

Highly Sensitive Temperature Sensor Based on a Polymer-Coated Microfiber Interferometer.

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Abstract.

A simple-to-fabricate and highly sensitive optical fiber temperature sensor is presented. The device consists of an optical microfiber mode interferometer embedded in a polymer with high thermo-optic coefficient which is also used as a packaging material. Temperature modifies the refractive index of the polymer, hence the phase difference between the interfering modes, which results in a prominent wavelength shift of the interference pattern. The sensor was tested in the 20 °C–48 °C range. The temperature sensitivity was found to be 3101.8 pm/°C. The simplicity and the performance of our device make it attractive for several applications.