

Abstract Submitted
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A new method to measure the optical trapping energy of nanoparticles JOSEPH JUNIO, Lehigh University, JACK NG, Hong Kong Univeristy Science and Technology, JOEL COHEN, University of the Pacific, ZHIFANG LIN, Fudan University, H. DANIEL OU-YANG, Lehigh University — A novel method is described for measuring the potential energy of nanoparticles in an optical trap by trapping an ensemble of particles with a focused laser beam. The mechanical force balance between repulsive osmotic and confining gradient-force pressures determines the single-particle trapping potential independent of interactions between the particles. The ensemble nature of the measurement permits evaluation of single-particle trapping energies much smaller than $k_B T$. Energies obtained by this method are compared with those of single-particle methods as well as with theoretical calculations based on classical electromagnetic optics.

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