

Engineering Materials: Research, Applications and Advances

By K.M. Gupta

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Mechanical, materials, and production engineering students can greatly benefit from **Engineering Materials: Research, Applications and Advances**. This text focuses heavily on research, and fills a need for current information on the science, processes, and applications in the field. Beginning with a brief overview, the book provides a historical and modern perspective on material science, and describes various types of engineering materials. It examines the industrial process for emerging materials, determines practical use under a wide range of conditions, and establishes what is needed to produce a new generation of materials.

Covers Basic Concepts and Practical Applications

The book consists of 18 chapters and covers a variety of topics that include functionally graded materials, auxetic materials, whiskers, metallic glasses, biocomposite materials, nanomaterials, superalloys, superhard materials, shapememory alloys, and smart materials. The author outlines the latest advancements, including futuristic plastics, sandwich composites, and biodegradable composites, and highlights special kinds of composites, including fire-resistant composites, marine composites, and biomimetics. He also factors in current examples, future prospects, and the latest research underway in materials technology.

- Contains approximately 160 diagrams and 85 tables
- Incorporates examples, illustrations, and applications used in a variety of engineering disciplines
- Includes solved numerical examples and objective questions with answers

Engineering Materials: Research, Applications and Advances serves as a textbook and reference for advanced/graduate students in mechanical engineering, materials engineering, production engineering, physics, and chemistry, and relevant researchers and practicing professionals in the field of materials science.

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Editorial Review

Review

"The present text can be indisputably considered as extensive resource for contemporary teaching and research work at both undergraduate and graduate level. ... The text is well-organized, up-to-date, informative, enlightening, filled with valuable tables, graphs, references, suggested readings, illustrations and numerical questions with answers at the end of each chapter for further learning. Author has seriously attempted the formidable task of including essentially all types of materials that can be used for various applications and their properties in a single text." ?Manish A. Kewalramani, Abu Dhabi University, UAE

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About the Author

Dr. K.M. Gupta is a professor in the Department of Applied Mechanics, Motilal Nehru National Institute of Technology, Allahabad, India. He earned his diploma in mechanical engineering (Hons), bachelor of engineering (AMIE) in mechanical engineering and ME (Hons) in 1977. He earned his PhD from the University of Allahabad. His research interests are in the fields of materials science, composite materials, stress analysis, and solid mechanics. Professor Gupta has authored 28 books, and 120 papers, and is the editor-in-chief of two journals, *The International Journal of Materials, Mechanics and Manufacturing(IJMMM)*, and *International Journal of Materials Science and Engineering (IJMSE)*.

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