

Numerically study the combined effect of electrophoresis and electroosmosis in the nonpolar system

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Abstract

Electrophoresis (EP) is the movement of the charged particles relative to a stationary liquid induced by an applied electric field. Electroosmosis (EO), on the other hand, is the movement of a liquid relative to a stationary charged surface caused by an external electric field. In nonpolar systems, charges are generated in the form of charged inverse micelles (CIMs). The addition of surfactants helps disperse particles in nonpolar systems and makes it possible for EP and EO to take place. The novelty of this work is in using numerical ways to uncover the physics behind the experimental fluid motion and particle trajectories in nonpolar systems, which may help people understand, control, and optimize the switching ability of microfluidic devices, especially electronic paper displays based on micro or nano-particles.

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Biography

Wei Liu has a student from Eindhoven University of Technology, Netherlands.