Effects of Physical Parameters on the Reflection Minimum in Graphene based Otto Configuration

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Received: 16.10.2017 Final revised: 02.10.2018 Accepted: 07.07.2019

Abstract

We have studied the electromagnetic response of Otto configuration, including the graphene layer in THz frequencies (0.5-10 meV). Due to the excitation of SPPs, the minimum in the intensity of the reflected beam appears at the angle of the total internal reflection. The position of the minimum depends on the physical parameters of the structure. We have studied its position while changing the angle and frequency of the incident beam. The effects of the physical parameters, such as the thickness of the air gap, the dielectric constant of the substrate, and the conductive tunability of graphene are investigated. Our results can be important in designing SPR based devices.

Keywords: graphene, Otto configuration, reflectance, surface plasmon polariton

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