Fast Inscription of Long Period Gratings in Microstructured Polymer Optical Fibers

We demonstrate 20 dB long period grating (LPG) fast inscription in microstructured polymer optical fibers (mPOFs) using a point-by-point technique obtaining an LPG total length of 25 mm. Two 248 nm UV laser pulses of 15 ns duration have been employed for every inscription point, which means a time reduction by over 21 times compared with the fastest inscription time already reported in literature. The device has been fabricated in a single-mode mPOF with a core that has been doped with benzyl dimethyl ketal for photosensitivity enhancement. Moreover, we characterize the strain and temperature responses and the stability of the fabricated gratings response under different conditions in order to assess the viability for different applications.

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