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标题: Enhanced Continuous-Wave Terahertz Imaging with a Horn Antenna for Food Inspection
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摘要: Continuous-wave (CW) terahertz (THz) imaging with a horn antenna is proposed to enhance the spatial resolution of a THz imaging system. The attached waveguide that is smaller than the wavelength can easily increase the spatial resolution, and the optimized horn flare can significantly increase the transmission power. Consequentially, transmission THz images of a phantom obtained by the amplitude signal using a 0.2 THz wave reveal that the spatial resolution is achieved up to 500 mu m. Also, the transmitted power is increased up to 6 times higher compared to the pinhole aperture. The feasibility of CW THz imaging with a horn antenna is demonstrated by the inspection of the organic samples inside food resulting in a relatively high sensitivity for soft organic samples compared with the sensitivity of X-ray imaging to this kind of samples.
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