34
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Title:Terahertz multichannel microfluidic sensor based on parallel-plate waveguide resonant cavities
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Abstract:We demonstrate a terahertz multichannel microfluidic sensor based on a parallel-plate waveguide geometry with two independent integrated resonant cavities. The resonant frequency of each cavity exhibits an approximately linear dependence on the index of refraction of the material inside the cavity and each cavity is demonstrated to respond independently with no measurable crosstalk. The sensitivities of the two cavities in terms of the change in resonant wavelength per refractive index unit (RIU) are measured to be 1.21 × 10⁶ nm/RIU and 6.77 × 10⁵ nm/RIU.
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Inspec controlled terms:cavity resonators - flow sensors - microchannel flow - microsensors - parallel plate waveguides - refractive index - terahertz wave detectors
Uncontrolled terms:resonant frequency - refraction index - RIU - refractive index unit - parallel plate waveguide geometry - integrated resonant cavity - terahertz multichannel microfluidic sensor
Inspec classification codes:A0710C Micromechanical devices and systems - A4780 Measurement instrumentation and techniques for fluid dynamics - A0670D Sensing and detecting devices - B7230M Microsensors - B7320W Level, flow and volume measurement - B1310 Waveguides and striplines - B1320 Waveguide and stripline components - B1350 Microwave circuits and devices
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