

Quantitative investigation of diffusiophoresis phenomena via optical laser tweezers

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Diffusiophoresis is one of the colloid transport phenomena driven by a chemical concentration gradient in a fluid phase. In previous study, colloidal particles migrate toward a high concentration region of solute molecules due to diffusiophoresis force. The migration velocity can be related to solute diffusivity. It was reported that the diffusiophoresis force is logarithmically proportional to the concentration gradient. Although many studies on controlling diffusiophoresis have been conducted to date, the diffusiophoresis force has not been measured directly. In this work, optical laser tweezers were employed to quantitatively investigate the effect of diffusiophoresis in various salt conditions.