The New Course
“The Basics of Physical Material Science: Diffusion, Dislocations and Structuring Mechanisms”
for Technical Universities

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Key words and phrases: diffusion; diffusion-defects interaction; dislocations; physical metallurgy; property-forming mechanisms; structure formation mechanisms.

Abstract: Basics of the dislocation theory are presented from the standpoint of their effect on the material properties. Special attention is given to the interaction of diffusion fluxes with crystal defects, which takes place at both high and low temperatures, as well as to the mechanisms of formation of structure-dependent mechanical properties (such as deformation behavior, creep, microcracking, fracture of materials) and some other aspects important for Materials Scientists and Engineers.

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