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Optical mapping of surface plasmon near-field spatial distribution in triangular silver nanoprisms ANDREW JONES, MATTHIAS RANG, University of Washington, BENJAMIN WILEY, Washington University, ZHIYUAN LI, Institute of Physics: Chinese Academy of Science, YOUNAN XIA, Washington University, MARKUS RASCHKE, University of Washington — Plasmonic metal nanostructures have attracted interest in diverse fields including biomolecular sensing and nano-photonics. To understand the correlation of the optical response with the shape and size of the structure, we optically stimulate localized surface plasmons on chemically prepared Ag triangular nanoprisms and utilize scattering-type Scanning Near-field Optical Microscopy (aSNOM) to map the optical near-field distribution with a spatial resolution down to 10nm. Using homodyne amplification allows for phase selective probing and identification of specific plasmon eigenmodes. For large triangles the superposition of several modes results in a complex distribution of the electric field whereas for smaller particles the distribution takes on a dipolar pattern.

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