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Measurement of Trap Length for an Optical Trap

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BiblioGov. Paperback. Book Condition: New. This item is printed on demand. Paperback. 22 pages. Dimensions: 9.7in. x 7.4in. x 0.1in. The trap length along the beam axis for an optical trap formed with an upright, oil-immersion microscope was measured. The goals for this effort were twofold. It was deemed useful to understand the depth to which an optical trap can reach for purposes of developing a tool to assist in the fabrication of miniature devices. Additionally, it was desired to know whether the measured trap length favored one or the other of two competing theories to model an optical trap. The approach was to trap a microsphere of known size and mass and raise it from its initial trap position. The microsphere was then dropped by blocking the laser beam for a pre-determined amount of time. Dropping the microsphere in a free-fall mode from various heights relative to the coverslip provides an estimate of how the trapping length changes with depth in water in a sample chamber on a microscope slide. While it was not possible to measure the trap length with sufficient precision to support any particular theory of optical trap formation, it was possible to find regions where the...



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