Abstract Submitted
for the DFD11 Meeting of
The American Physical Society

Gas Flow near a Smooth Plate WILLIAM A. DUCKER, ADAM P. BOWLES — We examine gas flow adjacent to a molecularly smooth solid, muscovite mica. The fluctuations in force acting on a glass sphere as a function of proximity to a mica plate were measured in air, and were used to obtain the damping. The damping was interpreted as a lubrication force. The measured damping as a function of separation in the slip-flow regime corresponds to a slip length of 480 $\pm$ 70 nm, which is equivalent to highly specular gas molecule collisions. The slip flow model also fits the data for separations as small as one mean free path.

Milad Radiom

Date submitted: 26 Jul 2011 Electronic form version 1.4