
From the micro- down to nanostructuration: an access to new polarisation-maintaining silica based optical fibres

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Abstract

Herein we present a concept and development of new silica optical fibers based on the nanostructuration of the core. This concept permits to induce some new or non-achievable by other techniques properties, such as construction of defined gradient for the GRIN lenses, a birefringence without application of SAP or the multi- material mixing for free-form fiber optics. In this paper, we will describe the design, the manufacturing and the characterization of polarization-maintaining optical fiber with circular core without stress-applying parts (SAP). This approach enables the integration with telecom fiber by the circular design and moreover, permits the construction of multicore polarization maintaining fiber optics.

Keywords: nanostructuration, polarization maintaining optical fibers, silica doped materials, birefringence

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