Abstract Submitted
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Experimental Observations of Nanoscale Coaxial Waveguides (Nanocoax) at Optical Frequencies[1] 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 nanocoax-based optical microscope,[3] which extracts near-field (evanescent) information and propagates it into the far-field, is presented.

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[2]Y. Peng., X. Wang, & K. Kempa, *Opt. Express* **16**, 1758 (2008)
[3]K. Kempa *et al.*, *Appl. Phys. Lett.* **92**, 043114 (2008)

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