

TERAHERTZ SURFACE PLASMON POLARITONS ON A PERIODICALLY STRUCTURED METAL
FILM WITH HIGH CONFINEMENT AND LOW LOSS

X. F. Zhang, L. F. Shen, J.-J. Wu, 楊宗哲

Electrical Engineering

Engineering

yangtj@chu.edu.tw

Abstract

Spoof surface plasmon polaritons (SPPs) on a real metal film with periodic cut-through slits are investigated theoretically at terahertz frequencies. For both symmetric and antisymmetric modes of spoof SPPs on the film, the propagation length is severely limited by the absorbing loss in the metal when the fields are highly confined. By stuffing the slits with dielectric slabs thicker than the film, the propagation length of spoof SPPs is greatly increased under the subwavelength field confinement, especially for the antisymmetric mode. This improvement of the modal behavior is explained physically.

Keyword : SURFACE PLASMON POLARITONS