PRINCIPLES OF CLASSICAL THERMODYNAMICS

Applied to Materials Science

By
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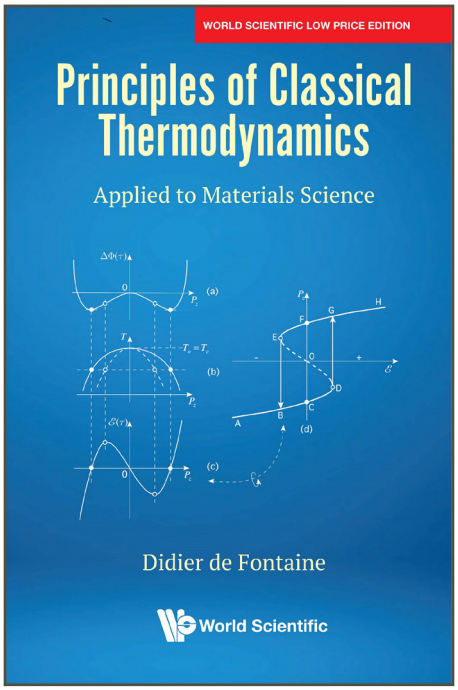

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ABOUT THE BOOK

The aim of this book is to present Classical Thermodynamics in a unified way, from the most fundamental principles to non-uniform systems, thereby requiring the introduction of coarse graining methods, leading for instance to phase field methods. Solutions thermodynamics and temperature–concentration phase diagrams are covered, plus also a brief introduction to statistical thermodynamics and topological disorder. The Landau theory is included along with a general treatment of multicomponent instabilities in various types of thermodynamic applications, including phase separation and order–disorder transitions. Nucleation theory and spinodal decomposition are presented as extreme cases of a single approach involving the all-important role of fluctuations.

In this way, it is hoped that this coverage will reconcile in a unified manner techniques generally presented separately in physics and materials texts.

READERSHIP

Students and professionals in solid state physics and materials science.

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CONTENTS

- Foreword
- Introduction
- *Basic Thermodynamics:*
  - Thermodynamic Systems
  - Fundamental Laws
  - Thermodynamic Equilibria
  - Ideal Cases
  - Single-Component Equilibrium
  - Solutions
  - Introduction to Statistical Mechanics
- *Materials Applications:*
  - Temperature-Composition Phase Diagrams
  - Topological Disorder
  - Chemical Reactions
  - Point Defect Equilibrium
  - Interfaces
  - Non-Uniform Systems
  - Landau Theory
  - Thermodynamic Stability of Crystals
  - Nucleation and Growth
  - Kinetic Aspects
  - Summary and Conclusion
- *Appendices:*
  - Pfaffian Differential Forms
  - The Second Law and the TdS Derivation
  - Euler's Theorem on Homogeneous Functions
  - Constrained Extrema and Lagrange Multipliers
  - Jacobians in Thermodynamics
  - The Third Law in Statistical Mechanics
  - Proof of Triangle Equalities
  - Variational Calculus
  - Discrete Lattice Fourier Series
  - Symmetry of Tensors
  - Diagonalization of Quadratic Forms
- Index

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