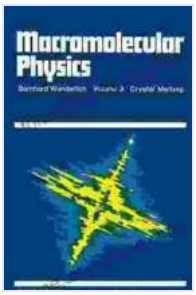
Macromolecular Physics Crystal Melting Bernhard Wunderlich



Macromolecular Physics: Crystal Melting

by Bernhard Wunderlich

4.8 out of 5

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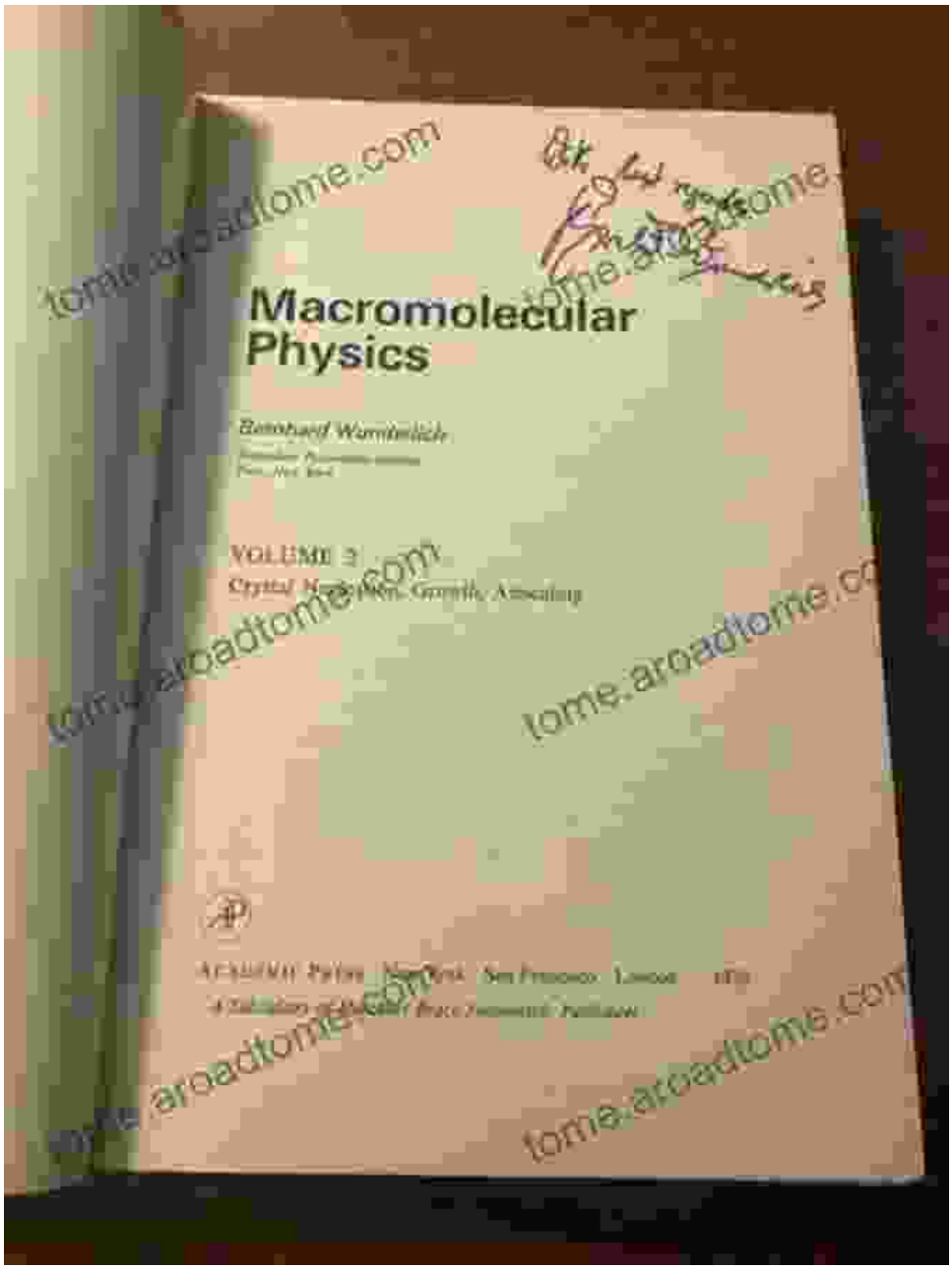


In the realm of polymer science and macromolecular physics, the work of Bernhard Wunderlich stands as a towering beacon. His seminal contributions to the study of crystal melting have revolutionized our understanding of the behavior of macromolecules and the properties of crystalline polymers.

Bernhard Wunderlich: A Visionary Physicist

Born in 1920, Bernhard Wunderlich was a brilliant physicist whose pioneering research spanned several decades. He received his Ph.D. from the University of Göttingen, Germany, and went on to hold prestigious positions at the Massachusetts Institute of Technology (MIT) and the Rensselaer Polytechnic Institute (RPI).

Wunderlich's work was characterized by his meticulous experimental approach and his deep theoretical insights. He developed innovative techniques for studying the thermal properties of polymers, including differential scanning calorimetry (DSC),which became a cornerstone of polymer characterization.

'Macromolecular Physics Crystal Melting': A Landmark Publication

In 1980, Wunderlich published his magnum opus, 'Macromolecular Physics Crystal Melting'. This comprehensive and authoritative work synthesized decades of research on the melting behavior of crystalline polymers. It became an instant classic, establishing Wunderlich as one of the leading authorities in the field.

'Macromolecular Physics Crystal Melting' provides a comprehensive overview of the thermodynamics and kinetics of crystal melting. It covers a wide range of topics, including:

- The different types of crystal melting
- The effects of molecular structure on melting behavior
- The use of DSC to study crystal melting
- The development of theoretical models for crystal melting

Key Contributions to the Field

Wunderlich's work has had a profound impact on the understanding of crystal melting in macromolecules. His key contributions include:

- **The identification of two distinct types of crystal melting:** first-Free Download melting, which involves a sharp transition from the crystalline to the liquid state, and second-Free Download melting, which exhibits a gradual transition.
- **The development of a theoretical model for crystal melting:** Wunderlich proposed that crystal melting occurs through a series of cooperative rearrangements of polymer chains within the crystal lattice.
- **The establishment of DSC as a powerful tool for studying crystal melting:** DSC enables the measurement of heat flow during melting and provides valuable insights into the thermodynamics and kinetics of the process.

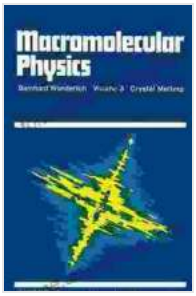
Impact on Polymer Science and Technology

Wunderlich's research has had a significant impact on the development of polymer science and technology. His work has helped to improve the understanding of the properties of crystalline polymers and has led to the development of new materials with tailored properties.

For example, the knowledge gained from Wunderlich's work has been applied to the design of polymers with high melting points, which are used in a variety of applications, including aerospace and automotive components.

Bernhard Wunderlich's 'Macromolecular Physics Crystal Melting' remains a seminal work in the field, providing a comprehensive and authoritative account of the melting behavior of crystalline polymers. His groundbreaking research has had a profound impact on the understanding of macromolecular physics and has led to the development of new materials with tailored properties.

As we continue to explore the fascinating world of polymers, the work of Bernhard Wunderlich will continue to inspire and guide future generations of scientists and engineers.



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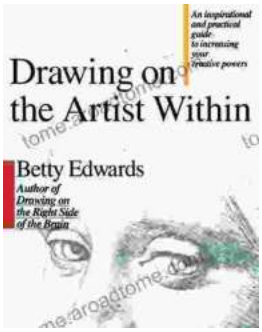

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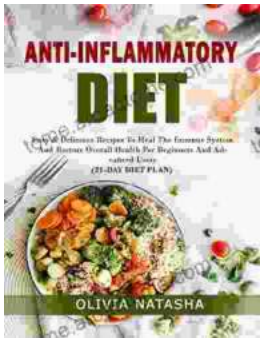

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