

Substrate and annealing temperatures effects on the structural results of LiNbO₃ photonic films using PLD method

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ABSTRACT

The nanocrystalline structure of Lithium niobate (LiNbO₃) thin film was prepared and deposited on the substrate made of quartz by using pulse laser deposition (PLD) technique. XRD measurements indicate that the LiNbO₃ thin film structure will be more purity and more crystalline with drop the substrate temperature to 250C° because of increase the peaks intensity and disappearance the intensity of peak at $2\theta=52.26$ corresponding to (116) plane. And, the structure of the film will appear high crystallization with higher laser wavelength (1064nm) before the annealing process at both substrate temperature and after the annealing process at substrate temperature 300C° only. Because, at the substrate temperature 250C° the film structure will be more crystallized at laser wavelength 532 nm. Also, the structure of these films after the annealing process is much better than it is structure before this process due to increasing the peaks intensity.