Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Dependence of Transmission Through Subwavelength Linear Apertures on Grating/Aperture Separation[1] MICHAEL HUROWITZ, IAN SCHICK, PHILIP FLAMMER, JAMES MARTINEAU, Colorado School of Mines, RUSSELL HOLLINGSWORTH, ITN Energy Systems, Inc, REUBEN COLLINS, Colorado School of Mines — Far-field transmission spectra were obtained for structures consisting of subwavelength linear apertures flanked on one or both sides by periodic grating arrays in Au films. In each set of structures, the distance from the grating arrays to the aperture was incrementally varied. Transmission spectra clearly showed enhancement and suppression relative to an isolated aperture. A systematic shift in these extremes was observed with varying cavity width while holding other structural parameters constant. Distinct bands of enhancement and suppression arise from this analysis, consistent with a predictive analytical model. Our conclusions allow for precise control over enhancement/suppression at specific wavelengths in future structures.

[1]This material is based on work supported by the National Science Foundation under Grant No. DMI-0522281

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Date submitted: 17 Nov 2006 Electronic form version 1.4