

APPENDIX

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Influence of Deposition Pressure on Local Structure, Optical and Structural Properties of Sputtered Silicon Oxide Thin Films

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Abstract

Titanium oxide thin films were prepared by an RF magnetron sputtering by using TiO₂ ceramic target. Under the deposition condition i.e. the RF power of 60 watt, deposition time of four hours and the deposition pressure was varied from 2.2 – 16.8 Pa, the deposited thin films had shown amorphous structure. The local structure of the prepared thin films was measured at Ti K-edge by x-ray absorption near-edge structure (XANES). Surface morphology was investigated by scanning electron microscopy (SEM) and atomic force microscopy (AFM).

Their optical properties such refractive index and optical constants were investigated by a spectroscopic ellipsometry. Its optical transmittance spectra were obtained by an UV-Vis measurement. Finally, discussion related on the influences of deposition conditions on the structural and optical properties of the deposited films was made.

Keywords: Titanium oxide, Optical thin film, RF sputtering.

Abstract presented at the 21st International Union of Materials Research Societies – International Conference in Asia (IUMRS-ICA2020), 23-26 February 2021, Chiang Mai, Thailand