THIN FILM GROWTH AT FINITE TEMPERATURE

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In this report a growth model was proposed to explain thin film growth. Analysis of time variation of occupied sites in each layer is the main study of this work. To facilitate the study, the fraction of occupied site in a single layer was defined as "area coverage".

The study consisted of two parts: the time evolution of area coverage of a film at low temperatures and at elevated temperatures. Surface rearranging mechanism, evaporation and re-condensation (ER), was incorporated at the later case.

At low temperatures, exact agreement between theory and simulation was obtained; both follow a power law behavior. At the elevated temperatures, the results of simulation show that the time taken to fill up a single layer is higher than the time taken to fill up that layer at freezing temperatures, irrespective of the layer height.

By comparing the elevated temperature simulation results with that of low temperature theoretical results, it is possible to obtain activation energy triggered by evaporation and re-condensation (ER) mechanisms. Programming was carried out using MATLAB software.