

Abstract Submitted
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Design of a spin-down experiment for measuring momentum accommodation on planar surfaces TATHAGATA ACHARYA, MICHAEL MARTIN, Department of Mechanical Engineering, Louisiana State University, Baton Rouge, USA — A mathematical model has been developed to quantify momentum accommodation coefficient as a function of ambient pressure, gas density, ambient temperature, mass of the gas molecule, and the angular velocity of a disk. An experimental method is proposed for the measurement of momentum accommodation coefficient. The experimental method involves accelerating a disk to a given angular velocity and then allowing it to spin down over a measured time interval. Numerical simulations have been performed to evaluate the correct size of experimental chamber in order to avoid wall effects, and to determine the limiting pressure that will help achieve free molecular flow in the experimental chamber. Simulations indicate that the transition between the continuum and free molecular regimes starts below 10^{-4} atmospheric pressure.

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