Annealing and etching effects on strain and stress sensitivity of polymer optical fibre Bragg grating sensors

Annealing and etching effects on strain and stress sensitivity of polymer optical fibre Bragg grating sensors are investigated. Bragg grating sensors have been photo-inscribed in PMMA optical fibre and their strain and stress sensitivity has been characterised before and after any annealing or etching process. The annealing and etching processes have been tried in different sequence in order to investigate their impact on the sensor’s performance. Results show with high confidence that fibre annealing can improve both strain and stress sensitivities. The fibre etching can also provide stress sensitivity enhancement, however the strain sensitivity changes seems to be random.

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