Abstract Submitted
for the DFD17 Meeting of
The American Physical Society

Visualization of an air-water interface on superhydrophobic surfaces in turbulent channel flows[1] HYUNSEOK KIM, HYUNGMIN PARK, Seoul National University — In the present study, three-dimensional deformation of air-water interface on superhydrophobic surfaces in turbulent channel flows at the Reynolds numbers of Re = 3000 and 10000 is measured with RICM (Reflection Interference Contrast Microscopy) technique. Two different types of roughness feature of circular hole and rectangular grate are considered, whose depth is 20 μm and diameter (or width) is varied between 20-200 μm. Since the air-water interface is always at de-pinned state at the considered condition, air-water interface shape and its sagging velocity is maintained to be almost constant as time goes one. In comparison with the previous results under the laminar flow, due to turbulent characteristics of the flow, sagging velocity is much faster. Based on the measured sagging profiles, a modified model to describe the air-water interface dynamics under turbulent flows is suggested.

[1]Supported by City of Seoul through Seoul Urban Data Science Laboratory Project (Grant No 0660-20170004) administered by SNU Big Data Institute.

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Date submitted: 28 Jul 2017 Electronic form version 1.4