

Optical propagation loss measurements in electro optical host - guest waveguides

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Optical waveguides are the key enabling elements for development of high performance and low cost nanoscale photonics devices such as switches, modulators, sensors etc. For the later waveguides with excellent nonlinear optical (NLO) and linear optical properties have to be developed. Such NLO active organic materials possess multiple advantages over the traditional inorganic materials such as low cost, easy processability, low dielectric constants and thus could be used as electro optically active components in high bandwidth EO modulators.

For the development of waveguide devices the optical quality of the waveguide is a crucial factor. One has to avoid light absorption and scattering in the core and cladding materials for best device performance. Therefore before the development of the waveguide devices the losses of the waveguides have to be estimated. For this matter a computer controlled setup for the measurement of light propagation losses in a slab or rectangular waveguides was developed. This setup was used for the estimation of propagation losses in the developed organic EO active host-guest DMABI+PMMA and DMABI+PSU waveguides. We demonstrate the influence of core and cladding optical properties so as the EO polymer poling on the light propagation losses in the developed waveguides.

This work has been supported by the European Social Fund within the project “Support for Doctoral Studies at University of Latvia” and by the ERDF project (agreement No. 2010/0308/2DP/2.1.1.1.0/10/APIA/VIAA/051).