

Abstract Submitted
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An all optical method for lab-on-a-chip temperature measurements ADAM GOERING, DAN ADAMS, JEFF SQUIER, CHARLES DURFEE, KIM WILLIAMS, Colorado School of Mines — We demonstrate the use of Spatially and Spectrally Resolved Interferometry (SSRI) to measure minute temperature changes in picoliter volumes. The SSRI technique allows the measurement of refractive index changes as a function of temperature, frequency, and one spatial dimension within a microfluidic device. Integration of optical fibers and inexpensive light sources facilitate the progress of this method toward “lab on a chip” applications. Additionally, careful construction of microfluidic devices, in combination with SSRI will enable in-situ control of thermal gradients across the channel. Broad applications of this technology could include the measurements of reaction enthalpies, development of accurate temperature measurements in microfluidic devices, and precise characterization of temperature gradients.

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