

Abstract Submitted
for the DFD08 Meeting of
The American Physical Society

Liquid motion induced by the collision of a pair of bubbles¹ DAIJI SONE, TOSHIYUKI SANADA, TAKAYUKI SAITO, Shizuoka University — Characteristics of the liquid motion through the collision of a pair of bubbles were experimentally investigated. Hypodermic needles and a bubble launcher utilizing pressure oscillation were employed to exactly extract and highly reproduce the interaction between the liquid-phase motion and bubble motion through the collision. We obtained the accurate velocity fields of the liquid motion using recursive cross correlation PIV technique. After the bubbles collide, the vertical velocity of each bubble decreased rapidly. From the PIV results, when the bubble velocity decreased, we found out the bubble wake which kept its own momentum flew into the area between bubbles. That flow continued the upward motion even after bubbles passed. From the time-series PIV data, we calculated the standard deviation of liquid-phase velocity as the parameter of disturbance. The standard deviation of the vertical liquid velocity in the upper area of collision point shows high values. The upward flow generated by the bubble collision (in a strict sense, interaction of the surrounding liquid of the colliding bubbles) results in this intensive disturbance.

¹This study was promoted and financially supported by Category “A” of the Grants-in-Aid for Scientific Research, Japan Society for the Promotion of Science.

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Date submitted: 06 Aug 2008

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