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Nanobeacons: Far-field-radiating nanoscale optical waveguides PASHUPATI DHAKAL, YUN PENG, G. MCMAHON, K. KEMPA, M.J. NAUGHTON, Boston College — Some of us have recently demonstrated that visible light can be transmitted through coaxial waveguides having subwavelength transverse dimensions [1]. Here, we used focused ion beam-assisted (FIB) deposition to precisely position and fabricate vertical nanopillars that will function as inner conductors of nanocoaxial optical waveguides. The coax annuli were prepared by atomic layer deposition of a 100 nm thick conformal oxide coating, with sputtered metal used for the outer electrodes. Using high resolution optical microscopy, we successfully demonstrated the transmission of visible light into, along and out of these subwavelength nanocoaxes prepared by this *in situ* FIB method. The macroscopic distance between the coax termini and the detecting microscope confirms that the nanocoaxes are functioning as "nanobeacons", radiating *far-field* light.

[1] J. Rybczynski, K. Kempa, A. Herczynski, Y. Wang, M.J. Naughton, Z.F. Ren, Z.P. Huang, D. Cai, and M. Giersig, Appl. Phys. Lett. 90, 021104 (2007).

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