

The Experimental Investigation of Temperature Influence on the Oscillations of Particles on Liquid Surfaces

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Abstract : It was shown recently that small particles and powders spontaneously disperse on liquid surfaces when they come into contact with the interface for the first time. This happens due to the combined effect of the capillary force, buoyant weight of the particle and the viscous drag that the particle experiences in the liquid. The particle undergoes oscillations normal to the interface before it comes to rest on the interface. These oscillations, in turn, induce a flow on the interface which disperses the particles radially outward. This phenomenon has a significant role in the pollination of sea plants such as Ruppia in which the formation of 'pollen rafts' is the first step. This paper investigates, experimentally, the influence of the temperature of the liquid on which this dispersion occurs. It was observed that the frequency of oscillations of the particles decreased with the increase in the temperature of the liquid. It is because the magnitude of capillary force also decreased when the temperature of the liquid increased.

Keywords : particle dispersion, capillary force, viscous drag, oscillations

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