

Abstract Submitted
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Slip, Slide, or Roll? MIKE TESTA, None — Using an atomic force microscope the research project, “Slip, Slide, or Roll?” investigates rolling and sliding friction on the nanoscale. The findings of this study may be used to develop improved mechanical lubricants and surfaces. Friction may seem like a simple idea that is familiar to everyone, yet scientific literature explaining what dictates the translational modes of nanoscale objects is surprisingly lacking. In the macroscopic world spherical objects energetically prefer rolling over sliding, for nanoscale objects this is not necessarily the case. We are testing the hypothesis that size, surface chemistry, and elastic modulus dictate whether spherical nanoscale objects will slide or roll when a lateral force is applied. In order to understand the conditions that cause nanoscale particles to transition between the two translational modes we precisely manipulate these variables and measure their effects.

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None

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