BAND GAP EXTENSION IN A ONE-DIMENSIONAL TERNARY METAL-DIELECTRIC PHOTONIC CRYSTAL

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Abstract

Comparing with an all-dielectric binary photonic crystal, we show, in this work, that the photonic band gap in ternary metal-dielectric photonic crystal can be signi¯cantly enlarged. First, the band gap enlargement due to the addition of the metallic ¯lm is examined in the case of normal incidence. Next, in the oblique incidence, a wider omnidirectional band gap can be obtained in such a ternary metal-dielectric photonic crystal. All the theoretical analyses are made based on the transfer matrix method together with the Drude model of metals.

Keyword：ternary metal-dielectric photonic crystal,omnidirectional band gap,Drude model,transfer matrix