Abstract Submitted
for the DFD19 Meeting of
The American Physical Society

Direct Numerical Simulations of Surfactant Effects on Heat and/or Mass Transfer Around a Bubble[1] THOMAS ABADIE, OMAR MATAR, Imperial College London — Contaminants or surfactants are involved in a wide range of environmental and industrial applications and their presence can affect significantly both the dynamics and transfer phenomena around bubbles and droplets. In this study, a front-tracking method is presented and assessed in order to model accurately surface tension forces for capillary driven flows and heat and mass transfer around a bubble rising in a continuous liquid phase. The effects of Marangoni stresses on the bubble dynamics on the one hand and on the Sherwood or Nusselt number on the other are investigated as a first step towards improve the understanding of heat and/or mass transfer in contaminated bubble swarms.

[1]PETRONAS and Royal Academy of Engineering Research Chair in Multiphase Fluid Dynamics for OKM; RCS (Research Computing Service of Imperial College London) for computational resources.

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Date submitted: 29 Jul 2019 Electronic form version 1.4