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Conference Paper

A Study on Absorptance Enhancement of Multilayer Graphene Metamaterial in Terahertz Regime

November 2022

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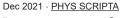
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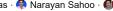
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Based on graphene tunable dual-band terahertz metamaterial absorber with wide-angle

May 2018 · Optics Communications

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We present a wide-angle tunable dual-band terahertz (THz) metamaterial absorber (MMA) based on square graphene patch (SGP). This MMA is a simple periodic array, consisting of a dielectric substrate sandwiched with the SGP and a continuous metallic film. The designed MMA can achieve dual-band absorption by exciting fundamental and second higher-order resonance modes on SGP. The numerical ... [Show full abstract]

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Dynamic phase modulation is vital for tunable focusing, beaming, polarization conversion and holography. However, it remains challenging to achieve full 360° dynamic phase modulation while maintaining high reflectance or transmittance based on metamaterials or metasurfaces in the terahertz regime. Here we propose a doubly resonant graphene-metal hybrid metasurface to address this challenge. ... [Show full abstract]

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Designing miniaturized metamaterial absorber with tunable multiband characteristics for THz applicat...

December 2021 · Bulletin of Materials Science

Balu Ashvanth · B. Partibane · Govindanarayanan Idayachandran

In this paper, a novel tunable metamaterial absorber having multiple bands is presented for solving sensing-related issues in THz applications. Initially, a zigzag shaped metamaterial absorber with multiband response is reported and then, a tunable absorber is proposed to cover a wide THz spectrum. The proposed tunable absorber has six 'V' shaped stubs with graphene at the edges to realize six ... [Show full abstract]

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August 2015 · Journal of Modern Optics

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A polarization-independent terahertz metamaterial based on hybrid graphene-gold structure with excellent refractive index sensing characteristics is proposed. The proposed structure exhibits a sharply narrow plasmon-induced transparency peak in the transmission spectrum at the terahertz regime. Obvious frequency shift in the transparency peak can be observed by varying the surrounding medium's ... [Show full abstract]

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Graphene plasmonics: Physics and potential applications

October 2016 · Nanophotonics

AlPlasmon in graphene possesses many unique properties. It originates from the collective motion of massless Dirac fermions and the carrier density dependence is distinctively different from conventional plasmons. In addition, graphene plasmon is highly tunable and shows strong energy confinement capability. Most intriguing, as an atom-thin layer, graphene and its plasmon are very sensitive to the [Show full abstract]				
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	polarization co	onverter is a rectangula	arization converter using a graphene-based metamaterial array. The graphene-based metamateria ar array that consists of 20 periodic unit-cell elements. Each graphene-based metamaterial unitar patch with four triangular-shaped graphene parts at its four corners. The rectangular patch with	1
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	Hyunseun	g Jung · Jaemok Koo ·	Eunah Heo · [] · Hojin Lee	
	Active control of metamaterial properties is critical for advanced terahertz (THz) applications. However, the tunability of THz properties, such as the resonance frequency and phase of the wave, remains challenging. Here, a new device design is provided for extensively tuning the resonance properties of THz metamaterials. Unlike previous approaches, the design is intended to control the [Show full abstract]			
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	incident light.	In this work, we present	properties are limited due to weak light matter interaction between the ultrathin graphene and the nt enhanced nonlinear effects at the low terahertz (THz) range by designing a new patterned GHMM). More specifically, it is demonstrated that the third harmonic generation (THG) can be	
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Electrically controlling the polarizing direction of a graphene polarizer

September 2014 · Journal of Applied Physics

Chu Cai Guo · Z. H. Zhu · Keyao Liu · [...] · Qin Shiqiao

We theoretically demonstrate a polarizer with an electrically controllable polarizing direction in the far infrared range using two orthogonal periodic arrays of graphene ribbons, which have different widths and are supported on a dielectric film placed on a thick piece of metal. The operation mechanism originates from the polarization-dependent resonant absorption of the two orthogonal graphene ... [Show full abstract]

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Graphene hyperbolic metamaterials: Fundamentals and applications

October 2022 · EPL (Europhysics Letters)

Zitao Ji · Zhi Yuan Li · Wenyao Liang

Metamaterials have shown potential for next generation optical materials since they have special electromagnetic responses which cannot be obtained in natural media. Among various metamaterials, hyperbolic metamaterials (HMMs) with highly anisotropic hyperbolic dispersion provide new ways to manipulate electromagnetic waves. Besides, graphene has attracted lots of attention since it possesses ... [Show full abstract]

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