

Project 4.6. Dynamic stability of crystal surfaces.

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Unit: ON 5

Background:

New methods in nanotechnology are largely based on precisely controlled crystal growth processes. The purpose of such processes is either to lay smooth layers with a well-controlled composition, or to obtain more sophisticated structures such as well-designed nanowires. To achieve the right results when building new nanostructures, we need deep knowledge of the dynamics of surface processes that determine the nature of growth. A full description of this phenomenon can only be build by combining different approaches: analytical, modeling and simulation.

Aim:

Comprehensive crystal surface stability analysis depending on different conditions, for different surface orientations, miscuts and other parameters. Analytical description methods based on differential equations and scaling analysis will be supported by cellular automata and Monte Carlo simulations. Main result of this study should give answer to the question of optimal conditions for creating nanostructures with given parameters .

The work will be carried out in close cooperation with experimental groups.

Requirements:

General knowledge of physics - master's degree.

Programming skills