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Title

Stand-up magnetic metamaterials at terahertz frequencies

Source

Optics Express, vol.19, no.13, 2011, 12619-27. Publisher: Optical Society of America, USA.

Abstract

We present a detailed study of non-planar or 'stand-up' split ring resonators operating at terahertz frequencies. Based on a facile multilayer electroplating fabrication, this technique can create large area split ring resonators on both rigid substrates and conformally compliant structures. In agreement with simulation results, the characterization of these metamaterials shows a strong response induced purely by the magnetic field. The retrieved parameters also exhibit negative permeability values over a broad frequency span. The extracted parameters exhibit bianisotropy due to the symmetry breaking of the substrate, and this effect is investigated for both single and broad side coupled split rings. Our 3D metamaterial examples pave the way towards numerous potential applications in the terahertz region of the spectrum. (33 References).