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Kinetic Monte Carlo simulation of GaAs homoepitaxy and droplet epitaxy KRIS REYES, DENIS NOTHERN, JOANNA MILLUNCHICK, PETER SMEREKA, University of Michigan — We present a new model for atomistic simulation of III-V semiconductors that is based on the solid-on-solid model and allows for multiple species, atom exchanges, and local considerations for atom bonding energies. The model is validated by comparison with experimental observations of GaAs homoeptiaxial growth. In particular the simulated surface concentration and growth modes agree with experiments over a wide range of growth conditions. An important feature of this model is that Ga and As atoms are treated explicitly, resulting in the ability to realistically model Ga droplet formation under low As overpressure and their recrystallization upon exposure to As.

Denis Nothern
Univeristy of Michigan

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