Statistical Study of Simultaneous Nucleation, Growth and Ripening in an Open System

P. P. Lau, O. Prabhakar, C.C. Wong

School of Materials Engineering, Nanyang Technological University, Singapore

Abstract

Particle deposition in any real open system involves complicated interplays between continuous nucleation, growth, and non-conservative ripening processes. To predict the behavior of real deposition systems, one requires a model that considers all these concurrent phenomena. In this paper, we present a statistical analysis of the change in particle size distribution with time in an open system, using a simple concurrent model. The differences in time-dependent particle size distribution behavior between isolated and concurrent processes are discussed in detail and compared to experimental data of a prototypical contact-displacement particle deposition system.

Keyword: Nucleation, Growth, Ripening, Open System, Statistical Study

* Corresponding author: School of Materials Engineering, Nanyang Technological University, Singapore 639798 E-mail: pingping@pmail.ntu.edu.sg Tel: 6790 6161

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