

## **Design of Step-Index Optical Waveguides by Ion Implantation**

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### **Abstract**

Step-index optical waveguides have been obtained by means of silver ion implantation on fused silica substrates. Step index profiles have been reached using a sequential multiple ion implantation process with energies of implantation from 4.3 to 9 MeV and fluences of  $10^{14}$ - $10^{15}$  ions/cm<sup>2</sup>. Optical absorption spectra, propagation losses, intensity distribution, and effective refractive indices of the propagation modes of the waveguides are presented. An approach of refractive index profile of ion-implanted waveguides was fitted as function of polarizability, compaction, and stress.