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Abstract:A device for performing vector transmission spectroscopy on aqueous and polar solvent specimens at terahertz frequencies is presented. The device enables the direct measurement of the complex dielectric function across the terahertz band using a Fourier transformIR spectrometer for lossy solutions. Using microfluidic sampling, specimen handling is straightforward and direct measurements on polar specimens are made possible. The method is scalable to longer or shorter wavelengths. © 2011 Optical Society of America.