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Title:Application of terahertz spectroscopy to the characterization of biological samples using birefringence silicon grating
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Abstract:We present a device and method for performing vector transmission spectroscopy on biological specimens at terahertz (THz) frequencies. The device consists of artificial dielectric birefringence obtained from silicon microfluidic grating structures. The device can measure the complex dielectric function of a liquid, across a wide THz band of 2 to 5.5 THz, using a Fourier transform infrared spectrometer. Measurement data from a range of liquid specimens, including sucrose, salmon deoxyribonucleic acid (DNA), herring DNA, and bovine serum albumin protein solution in water are presented. The specimen handling is simple, using a microfluidic channel. The transmission through the device is improved significantly and thus the measurement accuracy and bandwidth are increased. (C) 2012 Society of Photo-Optical Instrumentation Engineers (SPIE). [DOI: 10.1117/1.JBO.17.6.067006]
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