Abstract Submitted
for the MAR07 Meeting of
The American Physical Society

Preparation and control of optical properties of plasmonic crystals using colloidal crystals as templates.[1] ZHEN-LIN WANG, PENG ZHAN, NAI-BEN MING, National Laboratory of Solid State Microstructures, Nanjing University — Plasmonic crystals show promise for applications from optical, electronic devices, nanolithography, metamaterials to enhanced Raman scattering sensors. For such applications it is important to develop simple routes to prepare such metallic films with two-dimensional (2D) regular nanostructure ordering. We will show that templating against 2D colloidal crystal is a convenient route to prepare such crystals that are composed of rigid array of metal nanoparticles. We also discuss how to excise rational methods which allow control over the morphology of the crystal unit, thus tuning optical properties of the prepared plasmonic crystals. By implementation of physical, chemical, or electrochemical deposition of metal in combination with micromolding, a variety of morphologies of the metallic nanoparticles can be created. The nanoscale morphology and optical transmission properties of the prepared 2D metallic membranes have been characterized.

[1]The National Natural Science Foundation of China and the State Key Program for Basic Research of China support this work.

Zhen-Lin Wang
National Laboratory of Solid State Microstructures, Nanjing University

Date submitted: 24 Nov 2006 Electronic form version 1.4