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Transient Flow due to the Adsorption of Particles PUSHPENDRA SINGH, NAGA MUSUNURI, BHAVIN DALAL, IAN FISCHER, DANIEL CODJOE, NJIT — 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 surface that it appears explosive, especially on the surface of mobile liquids like water. This is a consequence of the fact that a particle coming in contact with a liquid surface is pulled into the surface by capillary force causing the particle to accelerate to a relatively-large velocity in the direction normal to the surface. This vertical motion of the particle gives rise to a lateral flow on the surface away from the particle. PIV measurements show that the adsorption of a spherical particle causes a transient axisymmetric flow about the vertical line passing through the center of the particle. The flow develops in a fraction of second after the adsorption of the particle and persists for several seconds. The fluid directly below the particle rises upwards and near the surface it moves away from the particle.

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