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Title

Reconfigurable gradient index using VO₂ memory metamaterials

Source

Applied Physics Letters, vol.99, no.4, 25 July 2011, 044103 (3 pp.). Publisher: American Institute of Physics, USA.

Abstract

We demonstrate tuning of a metamaterial device that incorporates a form of spatial gradient control. Electrical tuning of the metamaterial is achieved through a vanadium dioxide layer which interacts with an array of split ring resonators. We achieved a spatial gradient in the magnitude of permittivity, writeable using a single transient electrical pulse. This induced gradient in our device is observed on spatial scales on the order of one wavelength at 1 THz. Thus, we show the viability of elements for use in future devices with potential applications in beamforming and communications. (24 References).