

Abstract Submitted
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3D Optical Field Mapping of a Focused Cylindrical Vector Beam Using Rayleigh Nanoparticles¹ LIANGCHENG ZHOU, Lehigh University, QIWEN ZHAN, University of Dayton, H. DANIEL OU-YANG, Lehigh University — We report a novel method of mapping the optical field distribution of a focused cylindrical vector beam (CVB) using optically trapped Rayleigh nanoparticles. By using an ensemble method to measure the potential energy of nanoparticles in a CVB trap, optical trapping energy as low as $0.05 k_B T$ was measured. We demonstrated that the absolute intensity of a highly localized optical field is measured *in situ* using low concentration of polystyrene nanoparticles sized at 48 nm acting as optical nanoprobos. Their collective behavior in the focal volume gives very accurate reading of the optical field distribution, which shows excellent consistency with numerical simulations.

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