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Occurrence of Micro-Bubbles During the Coalescence of Two Bubbles

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A new method is proposed to estimate hydrodynamic interactions among deformable gas-bubbles in a viscous liquid at low Reynolds numbers. This superposition method of Oseen's flow fiels succeeds to estimate the approaching motions of two equal-sized gas-bubbles located vertically in series in the viscous liquid. On relation to this subject the following interesting phenomena are newly recognized by using high-speed video-cameras and microscopes: (1) an occurrence of several number of micro-bubbles during the coalescent motions of two bubbles, (2) an occurrence of micro-bubbles during coalescent motions of two bubbles between two sheets of vertically set parrarel two plates in a viscous liquid, and (3) an occurrence of several micro-water-drops and micro-bubbles in a bursting motion of a single air-bubble at water surface.

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