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Title:Broadband subwavelength imaging using a tunable graphene-lens
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Abstract:Graphene as a one-atom-thick planar sheet can support surface plasmons at infrared (IR) and terahertz (THz) frequencies, opening up exciting possibilities for the emerging research field of graphene plasmonics. Here, we theoretically report that a layered graphene-lens (GL) enables the enhancement of evanescent waves for near-field subdiffractive imaging. Compared to other resonant imaging devices like superlenses, the nonresonant operation of the GL provides the advantages of a broad intrinsic bandwidth and a low sensitivity to losses, while still maintaining a good subwavelength resolution of better than λ/10. Most importantly, thanks to the large tunability of the graphene, we show that our GL is a continuously frequency-tunable subwavelength-imaging device in the IR and THz regions, thus allowing for ultrabroadband spectral applications. © 2012 American Chemical Society.
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