

Abstract Submitted
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Diffusion of charged colloidal particles at aqueous interfaces

PENGER TONG, WEI CHEN, Department of Physics, Hong Kong University of Science and Technology — We report our recent experimental study of Brownian dynamics of weakly charged particles at a water-air interface. Optical microscopy and multi-particle tracking are used to measure the mean square displacement of the interfacial particles. The measured short-time self-diffusion coefficient D_s^s has the form, $D_s^s/D_0 = \alpha(1 - \beta n)$, where n is the area fraction occupied by the particles and D_0 is the Stokes-Einstein diffusion coefficient. The values of the fitting parameters α and β are found to be different from those for the three dimensional (3D) colloidal suspensions, indicating that hydrodynamic interactions at the interface have interesting new features when compared with their 3D counterpart. *This work was supported by the Research Grants Council of Hong Kong SAR under Grant No. HKUST603305.

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