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标题: Experimental characterization of bi-directional terahertz emission from gold-coated nanogratings
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摘要: The THz radiation emission of Au-coated nanogratings (fused silica substrate, 30 nm Au layer thickness, 500 nm grating constant) upon fs laser irradiation (785 nm, 150 fs, 1 kHz, a parts per thousand currency sign1 mJ/pulse) is observed in both directions along the laser beam axis (forward and backward) and for both, illumination of the Au/air or the Au/silica interface. THz radiation along the laser beam propagation is emitted in a narrow solid angle of about 15A degrees A fwhm independent on the laser pulse fluence, the angle of incidence and the nanograting profile. The bar width and groove depth of the nanograting as well as the angle of laser beam incidence strongly affect the THz radiation yield. The energy of single THz light pulses is measured absolutely (2 fJ in the 0.3-0.38 THz range) using a highly sensitive and fast superconducting transition edge sensor. The bi-directional emission of THz radiation is in agreement with the model assumption of surface plasmon polaritons propagating simultaneously on both Au layer interfaces (Au/air and Au/silica).
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