

Dynamic Simulation of Interface Shapes During Chemical Vapor Deposition

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Abstract

Chemical Vapor Deposition (CVD) finds application in many manufacturing processes of microelectronic devices and MEMS as a recent development. It is also useful for preparation of functionalized surfaces in microsensor kind of devices. The phenomena that is studied is deposition of a crystalline material for example Silicon from the gas phase substance such as Silicon Hydride (SiH₄). The material gets deposited on a substrate surface due to chemical reaction. If the deposition is carried out in a micron sized well, then imaging the pattern of coating is slightly difficult. Hence a simulation is developed which can track the moving boundary or the interface of coated material. It is demonstrated through the use of COMSOL Multiphysics®.

Keywords: CVD, Diffusion, Surface reaction, Moving boundary problem

Reference

C.R. Kleijn et al., Multi-scale modeling of chemical vapor deposition processes for thin film technology, Journal of CRYSTAL GROWTH, 303,19 (2007)