

Optical trapping of a dielectric cylinder near the focus of different light beams

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Abstract:

A computational comparative research is performed to investigate the possibility of optical trapping of a dielectric microcylinder with a circular or elliptical cross section, the diameter of which is comparable to the wavelength of light, when it is placed near the waist of a nonparaxial Gaussian beam or in the focal region of a “sharply” focused Gaussian beam and a plane wave (ratio of lens diameter to focal distance ranged from 0.85 to 1.27).

Keywords: light beams, dielectric cylinder, Gaussian beam, optical trapping, elliptical cross section, wavelength of light, plane wave.

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