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Title: Optical fiber-coupled InGaAs-based terahertz time-domain spectroscopy system

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Abstract: The successful demonstration of an optical fiber-coupled terahertz time-domain spectroscopy (THz-TDS) system is described in this study. The terahertz output power of the emitter with two optical band rejection filters was 132 nW, which is an improvement of 70% over the output power without any filters. This improvement is due to the suppression of an optical modulated signal that is reverse-generated when an alternating current bias exceeding a certain threshold is applied to the emitter. Under the optimal alignment conditions, the terahertz detector in a fiber-coupled THz-TDS system clearly measured water vapor dips in the free space.