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Experimental verification of a high performed multiple-band metamaterial absorber

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Abstract: In this paper, a thin-film metamaterial absorber with multiple-band is experimental verified and calculated analysis. Two absorption peaks higher than 99% and 98% are obtained at normal incidence. The resonance of the local surface plasma (LSP) mode and the internal surface plasmon (ISP) mode lead to the two high absorption peaks. The impedance matched condition is obtained behind two high absorption peaks. Measured results indicate that high absorption performed can be observed with different dielectric layer combinations ($\text{Al}_2\text{O}_3\text{-ZnSe}$, $\text{Al}_2\text{O}_3\text{-Al}_2\text{O}_3$, and ZnSe-ZnSe), which indicates that the designed metamaterial absorber is insensitive to the dielectric layer combination. High absorption performed is obtained under both TE and TM configurations at various incident angles.

Keywords: Photo-electrochemical, metamaterial, absorber

1. Introduction

Metamaterial is artificial engineered and manufactured materials which exhibits unique electromagnetic properties that can't be obtained in nature[1-2]. Metamaterial shows a wide range of potential applications, such as ultrafast modulators, highly sensitive sensors, and antenna systems [3-5]. The absorption performance of metamaterial equipments

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