Abstract Submitted
for the DFD13 Meeting of
The American Physical Society

Study of contact line motion in two phase flow using molecular dynamics[1] JOSEPH THALAKKOTTOR, KAMRAN MOHSENI, University of Florida — Contact line motion is an age old problem. The scale in which the continuum assumption breaks down resulting in the motion of contact line makes it difficult to analyze the problem. Using molecular dynamic simulations we intend to investigate the cause and effects of contact line motion. The results indicates that miscibility between the two fluids, hydrophobicity between fluid and wall, and shear rate of the fluid are some of the key parameters that determine the amount of slip at the triple contact point. Circulation inside a droplet is observed even at nanoscales and is seen to vary inversely with slip length. We also observe non-Newtonian behavior of fluid in the vicinity of the triple contact point. Understanding the affects of these phenomena on contact line motion would help in better understanding the movement of triple contact point in two phase flow. This information would aide in developing a slip model for the triple contact point.

[1]This research was supported by Office of Naval Research

Joseph Thalakkottor
University of Florida

Date submitted: 02 Aug 2013 Electronic form version 1.4