

Abstract Submitted
for the MAR14 Meeting of
The American Physical Society

Nanoscope based on nanowaveguides¹ A.H. ROSE, B. WIRTH, R.E. HATEM, A.P. RASHED AHMED, M.J. BURNS, M.J. NAUGHTON, K. KEMPA, Boston College — The far field spatial resolution of conventional optical lenses is of the order of the wavelength of light due to loss in the far field of evanescent, near electromagnetic field components. We show that subwavelength details can be restored in the far field with an array of divergent nanowaveguides, which map the discretized, subwavelength image of an object into a magnified image observable with a conventional optical microscope. We demonstrate that metallic nanowires, nanocoaxes, and nanogrooves can be used as such nanowaveguides. Thus, an optical microscope capable of subwavelength resolution — a nanoscope — can be produced, with possible applications in a variety of fields where nanoscale imaging is of value, including living systems.

¹The authors acknowledge support from the W. M. Keck Foundation and assistance from Fan Ye of Boston College.

A. H. Rose
Boston College

Date submitted: 12 Nov 2013

Electronic form version 1.4