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Title:Self-organization approach for THz polaritonic metamaterials
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Abstract:In this paper we discuss the fabrication and the electromagnetic (EM) characterization of anisotropic eutectic metamaterials, consisting of cylindrical polaritonic LiF rods embedded in either KCl or NaCl polaritonic host. The fabrication was performed using the eutectics directional solidification self-organization approach. For the EM characterization the specular reflectance at far infrared, between 3 THz and 11 THz, was measured and also calculated by numerically solving Maxwell equations, obtaining good agreement between experimental and calculated spectra. Applying an effective medium approach to describe the response of our samples, we predicted a range of frequencies in which most of our systems behave as homogeneous anisotropic media with a hyperbolic dispersion relation, opening thus possibilities for using them in negative refractive index and imaging applications at THz range. © 2012 Optical Society of America.
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