

Abstract Submitted  
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**Immersed collision of a sphere with a textured wall: from sticking to bouncing dynamics** THIBAUT CHASTEL, ANNE MONGRUEL, Physique et Mécanique des Milieux Hétérogène (UMR 7636 - CNRS - ESPCI - Université Pierre et Marie Curie - Université Paris-Diderot) — We investigate experimentally the dynamics of a sphere immersed in a viscous fluid and impacting a wall decorated with square micro-pillars. High frequency laser interferometry is used for measuring small displacements of the sphere with spatial resolution of 200 nm. For creeping flow, the classical lubrication force on the sphere is regularized by an effective slip length that can be correlated to the texture geometry. For Reynolds number of the order of 1 to 10, the sphere can either stick to or bounce off the wall. We show how the micro-textures affect the critical Stokes number for bouncing transition. A simple model using the slip length is presented to describe the near-wall dynamics of the sphere.

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