

Abstract Submitted  
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**Universal Scaling Law of Diffusion and Hydrodynamic Corrections in Colloidal Monolayers**<sup>1</sup> XIAO-GUANG MA, Hong Kong University of Science and Technology, WEI CHEN, Fudan University, Shanghai, China, ZIREN WANG, YUAN PENG, YILONG HAN, PENGGER TONG, Hong Kong University of Science and Technology — Using dense monolayers of colloidal particles and the techniques of optical microscopy and particle tracking, we tested the universal scaling law of the diffusion constant of colloidal particles as a function of excess entropy. By varying the area fraction of the colloidal monolayer, we measured the diffusion constant and the corresponding pair correlation function of the colloidal particles, from which the excess entropy can be calculated. It is found that the universal scaling law applies to a monolayer of latex suspensions at an air-water interface when the interparticle repulsions are dominant over the hydrodynamic interactions. For colloidal monolayers of hard spheres at the air-water interface and near a solid wall, the universal scaling law starts to deviate from its original form as the short-ranged hydrodynamic interactions increase.

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