

Numerical Simulation of Submicron Photolithographic Processing

Eytan Barouch, Uwe Hollerbach, Steve A. Orszag
Applied and Computational Mathematics, Princeton University, Princeton, NJ, USA

John W. Cahn
NIST, Gaithersburg, MD, USA

ABSTRACT

A complete numerical simulation package for submicron photolithography is described in depth. Four of the computational steps are analyzed: aerial image generation, exposure, postexposure bake, and dissolution. An application to bar printing over a MOSFET gate is described. In addition, the utility of phase-shift masks is described, and effects of aberrations are explored.