Abstract Submitted for the MAR14 Meeting of The American Physical Society

Experimental Observations of Nanoscale Coaxial Waveguides (Nanocoax) at Optical Frequencies¹ Y.M. CALM, F. YE, J.M. MERLO, A.H. ROSE, N.T. NESBITT, C. YANG, N. DRACHMAN, G. MCMAHON, M.J. BURNS, K. KEMPA, M.J. NAUGHTON, Boston College — The localization and transport of optical energy on subwavelength scales is facilitated by using nanostructured, metallic waveguides. The coaxial cable has no cutoff frequency for the fundamental, TEM-like mode, even up to optical frequencies where this mode obtains plasmonic/polaritonic character,² and is therefore a natural choice for miniaturization. Epitaxially grown Ag nanowires and nanocoaxes were studied by electron- and focused ion beam microscopies, and their transmission of visible frequencies of light was characterized by optical microscopy. Experimental efforts towards lithographically fabricated nanocoaxes are discussed. Finally, an architecture for a nanocoaxbased optical microscope,³ which extracts near-field (evanescent) information and propagates it into the far-field, is presented.

¹This work is supported by the W. M. Keck Foundation.
²Y. Peng., X. Wang, & K. Kempa, *Opt. Express* 16, 1758 (2008)
³K. Kempa *et al.*, *Appl. Phys. Lett.* 92, 043114 (2008)

Yitzi Calm Boston College

Date submitted: 15 Nov 2013

Electronic form version 1.4