Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

Experimental study of interactions between bubbles and bubble wakes, via PIV/LIF DAISUKE SHINOHARA, Graduate School of Engineering, Shizuoka University, TAKAYUKI SAITO, Research Institute of Green Science and Technology, Shizuoka University — A study of the interactions between bubbles and bubble wakes is essential to improve the efficiency of an industrial application. The knowledge of the bubbles and bubble wakes interactions in a bubble swarm, however, is still few. The purpose of this study is to experimentally investigate these interactions in a bubble column. For this specific purpose, a bubble-swarm generator that controls the formation and launch of the bubbles precisely was employed. Equivalent diameters of the bubbles was about 2.6 mm. The two bubbles were launched side by side and the bubble-bubble distance was 7 mm. The center bubble was launched between two leading bubbles 9.75 ms behind the leading bubbles. Using a high speed video camera and PIV, we visualized motion of the bubbles and their surrounding liquid motion. Those bubbles linearly ascended during 0.07 sec after launched. An aspect ratio of the center bubble in the time span from 0.03 to 0.07 sec after launched was smaller than those of the leading bubbles. The wakes of the leading bubbles are considered to enhance dynamic pressure acting on the center bubble. Hence, the bubble wake contribution is important to understand a bubbly flow.

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Date submitted: 30 Jul 2014 Electronic form version 1.4