

FLUX-DRIVEN TRANSFORMATIONS IN OPEN SYSTEMS UNDER SHARP CONCENTRATION GRADIENTS

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Subtopics:

Bogolyubov's idea of hierarchy of characteristic times in the inter-diffusion and solid-state reactions.

Thermodynamics of nucleation in the contact zone with sharp concentration gradient.

Kinetics of nucleation at interfaces – modification of Fokker-Planck approach.

Competition of antiphase domains during the growth of the intermediate phase layer.

Possibility of the flux-driven lateral grain growth during deposition of the thin films.

Flux-driven cellular precipitation of the porous Cu₃Sn phase under outflux of tin.

Flux-driven ripening of Cu₆Sn₅ scallops during soldering.

Competition of intermediate phases in isothermal and in SHS reactions.

Oscillatory nucleation of intermediate phases in point-contact reactions.

1. Гуров К. П. Основания кинетической теории: метод НН Боголюбова. – Наука, 1966.
2. Гуров К. П., Карташкин Б. А., Угасте Ю. Э. Взаимная диффузия в многофазных металлических системах. – Наука. Гл. ред. физ.-мат. лит., 1981.
3. Gusak A., Storozhuk N. Diffusion-Controlled Phase Transformations in Open Systems // Handbook of Solid State Diffusion, Volume 2. – Elsevier, 2017. – С. 37-100.