

THE NUCLEATION RATES OF SILICON NANOFILMS

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ABSTRACT

An approach for the calculation of thin film nucleation rate, J is highlighted in this paper. Nucleation is a random process in which the number of nuclei formed in a fixed interval of time is a random quantity and subjected to statistical laws. This normally applies to either the frequency of appearance at time, t of nuclei per unit volume or area of the system under consideration, based on the classical kinetic theory of nucleation. In this work, the nucleation rates, J was calculated using a visual basic programming by identifying appropriate parameters from the pre-exponential factor, contact angle, desorption energy, diffusion energy, supersaturation ratio, etc.) and performing trial and error execution. It was observed that, from the different plots of nucleation rates, J for vapour/liquid and liquid/solid transition was found to lie within the reasonable experimental ranges.

<http://journal.masshp.net/wp-content/uploads/Journal/2007/Jilid%201/Lim%20Qiao%20Jie%2095-101.pdf>

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