

عنوان مقاله:

Designing real-time biosensors and chemical sensors based on topological photonic crystal heterostructures

محل انتشار:

کنفرانس بین المللی بیو فوتونیک و اپتیک زیست پزشکی (سال: 1400)

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خلاصه مقاله:

In this paper, we introduce and analytically demonstrate a novel biosensor based on the light-matter interaction in a classic topological photonic crystal (PC) heterostructure, which consists of two opposite-facing ω -period PCs separated by a microfluidic channel. Because of the excitation of topological edge mode (TEM) at the interface of the two PCs, the strong coupling between incident light and TEM produces a high-quality resonance peak, which can be used to detect very small changes in the refractive index of biomaterials such as Jurkat Cells inside the microfluidic channel. The proposed biosensor has a sensitivity of 240 nm/RIU

کلمات کلیدی:

Biosensor, Photonic Crystals, Topological Edge Modes, Light-Matter interaction, Transfer Matrix Method

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