

# Measurement of Contact Angle of Particles at Fluid-Fluid Interface: An Overview

Thriveni G. Anjali and Madivala G. Basavaraj\*

Polymer Engineering and Colloid Science (PECS) Laboratory, Department of Chemical Engineering, Indian Institute of Technology Madras, Chennai 6000 36, India;

## Abstract

A clear understanding of the adsorption of colloidal particles to interfaces is a matter of both scientific and technological interest. The particle stabilized interfaces are commonly encountered in food formulations, cosmetics, ceramic processing, pharmaceutical and other functional materials. The three phase contact angle of the particles at an interface is a measure of their equilibrium position at the interface. A quantitative estimation of this parameter is important to control the structure, dynamics and flow properties of particle laden interfaces. For example, an accurate measurement of contact angle is key for the determination of the interfacial attachment energy of particles, nature of electrostatic and capillary interactions, and for the synthesis of novel "patchy" particles. This review article is an insight into the different experimental methods for the measurement of the three phase contact angle of particles adsorbed to fluid-fluid interfaces. In the first part, we discuss the currently available methods highlighting the advantages and limitations of each type. In the second part, we review the measurement of contact angle of anisotropic particles and highlight the challenges in the accurate measurement of wettability of anisotropic particles attached to interfaces.

**Keywords:** Anisotropic Particles, Attachment Energy, Colloidal Interactions, Fluid-fluid Interface, Interfacial Assemblies, Particle Laden Interfaces, Three phase Contact Angle