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Two-Photon Polymerization and application to Surface Plasmon Polaritons

By Sven Passinger

Cuvillier Verlag Aug 2008, 2008. Taschenbuch. Condition: Neu. Neuware - Plasmonics is a large part of the field of nanophotonics. Besides a wide range of industrial applications already developed, e.g. enhanced biosensors and diodes, surface plasmon polaritons (SPPs) are still an expanding field of research. In conventional optics, working on the sub-wavelength scale is not trivial, and structures smaller than half the wavelength will not lead to results expected by traditional optics. State-of-the-art microchips and optical data storage devices are fabricated at the limit of conventional optics. SPPs could open up the way to sub-wavelength optics far beyond the diffraction limit as demonstrated by Ebbesen in 1998. The length scales for SPPs span over seven orders of magnitude, from several nanometers, the penetration depth into metal, to several centimeters, the propagation length of long range plasmons, making them very interesting objects for investigation. The subject of this thesis is the investigation on dielectric loaded surface plasmon polariton waveguides (DLSPWs). DLSPWs are theoretically analysed by computational simulations at telecommunication wavelength at 1550nm. The waveguides are experimentally examined using leakage radiation microscopy for 632nm and 800nm wavelength. The experimental results are compared with simulation results of corresponding wavelengths. Furthermore, SPP structures like...

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