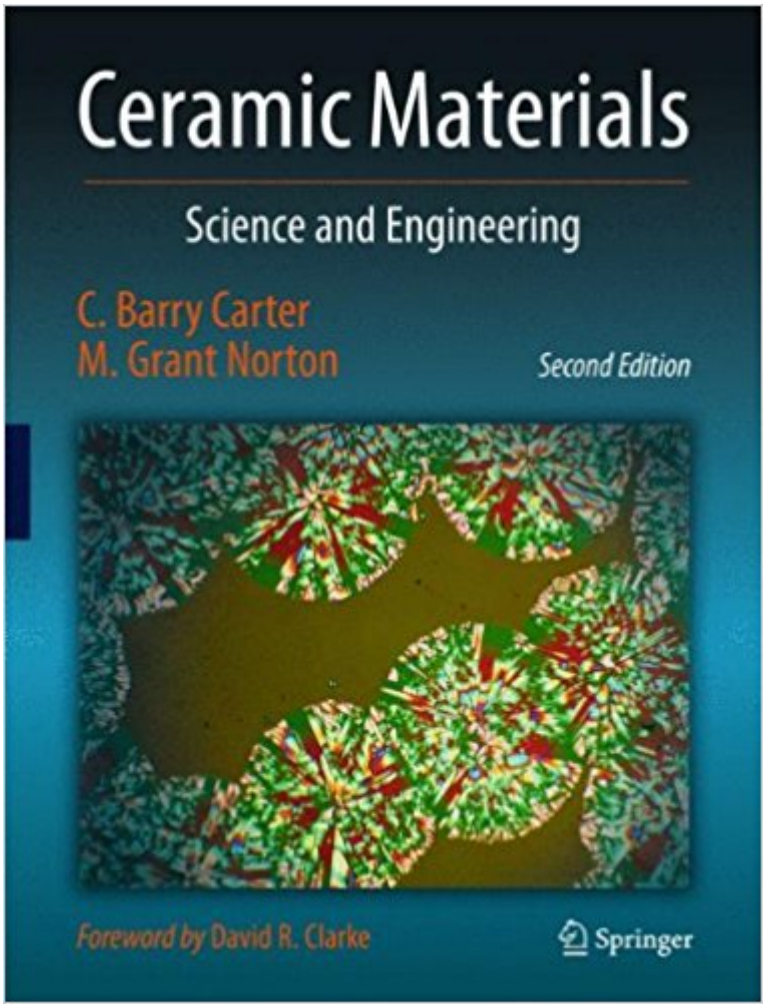
Ceramic Materials: Science And Engineering



Synopsis

Ceramic Materials: Science and Engineering is an up-to-date treatment of ceramic science, engineering, and applications in a single, comprehensive text. Building on a foundation of crystal structures, phase equilibria, defects, and the mechanical properties of ceramic materials, students are shown how these materials are processed for a wide diversity of applications in today's society. Concepts such as how and why ions move, how ceramics interact with light and magnetic fields, and how they respond to temperature changes are discussed in the context of their applications. References to the art and history of ceramics are included throughout the text, and a chapter is devoted to ceramics as gemstones.Â This course-tested text now includes expanded chapters on the role of ceramicsÂ in industry and their impact on the environment as well asÂ a chapter devoted to applications of ceramic materials in clean energy technologies. Also new are expanded sets of text-specific homework problems and other resources for instructors. The revised and updated Second EditionÂ is further enhanced with color illustrations throughout the text.

Book Information

Hardcover: 766 pages

Publisher: Springer; 2nd ed. 2013 edition (January 28, 2013)

Language: English

ISBN-10: 1461435226

ISBN-13: 978-1461435228

Product Dimensions: 8.6 x 1.7 x 11.1 inches

Shipping Weight: 4.4 pounds (View shipping rates and policies)

Average Customer Review: 4.4 out of 5 stars 11 customer reviews

Best Sellers Rank: #992,205 in Books (See Top 100 in Books) #79 inÂ Books > Engineering & Transportation > Engineering > Materials & Material Science > Testing #164 inÂ Books > Science & Math > Technology > Nanotechnology #204 inÂ Books > Science & Math > Chemistry > Inorganic

Customer Reviews

From the book reviews:â œI will definitely select this book as a textbook for a class on this subject. â | The book includes general backgrounds materials, the basics of ceramic materials science and advanced applications of ceramic science and technology. Therefore, non-specialists (even non-science majors) including undergraduate, and graduate students as well as experts in the field can learn from various parts of in this book.â • (Katsuhiko Ariga, Journal of Inorganic and

Organometallic Polymers and Materials, Vol. 24, 2014)

â œThe unprecedented completeness of this book makes it a bible on ceramic materials. It is a must read textbook for researchers, graduate students and undergraduate students who are interested in ceramics.â • (Zhong Lin Wang, Regentsâ ™ Professor, The Hightower Chair in Materials Science and Engineering, Georgia Institute of Technology)"An outstanding introduction to the subject, clearly written, very detailed, and actually fun and quite easy to read for anyone with some basic scientific background. Each chapter contains several exercises, which this reviewer found to be very helpful. I also found extremely useful the shaded boxes on almost every page with short definitions plus â œpeople in historyâ •. After being exposed to many books on ceramic science during my 40-year career, I finally found a book with which I can restart my ceramic education again.â • (Antoni Tomsia, Lawrence Berkeley National Laboratory) â œAÂ valuable resource for the materials science and engineering community, both as a textbook and as a general reference to this important fieldâ |.recommended reading and a serious study source for anyone interested in ceramics...â • (Richard W. Siegel, Director, Rensselaer Nanotechnology Center, Rensselaer Polytechnic Institute)â œThe book is just wonderful, and one can only envy what the authors have done! It is the best book I have seen to date. Very clearly written with excellent examples and explanations [as well as] beautiful figures and photographs.â • (Professor Safa Kasap, Canada Research Chair in Electronic and Optoelectronic Materials, University of Saskatchewan)â œThis new bookâ |covers all important topics including history, microstructures, tools, defects, mechanical properties and processing of ceramics for understanding and solving the problems of ceramic science and engineering,...â • (Yuichi Ikuhara, The University of Tokyo)â œThis is a comprehensive text covering, as the title suggests, both the science and engineering of ceramic materials. What I particularly like about the presentation of the material is it that it is broken down into useful themed sections where related topics are grouped togetherâ |.This will be a very useful text for MSE undergraduate ceramic courses and for post graduates starting MSc or PhD work and who are new to the field of ceramic materials.â • (Professor John Kilner, BCH Steele Chair in Energy Materials, Department of Materials, Imperial College London)â œCeramic Materials: Science and Engineering is a very thorough bookâ |.Its uniqueness lies in the coverage of fundamentalsâ |[as well as] properties and applicationsâ |at an unparalleled level, while also providing excellent sections on defects and processing....Carter and Nortonâ ™s book is a must have in the ceramics field.â • (Juan Claudio Nino, UFRF Professor, Department of Materials Science and Engineering, University of Florida, Gainesville)â œIt is no mean task to compete with Kingery et

al.’s classic textbook on the subject, but the authors have managed to provide a fresh new perspective on the subject with their unique and student-friendly writing style coupled with spectacular graphics and micrographsâ |. a truly remarkable text that is bound to become a benchmark in the field.â • (N. Ravishankar, Materials Research Centre, Indian Institute of Science)â œAn excellent introductory textbook and basic reference for students and professionals interested in the field of technical ceramics. ...Â There are two aspects which set this book apart from most specialty engineering text books. First, this book is replete with micrographs, photographs, and diagrams that complement the refreshingly easy-to-read text. Second, the authors discuss the field of technical ceramics in a societal context that will help novices understand why ceramics are important to our past and future. In summary, I highly recommend this text.â • (Doreen Edwards, Dean and Professor of Materials Science, Inamori School of Engineering at Alfred University)â œAs a practitioner of ceramic science and technology over the last twenty five years, I was truly amazed with the easy to understand and quite innovative presentation approach of various contents in the bookâ |.This book provides a comprehensive look at various topics from the fundamental aspects of ceramics to the properties required for various applicationsâ |.. I am sure this book will serve a key reference to students, technology developers, and end users all over the world.â • (Dr. M. Singh, Chief Scientist, Ohio Aerospace Institute, NASA Glenn Research Center)

I spent 4 weeks in the ceramics class without a text book. Consequently, I used lots of different ceramics text books during these 4 weeks in an attempt to stay in sync with the ceramics material, but I can now tell you that, this is so far the best book I have used, and I ended up buying the book; This is because the literature in the book is very clear, the print quality is better, and pages intended to be in color are actually in color; This book is perfect if you want to learn ceramics.

This book is a comprehensive overview of Ceramics. It provides a great amount of detail about the necessary background needed to study ceramic materials at a deeper level. I find the writing style to be slightly less engaging than some other texts that I own, but I still find myself referencing this text often when necessary.

Very readable book with good technical detail. Is working for me for self study. Good intro to ceramic technology.

I already knew the book in the previous edition. The new edition has some interesting additions to

justify the purchase of same. The content of the material is very good, with an excellent choice for teaching materials in courses in materials science and physical ceramics

After I received this book, I can understand what the teacher said in class.the book is very beautiful ,I really love it although it’s a little expensive

The best book on Material science I’ve seen so far

Covers broadly but not very detailed for industry use

Very good

Earth, into the Fire: A Course in Ceramic Materials for the Studio Potter The Ceramic Glaze Handbook: Materials, Techniques, Formulas