Abstract Submitted
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Coalescence preference in dense packing of bubbles[1] YESEUL KIM, BOPIL GIM, SKKU Advanced Institute of Nanotechnology(SAINT), Sungkyunkwan University, SU JIN LIM, Department of Bio and Brain Engineering, Korea Advanced Institute of Science and Technology (KAIST), BYUNG MOOK WEON, SKKU Advanced Institute of Nanotechnology(SAINT), Sungkyunkwan University — Coalescence preference is the tendency that a merged bubble from the contact of two original bubbles (parent) tends to be near to the bigger parent. Here, we show that the coalescence preference can be blocked by densely packing of neighbor bubbles. We use high-speed high-resolution X-ray microscopy to clearly visualize individual coalescence phenomenon which occurs in micro scale seconds and inside dense packing of microbubbles with a local packing fraction of ∼40%. Previous theory and experimental evidence predict a power of -5 between the relative coalescence position and the parent size. However, our new observation for coalescence preference in densely packed microbubbles shows a different power of -2. We believe that this result may be important to understand coalescence dynamics in dense packing of soft matter. This work (NRF-2013R1A22A04008115) was supported by Mid-career Researcher Program through NRF grant funded by the MEST and also was supported by Ministry of Science, ICT and Future Planning (2009-0082580) and by Basic Science Research Program through the National Research Foundation of Korea (NRF) funded by the Ministry and Education, Science and Technology (NRF-2012R1A6A3A04039257)

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