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Engineering : Engineering Thermodynamics, Heat and Mass Transfer

Boronenkov, V., Zinigrad, M., Leontiev, L., Pastukhov, E., Shalimov, M., Shanchurov, S.

# Phase Interaction in the Metal - Oxide Melts - Gas - System

**The Modeling of Structure, Properties and Processes**

- Describes mathematical models that enable prediction of phase compositions for various technological processes
- Allows obtaining materials in a cost-saving and cost-conscious manner
- Uses using state-of-the-art simulating methodologies

This monograph describes mathematical models that enable prediction of phase compositions for various technological processes, as developed on the base of a complex physico-chemical analysis of reaction. It studies thermodynamics and kinetics of specific stages of complex pyrometallurgical processes involving boron, carbon, sulfur, tungsten, phosphorus, and many more, as well as their exposure to all sorts of factors. First and foremost, this enables to optimize processes and technologies at the stage of design, while traditional empirical means of development of new technologies are basically incapable of providing an optimal solution. Simulation results of metals and alloys production, welding and coating technologies allow obtaining materials with pre-given composition, structure and properties in a cost-saving and conscious manner. Moreover, a so-called "inverse problem", i.e., selecting source materials which would ensure the required results, cannot be solved by any other means.

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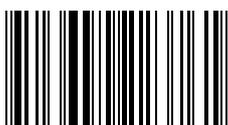
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