# Optical Antennas for the Observation of Fields Excited in Photonic Crystals

Michael Deceglie[1], Eric Kort[2], and Ken Crozier[2]
[1]Department of Physics and Astronomy, Dickinson College, Carlisle, PA 17013
[2]Division of Engineering and Applied Sciences, Harvard University, Cambridge, MA 02138

## Abstract

A possible method for the experimental observation of resonant electric fields in photonic crystals is presented. Sub-wavelength optical antennas are successfully fabricated on gold-coated atomic force microscope probes by focused ion beam milling. The response of the probes to incident light is simulated with the finite difference time domain method. The simulations show that the probes produce intensity enhancements at the tip as expected. A possible experiment for the use of these probes for the observation of resonant fields in photonic crystals is presented. Preliminary tests on the optical input of the experimental setup indicate the experiment is feasible.