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Title:Systematic studies of terahertz metamaterials fabricated on thin Mylar film

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Abstract:We present a systematic study of freestanding terahertz (THz) metamaterials fabricated on Mylar film by self-aligned photolithography. THz time-domain spectroscopy (THz-TDS) transmission measurements and numerical simulations reveal the negative index of refraction in the frequency range of 0.66-0.90 THz under normal wave incidence. The observed resonance behaviors can be explained by a theoretical circuit model. The electromagnetic properties of such close-ring metamaterials are also explored in terms of geometrical parameters of the unit cell, thickness of the dielectric film, and conductivity of the close ring. This flexible metamaterial can pave the way for three-dimensional THz metamaterial fabrication and applications.

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