

Abstract Submitted  
for the MAR13 Meeting of  
The American Physical Society

**Transient Flow Induced by the Adsorption of Particles**<sup>1</sup> NAGA MUSUNURI, DANIEL CODJOE, BHAVIN DALAL, IAN FISCHER, PUSHPENDRA SINGH, New Jersey Institute of Technology — When small particles, e.g., glass, flour, pollen, etc., come in contact with a fluid-liquid interface they disperse so quickly to form a monolayer on the interface that it appears explosive, especially on the surface of mobile liquids like water. This is a consequence of the fact that the adsorption of a particle in an interface causes a lateral flow which on the interface away from the particle. In this study we use the particle image velocimetry (PIV) technique to measure the transient three-dimensional flow that arises due to the adsorption of spherical particles. The PIV measurements show that the flow develops a fraction of a second after the adsorption of the particle and persists for several seconds. The fluid below the particle rises upwards and on the surface moves away from the particle. These latter PIV results are consistent with the surface velocity measurements performed in earlier studies. The strength of the induced flow, and the time duration for which the flow persists, both decrease with decreasing particle size. For a spherical particle the flow is axisymmetric about the vertical line passing through the center of the particle.

<sup>1</sup>National Science Foundation

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Date submitted: 20 Nov 2012

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