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Title:All air-plasma terahertz spectroscopy

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Abstract:We demonstrate terahertz wave generation and detection capabilities up to 6 THz without the need for solid state materials, biased electrodes, or forward propagating signal collection. An "all air-plasma" terahertz system is used to encode explosive material resonant signatures into the 357nm nitrogen fluorescence line of a bichromatic field-induced laser plasma filament. These results show the practicability to extend these measurements to remote locations where terahertz pulse information is no longer limited by water vapor absorption, phonon resonance, or signal collection directionality.

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