Zeonex-PMMA microstructured polymer optical FBGs for simultaneous humidity and temperature sensing

In this Letter, we report for the first time, to the best of our knowledge, the fabrication and characterization of a Zeonex/PMMA microstructured polymer optical fiber (mPOF) Bragg grating sensor for simultaneous monitoring of relative humidity (RH) and temperature. The sensing element (probe) is based on two separate in-line fiber Bragg gratings (FBGs) inscribed in the fabricated mPOF. A root mean square deviation of 0.8% RH and 0.6°C in the range of 10%-90% RH and 20°C-80°C was found. The developed mPOF FBG sensor constitutes an efficient route toward low-cost, easy-to-fabricate and compact multi-parameter sensing solutions.

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