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Abstract:We present an imaging technique in which the broadband frequency information of terahertz (THz) pulses is transformed into spatial resolution. Efficient blazed diffractive gratings spread the individual frequency components over a wide and defined spatial range and f-theta optics are employed to focus the individual components onto a onedimensional image-line. Measuring the time domain waveform of the THz waves allows therefore for a direct reconstruction of spatial sample characteristics as the spatial domain information is encoded in the terahertz spectrum. We will demonstrate terahertz imaging on selected samples with an improvement in acquisition speed up to two orders of magnitude. © 2012 Optical Society of America.
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