

Direct Measurement and Simulation of Apparent Slip Velocities in Sub-micron-scale FlowsPeter Huang, **Kenneth S. Breuer***Division of Engineering, Brown University, Providence, Rhode Island, USA*

The possible existence of slip of liquids in close proximity to a smooth surface is studied experimentally and numerically via the dynamics of small particles suspended in a shear flow. Sub-micron fluorescent particles suspended in water and imaged using Total Internal Reflection Fluorescence Microscopy (TIRFM) and a PTV algorithm. The measurements are in excellent agreement with Monte Carlo simulations of particle dynamics, and show that the observed apparent slip velocity is a direct consequence of the small, but finite, measurement volume, and that slip, if present, is minimal at the low shear rates tested (< 2500 /sec). Issues associated with the experimental and simulation techniques and the interpretation of results are also discussed

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