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Diffusiophoresis of a charged drop FAN YANG, SANGWOO SHIN, HOWARD STONE, Princeton Univ — Diffusiophoresis describes the motion of colloids in an electrolytic solution under a concentration gradient. Most of the previous studies in diffusiophoresis have dealt with motion of rigid particles. Here, we study the diffusiophoresis of fluid particles analytically and experimentally. We obtain the analytical solution of the diffusiophoretic velocity of fluid particles by perturbation methods. Using charged oil droplets, we measure the droplet speed under solute concentration gradient and compare it with the analytical solution. Our findings have potential applications for oil recovery and drug delivery.

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