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Lateral migration and diffusion of a mechanical engineer through emulsion of drops induced by Andy's influence KAUSIK SARKAR, George Washington University — My initiation to analytical sides of Stokes flow was thorough cyclostyled notes of Andy's Stanford fluid mechanics notes distributed by Ashok Sangani when he taught a course at Hopkins. Since then, reversibility of Stokes flow and singularity solution remained with me during my research carrier. I will discuss how it and Frankel and Acrivos (1970) paper in JFM influenced my research in drop deformation and emulsion rheology at finite inertia, winning the 2009 Acrivos award by my first PhD student Xiaoyi Li. Finally, I will discuss migration of suspended particles, drops, polymers and biological cells caused by breaking of Stokes reversibility due to deformation and viscoelasticity. Here, we show that the migration is induced by the image stresslet field, as was also indicated by Dave Leighton's thesis and a paper with Smart [1991, Phys. Fluid A, 3, 21]. We relate the stresslet field to the Interface tensor, and investigate the effects of drop inclination. In contrast to a plausible notion asserted also in the literature, that reduced inclination (increased alignment with flow) decreases migration, it is shown here that reduced inclination increases the stresslet and thereby the migration velocity.

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