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Title:Compression molded terahertz transmission blaze-grating

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Abstract:We present a terahertz transmission blaze-grating, which can be fabricated, easily, cost efficiently and in large numbers using compression molding of micro-powder. The diffraction properties of the grating are derived by simulation of electro-magnetic field scattering and are compared with angle-dependent measurements obtained in a terahertz time-domain setup. An excellent match between simulation and measurement is found, demonstrating the ability of the terahertz transmission blaze-grating for spatial dispersion of terahertz waves. Thus, this and similar terahertz transmission blaze-gratings can be used as dispersive elements for applications such as spectrometers or novel THz imaging systems. © 2011-2012 IEEE.

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Main heading:Terahertz spectroscopy

Controlled terms:Compression molding - Diffraction - Diffraction gratings - Spectrometers

Uncontrolled terms:Angle-dependent - Diffraction property - Dispersive elements - Optical fabrication - Simulations and measurements - Spatial dispersion - Tera Hertz - Terahertz transmission - Time domain

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