Abstract Submitted
for the TSF12 Meeting of
The American Physical Society

Practical metamaterial lenses for plasmonic applications[1] ONGARD THIABGOH, Department of Physics, Texas Tech University, Lubbock, TX 79409, USA, CHARLES REGAN, AYRTON BERNUSSI, Department of Electrical and Computer Engineering and Nano Tech Center, Texas Tech University, LubbockTX 79409, USA, LUIS GRAVE DE PERALTA, Department of Physics and Nano Tech Center, Texas Tech University, Lubbock, TX 79409, USA — We explored two-dimensional plasmonic metamaterial lenses using surface plasmon polariton (SPP) tomography techniques. Metamaterial lenses were defined by a periodic array of air holes patterned on a thin film polymethyl methacrylate (PMMA) deposited in a typical Au/glass nanostructure. Surface emission and Fourier-plane images of SPP beams through the plasmonic lenses were analyzed to extract the lens focal length. The experimental extracted values show very good agreement to calculated values using conventional thin-lens equation. These practical plasmonic lenses are attractive for integrated plasmonic devices and lab-on-chip applications.

[1]This work was partially supported by the NSF CAREER Award (ECCS-0954490), U.S. Army CERDEC contract (W15P7T-07-D-P040), and by the J. F. Maddox Foundation.

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Date submitted: 25 Sep 2012 Electronic form version 1.4