# Abstract: C33.00001 : Optical Confinement in Nanocoaxial Waveguides: Coupling to the Fundamental TEM-Like Mode

2:30 PM–2:42 PM

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The nanocoax has demonstrated confinement of VIS and NIR light, and calculations show that extreme confinement can be achieved by coupling to the fundamental mode. We have previously reported our novel nanofabrication process, which leverages the conformal nature of atomic layer deposition (ALD), and which produces high aspect ratio nanocoaxes. In this work, we report in more detail some optical transmission measurements, particularly related to signatures of coupling into the fundamental mode. While there have been many computational works concerning the excitation of the fundamental mode at optical frequencies, to date there have been relatively few experimental works. To interrogate these structures, we have integrated an optical vortex generation module into a near-field scanning optical microscope, we have built a confocal spectroscope for transmittance measurements in the VIS and SWIR, and we report on polarimetry measurements of a tightly focused vortex beam. We further discuss some computational progress with regard to coupling efficiency and some prospective technologies based on optical confinement to length scales arbitrarily smaller than the wavelength.