

Abstract Submitted
for the MAR11 Meeting of
The American Physical Society

Confined Three-Dimensional Plasmon Modes inside a Ring-Shaped Nanocavity on a Silver Film Imaged by Cathodoluminescence Microscopy¹ XINLI ZHU, JIASEN ZHANG, JUN XU, DAPENG YU, Department of Physics, Peking University — The confined modes of surface plasmon polaritons in boxing ring-shaped nanocavities have been investigated and imaged by using cathodoluminescence spectroscopy. The mode of the out-of-plane field components of surface plasmon polaritons dominates the experimental mode patterns, indicating that the electron beam locally excites the out-of-plane field component of surface plasmon polaritons. Quality factors can be directly acquired from the spectra induced by the ultrasmooth surface of the cavity and the high reflectivity of the silver reflectors. Because of its three-dimensional confined characteristics and the omnidirectional reflectors, the nanocavity exhibits a small modal volume, small total volume, rich resonant modes, and flexibility in mode control.

¹This work is supported by NSFC (10804003, 61036005 and 11074015), the national 973 program of China (2007CB936203, 2009CB623703), MOST and NSFC/RGC (N HKUST615/06).

Xinli Zhu
Department of Physics, Peking University

Date submitted: 14 Oct 2010

Electronic form version 1.4