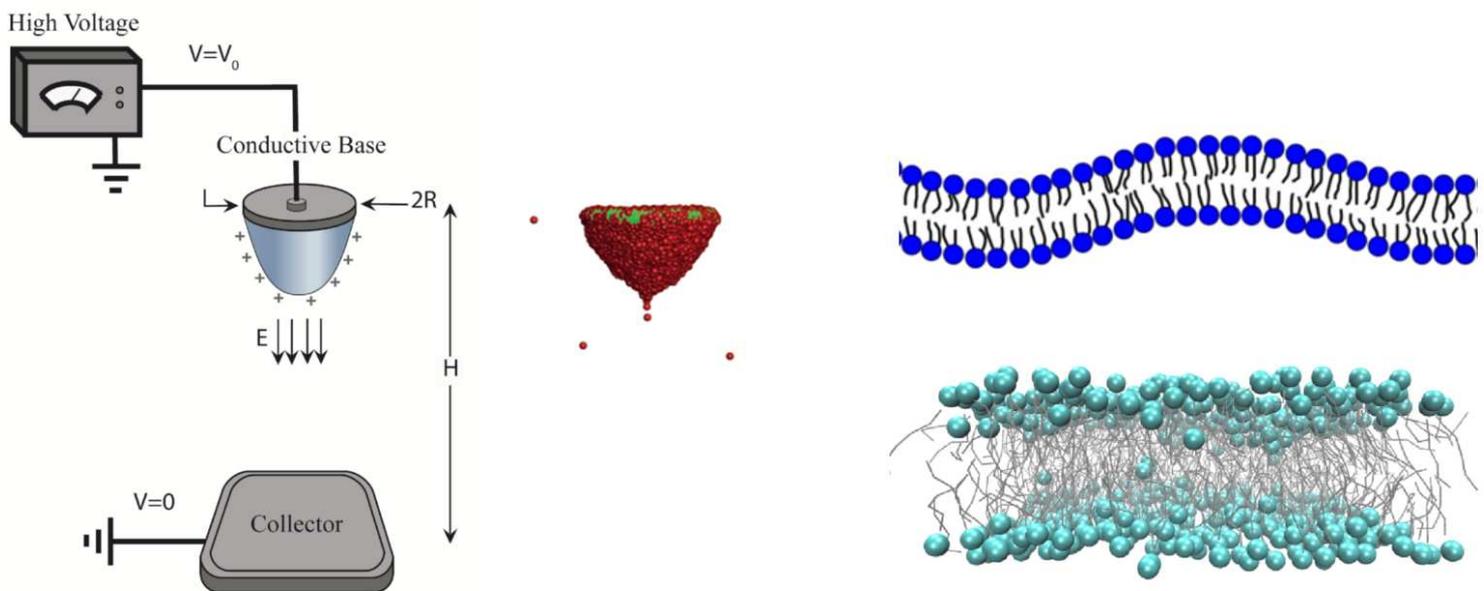


New Algorithms for Dissipative Particle Dynamics

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Dissipative Particle Dynamics (DPD) is a relatively new particle-based method fits between those used for molecular dynamics and computational fluid dynamics. It has been devised to simulate phenomena at mesoscopic level, i.e., on length and time scales suited for modelling complex materials with both atom-like effects and bulk fluid properties such as viscosity. Due to the flexibility of this method, it has been used for hydrodynamics simulation of both Newtonian and non-Newtonian fluids, flows through complex geometries, microfluidics, free surface flows, phase behaviours of fluids and polymers (e.g. surfactants, amphiphiles), self-assembly of chemical structures such as amphiphilic micelles and bilayer and adsorption onto surfaces.

Great advances in computing technologies and computational science in recent years, have lead to dramatic increases in many previously untractable scientific computing problems. Therefore, there is a great interest in developing and accelerating algorithms and methods. In this talk I will present some new algorithms that have been achieved recently.

