

Abstract Submitted
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A new method of nano-manipulation with AFM derived from nanotribology¹ SUENNE KIM, Department of Physics, University of Texas at Austin, DANIEL RATCHFORD, XIAOQIN LI — Based on principles of nanotribology, a new approach is explored for manipulating nanoparticles (ranging from 5nm to 60nm in diameter) with an Atomic Force Microscope (AFM). In this new approach, one first kicks a nanoparticle. Immediately following the kicking event, static friction is greatly reduced. One can then dribble the nanoparticle to the desired position in the tapping (imaging) mode of the AFM. The major advantage of this scheme lies in the active manipulation with simultaneous visual feedback. Our study revealed the mechanism for the nano-displacement is primarily governed by the “stick” events of the stick-slip process. We also found that the manipulation can be effectively controlled by adjusting the scanning speed, and the critical speed depends on the local roughness of the surface.

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