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标题: Reconfigurable plasmonic devices using liquid metals
作者: Wang, JQ (Wang, Jinqi); Liu, SC (Liu, Shuchang); Nahata, A (Nahata, Ajay)
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摘要: We experimentally demonstrate an approach to create reconfigurable plasmonic devices in which the geometry of the device can be changed dramatically. The specific embodiment we present utilizes eutectic gallium indium (EGaIn), a metal that is liquid at room temperature, which is injected into or withdrawn from channels encapsulated by a polydimethylsiloxane (PDMS) bullseye mold fabricated on a gold coated substrate. Using terahertz (THz) time-domain spectroscopy, we measure the enhanced transmission properties of a single subwavelength aperture surrounded by differing numbers of concentric annular EGaIn rings. The results obtained from different device geometries, with either a single or multiple rings, are performed using a single device, demonstrating true reconfigurability. We explain the properties of the observed temporal waveforms using a simple time-domain model. This represents, we believe, a first step in developing more complex reconfigurable plasmonic devices. (C) 2012 Optical Society of America
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地址: [Wang, Jinqi] Univ Utah, Dept Phys, Salt Lake City, UT 84112 USA
[Liu, Shuchang; Nahata, Ajay] Univ Utah, Dept Elect & Comp Engn, Salt Lake City, UT 84112 USA
通讯作者地址: Wang, JQ (通讯作者),Univ Utah, Dept Phys, Salt Lake City, UT 84112 USA
电子邮件地址: nahata@ece.utah.edu
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