

Abstract Submitted  
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**Photoemission electron microscopy of localized surface plasmon polaritons in nanostructured gold** R.C. WORD, T. DORNAN, R. KOENKAMP, Portland State University — Localized surface plasmon polaritons were studied in photoemission electron microscopy using multiphoton excitation with a fs-pulse laser. Nanostructured metal layers were placed on transparent ITO-glass slides to utilize internal reflections for the resonant excitation of surface plasmons. Gold layers of varying roughness, prepared by focused ion beam milling, gold nanowires and gold nanoparticle arrangements were investigated. In all of these specimens strong localized enhancement of the photoemission is found in small areas with typical diameters of a few nm. The location of these high-emission areas changes with excitation wavelength. Experiments with two light sources, for example a dc-Hg arc-lamp in addition to the pulsed laser, allowed us to identify the exact location and the environment of the resonances at high magnification, and study proximity effects.

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