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Effect of temperature changes on parameters of the sol-gel derived silica-titania films

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Abstract

SiO₂:TiO₂ films were prepared on silicon wafers by sol-gel technique. Evolution of their optical parameters was studied with spectroscopic ellipsometry in function of temperature. It was evidenced the effect of absorbed/desorbed water on the measured value of refractive index.

Keywords

slab waveguide, sol-gel method, silica-titania film, spectroscopic ellipsometry, refractive index, thin film

Introduction

The telecommunication and the evanescent wave sensors (EWSs) are two main areas where the integrated optics is currently applied. Integrated optics systems for application in the telecommunication industry are designed to operate within the third telecommunication window (~1550 nm) and technologies used for their fabrication base on the two material platforms: SOI (silicon on insulator) and indium phosphide InP [1, 2]. A waveguide film is the core element of every integrated optics component or system. To be efficiently implemented, waveguide films should have high refractive index contrast and low optical losses. The waveguide films for applications in EWSs

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