

Abstract Submitted
for the NES11 Meeting of
The American Physical Society

Funneling Light Through a Subwavelength Aperture Using Epsilon Near Zero Materials DAVID SLOCUM, University of Massachusetts Lowell, DAVID ADAMS, SANDEEP INAMPUDI, SHIVA VANGALA, WILLIAM GOODHUE, VIKTOR PODOLSKIY, DANIEL WASSERMAN, UNIVERSITY OF MASSACHUSETTS LOWELL TEAM — We show enhanced light funneling through subwavelength features at optical frequencies using an Epsilon-Near-Zero (ENZ) metamaterial layer. Our metamaterial consists of highly doped InAsSb, grown by Molecular Beam Epitaxy on a semi-insulating GaAs substrate. The bulk optical properties of the material are characterized as well as transmission through a subwavelength slit filled with the ENZ material. For TM polarizations (electric field perpendicular to the slit), there is a peak in the transmission spectra at the ENZ frequency. As expected, this enhancement is not seen for TE polarizations or in samples without the ENZ epilayer. The experimental results are supported by numerical simulations of the structure.

David Slocum
University of Massachusetts Lowell

Date submitted: 11 Mar 2011

Electronic form version 1.4