Abstract Submitted
for the DFD17 Meeting of
The American Physical Society

Rising dynamics of a bubble confined in vertical cells with rectangular cross-sections MAYUKO MURANO, KO OKUMURA, Ochanomizu Univ. — Recently, the drag friction acting on a fluid drop in confined space has been actively studied [1]. Here, we investigate the rising velocity of a bubble in a vertical cell with a rectangular cross-section, both theoretically and experimentally, in which understanding of the drag force acting on the rising bubble is crucial. Although the drag force in such confined space could involve several regimes, we study a special case in which the bubble is long and the aspect-ratio of the rectangular cross-section of the cell is high. As a result, we found new scaling law for the rising velocity and the drag force, and confirmed the laws experimentally. Crossover to the rising dynamics in a Hele-Shaw cell [2] will be also discussed. [1] K. Okumura, Adv. Colloid Interface Sci. (2017, in press) [2] A. Eri and K. Okumura, Soft Matter 7 (2011)

Mayuko Murano
Ochanomizu Univ

Date submitted: 01 Aug 2017 Electronic form version 1.4