

Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Lensless focusing and optical trapping CHRISTOPHER DUFORT, BOGDAN DRAGNEA, Chemistry Dept., Indiana University - Bloomington — Force mapping of optical gradients associated with electromagnetic fields above subwavelength apertures in a gold thin film has been studied using scanning probe techniques. Vertical cross-sections of this resulting field demonstrate that, in certain conditions, the light emerges in the form of a tightly focused beam even when the incident beam is only weakly focused. Quantification of the near-field in the vicinity of these apertures has shown it is possible to deflect a free particle resulting in an optical trapping effect. Applications involving lensless focusing below the diffraction limit and comparisons with traditional optical tweezing are discussed.

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Date submitted: 17 Nov 2006

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