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摘 要 : We developed a compact terahertz (THz) spectrometer with a superconductor-insulator-superconductor (SIS) mixer, aiming to realize a portable and highly sensitive spectrometer to detect dangerous gases at disaster sites. The receiver cryostat which incorporates the SIS mixer and a small cryocooler except for a helium compressor has a weight of 27 kg and dimensions of 200 mm x 270 mm x 690 mm. In spite of the small cooling capacity of the cryocooler, the SIS mixer is successfully cooled lower than 4 K, and the temperature variation is suppressed for the sensitive measurement. By adopting a frequency sweeping system using photonic local oscillator, we demonstrated a spectroscopic measurement of CH3CN gas in 0.2-0.5 THz range. (C) 2012 American Institute of Physics. [http://dx.doi.org/10.1063/1.3687430]
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