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Title: Bolometric THz-to-IR converter for terahertz imaging

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Abstract: The quasi-optical bolometric converter of terahertz (THz) waves into infrared (IR) radiation is proposed and experimentally investigated. The converter includes an ultra-thin THz absorber (with a thickness $1/50$ of the operating free-space wavelength) based on an artificial impedance surface with close to perfect resonant absorptivity at 0.3 THz and a high-performance IR emissive layer. Absorption of THz waves induces converter heating that yields enhancement of IR emission from the emissive layer. The experimental testing of the THz-to-IR converter demonstrates the applicability of a converter to THz imaging with spectral and polarization discrimination in real-time operation.

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