DESCRIPTION

Building on the extraordinary success of eight best-selling editions, Callister’s new Ninth Edition of *Materials Science and Engineering* continues to promote student understanding of the three primary types of materials (metals, ceramics, and polymers) and composites, as well as the relationships that exist between the structural elements of materials and their properties.

This edition is again supported by *WileyPLUS*, an integrated online learning environment, (when ordered as a package by an instructor). Also available is a redesigned version of Virtual Materials Science and Engineering (VMSE). This resource contains interactive simulations and animations that enhance the learning of key concepts in materials science and engineering (e.g., crystal structures, crystallographic planes/directions, dislocations) and, in addition, a comprehensive materials property database.

RELATED RESOURCES

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NEW TO EDITION

- A **new organization** to the chapters continues with the traditional approach that *Materials Science and Engineering* has always used, with some coverage of the unified approach to the subject.

- This new edition has an **increased emphasis on active learning** and includes more coverage of nano-, bio-, smart, and other modern materials. It incorporates new, **up-to-date, solved examples and practice problems** that reflect current technologies, current materials, and real word scenarios. In addition, the Virtual Materials Science and Engineering Lab (VMSE) has been updated.

- **New tutorial videos** have been added on “muddiest points” in the most widely used chapters (1-11). These videos give students peer-to-peer explanations of the most commonly misunderstood topics.

- An **expanded discussion** of the construction of crystallographic directions in hexagonal unit cells—also of conversion from the three-index scheme to four-index.

- **New chapter-opener photos of applications** of materials science help to motivate student interest in studying materials science.

FEATURES

- **Current and up-to-date**: The text presents the latest developments in Material Science and Engineering. Such modern coverage includes advanced ceramic and polymeric materials, composites, high-energy hard magnetic materials, and optical fibers.

- **Resources to facilitate the materials selection process**: Appendix B contains 10 properties for a set of approximately 100 materials and can be used in materials selection problems. An additional resource, Appendix C, contains the costs for all materials listed in Appendix B.

- **Mechanical property coverage**: The ninth edition maintains its extensive introductory level coverage of mechanical properties and failure—the most important materials consideration for many engineers.

- **Key terms and brief explanations** of key equations appear in margins for quick identification of the most important topics in the chapter.
• **VMSE** is a unique tool for visualizing molecules and manipulating them in 3D. New “muddiest point” videos explain from a student’s perspective tough concepts that have been identified through research as the most challenging topics to understand.

• **WileyPLUS** is a research-based online environment for effective teaching and learning. *WileyPLUS* is packed with interactive study tools and resources—including the complete online textbook—to give students more value for their money.

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