

Abstract Submitted
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New Techniques in Optical Trapping and Sensing¹ LULU LIU, Harvard Univ — Micrometer-sized dielectric scatterers suspended in fluid can act as sensitive, dynamic probes of surface forces and optical near-fields. Because of their small size, they are optimally manipulated with light. We demonstrate several new techniques that expand our current capabilities of optical trapping and sensing. This includes the use of nearly diffractionless beams for particle confinement in only two dimensions, effective optical traps for particles with lower index than surrounding fluid, and high precision tweezing and sensing near reflective/metallic surfaces. Finally, we demonstrate the application of a combination of these techniques in the successful measurement of near-field optical and double-layer forces.

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