

Abstract Submitted
for the DFD14 Meeting of
The American Physical Society

Four-dimensional visualization of rising microbubbles JUNG HO JE, JI WON JUNG, JAEYEON PYO, Dept. Materials Science and Engineering, Pohang University of Science and Technology (POSTECH), Korea, JAE-HONG LIM, Pohang Accelerator Laboratory, Korea — Four-dimensional imaging, which indicates imaging in three spatial dimensions as a function of time, provides useful evidence to investigate the interactions of rising bubbles. However, this has been largely unexplored for microbubbles, mostly due to problems associated with strong light scattering and shallow depth of field in optical imaging. Here, we developed tracking x-ray microtomography that is capable of visualizing rising microbubbles in four dimensions. Bubbles are tracked by moving the in-situ cell to account for their rise velocity. The sizes, shapes, time-dependent positions, and velocities of individual rising microbubbles are clearly identified, despite substantial overlaps between bubbles in the field of view. Our tracking x-ray microtomography affords opportunities for understanding bubble-bubble (or particle) interactions at microscales – important in various fields such as microfluidics, biomechanics, and floatation.

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Date submitted: 01 Aug 2014

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