Abstract DPG-Tagung

Influence of arrays of nanodiscs on surface plasmon propagation

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Arrays of discs were produced by means of electron-beam lithography (EBL) on top of a 40nm thick silver layer. The discs with a diameter of 250nm were realized in two different ways: On the one hand as 30nm thick gold structures produced by a lift-off process, on the other hand as polymer structures with a thickness of 130nm by using a direct-writing process. The distance between the discs varies between 1.5 microns and 300nm. A plasmon beam was excited by a focused laser beam of 673nm wavelength passing through the Kretschmann configuration. The plasmon beam with a half-width of 5 microns propagates from the excitation spot to the nanostructures. The influence on the propagation behavior in dependence on the period is studied by scanning near-field microscopy for normal and oblique incidence. The results are compared with finite elements calculations.