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Fractal analysis of the surface of indium–tin-oxide

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Abstract

In this study, indium-tin-oxide thin films in different thickness ranges were prepared by electron beam evaporation method on the glass substrate at room temperature. The thicknesses of films were 100, 150 and 250nm. Using fractal analysis, morphological characteristics of surface films thickness in amorphous state were investigated. The results showed that by increasing thickness, surface roughness (RMS) and lateral correlation length (ξ) were decreased. Also, the roughness exponent α and growth exponent β were determined to be 0.72 ± 0.01 and 0.11, respectively. Based on these results, we understand that the growth films can be described by the combination of the Edwards-Wilkinson equation and Mullins diffusion equation.

Keywords: ITO; thin film, fractal analysis, morphology

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