

Preparation of lithium niobate waveguiding structures

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Optical signal guiding is the discovery of the late 20th century and it has become a technological miracle for telecommunication technology. Nowadays, three wavelengths (830, 1300 and 1550 nm), so-called telecommunication windows, are used in the telecommunication technology. Waveguides are most often prepared in the form of optical fibers, but also as monocrystals and thin films. Because optical fibers show still undesirable attenuation the use of amplifiers is needed. Lithium niobate doped with Er^{3+} and Yb^{3+} can be used as an active waveguide in the amplification or switching in the 3rd telecommunication window (1530 nm).

My work presents an overview of the LiNbO_3 waveguiding structures preparation by various methods e.g. Czochralski process, ion implantation, LPE, PLD, PVD, CVD, etc. will be outlined. Then an alternative and cheaper sol-gel technique will be described as a suitable process for the preparation of multimode thin films.

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