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Abstract

Bubble-particle interaction is of great theoretical and practical importance in flotation. Significant progress has been achieved over the past years. E.g. the process of bubble-particle collision is reasonably well understood. This, however, is not the case for bubble-particle attachment leading to three-phase contact line formation due to the difficulty in both theoretical analysis and experimental verification. For attachment, surface forces play a major role. They control the thinning and rupture of the thin liquid film between the bubble and the particle. The dynamic coupling between force, bubble deformation and film drainage is critical to understand the underlying mechanism responsible for bubble-particle attachment. In this review we first discuss the advances in macroscopic experimental methods for characterizing bubble-particle attachment such as induction timer and high speed visualization.