

Some new mathematical problems of interdiffusion and solid state reaction

Prof. Andriy Gusak
Cherkasy National University, Ukraine

Abstract

1. Morphological instabilities and shape phase transitions in nano-materials.
2. Instabilities and bifurcations of Kirkendall planes or markers distributions in interdiffusion.
3. Non-local generalization of Fick's laws for interdiffusion under limited power of vacancy sinks/sources.
4. Generalization of Fokker-Planck equations for nucleation in open systems - theory of the Flux Driven Nucleation.
5. Solid state reactions with various (and, in general, varying) dimensions of contact.