

Effect of light induced heat treatment on the structural and morphological properties of Linbo3 thin films

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Abstract

In this research, the spin coating technique has been used to achieve the deposition process of the lithium-niobate. A halogen lamp has used to maintain required heating during the deposition process. A Range of temperatures (60 - 120 °C) was applied on a substrate of a single crystal silicon wafer to maintain high quality deposition process. The deposited films were subsequently annealed to annealing temperature of 500 °C. Films were characterized and analyzed using X-ray diffraction (XRD), atomic force microscopy (AFM), and scanning electron microscope (SEM), Raman spectroscopy. The results showed there is a significant impact that the substrate temperature can role over the structural and morphological properties of the prepared films. It also showed that there is a critical value of substrate temperature yields to the best combination of morphological and structural properties. Moreover, the higher values of the refractive index suggest that this material is more suitable for optical waveguides applications