



By Charles Gilmore





Materials Science and Engineering Properties, SI Edition By Charles Gilmore

MATERIALS SCIENCE AND ENGINEERING PROPERTIES is primarily aimed at mechanical and aerospace engineering students, building on actual science fundamentals before building them into engineering applications. Even though the book focuses on mechanical properties of materials, it also includes a chapter on materials selection, making it extremely useful to civil engineers as well. The purpose of this textbook is to provide students with a materials science and engineering text that offers a sufficient scientific basis that engineering properties of materials can be understood by students. In addition to the introductory chapters on materials science, there are chapters on mechanical properties, how to make strong solids, mechanical properties of engineering materials, the effects of temperature and time on mechanical properties, electrochemical effects on materials including corrosion, electroprocessing, batteries, and fuel cells, fracture and fatigue, composite materials, material selection, and experimental methods in material science. In addition, there are appendices on the web site that contain the derivations of equations and advanced subjects related to the written textbook, and chapters on electrical, magnetic, and photonic properties of materials.



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#### Review

"This text book strikes a much desired balance between tackling the classical topics in materials science for engineers while being able to provide the foundations for more recent topics such as nanomaterials and nanomechanics."

"The author's writing style is excellent. This is an important feature in a textbook. The author's style is engaging and not dry; it reads quite well and easily. Students will appreciate this. I give the text high marks in this category."

#### About the Author

Charles Gilmore holds a BS and MS degree in Engineering Mechanics from Penn State, and a PhD in Engineering Materials from the University of Maryland. He taught undergraduate materials science and engineering courses at the George Washington University for 35 years, has published more than 50 refereed papers on crystallography, X-ray diffraction, X-ray spectroscopy, fracture, fatigue life, fatigue crack growth, creep, corrosion, titanium metallurgy, molecular dynamics simulation of thin film growth, and the growth of thin films of alumina-zirconia ceramics and intermetallic high temperature metals.

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