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Title

Terahertz Surface Waves Propagating on Metals with Sub-wavelength Structure and Grating Reliefs

Source

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Abstract

Due to their long propagation length at a metal surface in the far infrared, surface plasmons make potentially feasible the design and realization of 2D integrated terahertz systems over a metallic substrate. In this article, we present a review of recent works dedicated to surface plasmon properties on structured metallic surfaces. We study excitation, propagation, diffraction and reflection of terahertz surface plasmon on shallow gratings and of spoof plasmons on deep sub-wavelength structures. The analysis of the experimental data supplied by terahertz time-domain spectroscopy allows us to point out the main parameters that govern this diffraction process and the propagation of a surface plasmon over a flat or corrugated metal surface.