The last fifteen years have witnessed an amazing development of petrology. During this time it became readily feasible to investigate reactions at high temperatures and pressures. The new experimental techniques were immediately applied in the fields of mineralogy and petrology and, at present, research activity continues unabated. The aim of these investigations is the elucidation of the origin of magmatic and, particularly, of metamorphic rocks. Only a few years ago, the second editions of the well-known textbooks by TURNER and VERHOOGEN (1960) and by BARTH (1962) were published. But even since that time, our knowledge of metamorphic petrology has been augmented by numerous experimental investigations and by new petrographic observations as well. Such rapid growth warrents an evaluation of the accumulated knowledge bearing on the origin of metamorphic rocks. With this thought in mind, the present book was written. The treatment purposely stresses the mineralogical-chemical aspects of metamorphism. The discussion is mainly concerned with the reactions, which transform the mineralogical composition of a rock, when subjected to metamorphic conditions within the earth’s crust. "The question of the general relationship between the minerals and the mineral associations, on the one hand, and temperature and pressure, on the other, is the real core of the study of metamorphic rocks" (BARTH, 1962).

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Microtectonics - C.W. Passchier - 2013-06-29
Microtectonics is the interpretation of small-scale deformation structures in rocks. They are studied by optical microscope and contain abundant information on the history and type of deformation and metamorphism in a rock and are therefore used by most geologists to obtain data for large-scale geological interpretations. This advanced textbook contains a large number of photographs and explanatory drawings, special chapters on related techniques, a chapter on microgauges and a simple, non-mathematical treatment of continuum mechanics with practical examples. Special terms are explained in boxes. This textbook is suited for independent use during optical studies on microstructures as a reference manual and as a manual for short courses.

An Introduction to Metamorphic Petrology - Bruce Yardley - 2021-02-04
A new edition of a classic text introducing metamorphic rocks and how they form, in full colour and thoroughly updated.

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The Southern Central Andes - Heinrich Bahlburg - 2006-04-11
This volume gives an overview of the geotectonic evolution of the Central Andes. The contributions cover the whole spectrum of geoscientific research: geology, petrology, geochemistry, geophysics and geomorphology. They deal with the period from late Precambrium up to the youngest phenomena in the Quaternary. The book is of value for regional geologists as well as for scientists interested in orogenic processes related to active continental margins.

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transferred to University Microfilms/Xerox of Ann Arbor, Michigan, with the

**Abstracts of North American Geology** - 1969

**Masters Theses in the Pure and Applied Sciences** - Wade H. Shafer - 2012-12-06
Masters Theses in the Pure and Applied Sciences was first conceived, published, and disseminated by the Center for Information and Numerical Data Analysis and Synthesis (CINDAS) * at Purdue University in 1957, starting its coverage of theses with the academic year 1955. Beginning with Volume 13, the printing and dissemination phases of the activity were transferred to University Microfilms/Xerox of Ann Arbor, Michigan, with the thought that such an arrangement would be more beneficial to the academic and general scientific and technical community. After five years of this joint undertaking we had concluded that it was in the interest of all concerned if the printing and distribution of the volumes were handled by an international publishing house to assure improved service and broader dissemination. Hence, starting with Volume 18, Masters Theses in the Pure and Applied Sciences has been disseminated on a worldwide basis by Plenum Publishing Corporation of New York, and in the same year the coverage was broadened to include Canadian universities. All back issues can also be ordered from Plenum. We have reported in Volume 34 (thesis year 1989) a total of 13,377 theses titles from 26 Canadian and 184 United States universities. We are sure that this broader base for these titles reported will greatly enhance the value of this important annual reference work. While Volume 34 reports theses submitted in 1989, on occasion, certain universities do report theses submitted in previous years but not reported at the time.

**Geological Survey Professional Paper** - 1979


**The Geology of the Carolinas** - J. Wright Horton - 1991
To celebrate its fiftieth anniversary, the Carolina Geological Society invited forty-three authors to contribute to the creation of The Geology of the Carolinas. The only comprehensive, modern treatment of the subject, the volume has been prepared for a diverse readership ranging from undergraduate students to specialists in the fields of geology and related earth sciences. Following the editors' general introduction are chapters on...
Precambrian and Paleozoic metamorphic and igneous rocks of the Appalachian Blue Ridge and Piedmont; rocks of early Mesozoic rift basins, formed just before the opening of the Atlantic Ocean; Cretaceous and Tertiary sedimentary deposits of the Atlantic Coastal Plain; Quaternary geology and geomorphology; Cenozoic tectonism, including evidence for the recurrence of large earthquakes near Charleston; and an overview of mineral resources in the Carolinas. The book includes an index of field guides produced by the society and a thorough bibliography. By introducing exciting new concepts and focusing on challenging problems on the frontiers of research, this authoritative book will stimulate research in the years to come. The Editors: J. Wright Horton, Jr., is a research geologist for the United States Geological Survey in Reston, Virginia. Victor A. Zullo is a professor of geology at the University of North Carolina at Wilmington.

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Permo-carboniferous Magmatism and Rifting in Europe - B. Marjorie Wilson - 2004


Amphiboles - Frank C. Hawthorne - 2018-12-17

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Gondwana. These data concern the presence of Ollenelus and associated fauna in the Precordillera of central Western South America; the common early Paleozoic paleomagnetic data, the presence of a large early Paleozoic carbonate platform distinct from the Southwest Gondwanan clastic platforms associated with glacial deposits, and the exotic nature of the Grenville basement of this platform.

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Metamorphic Geology - S. Ferrero - 2019-04-17
In Earth evolution, mountain belts are the loci of crustal growth, reworking and recycling. These crustal-scale processes are unravelled through microscale investigations of textures and mineral assemblages of metamorphic rocks. Multiple episodes of metamorphism, re-equilibration and deformation, however, generally produce a complex and tightly interwoven pattern of microstructures and assemblages. Over the last two decades, the combination of advanced computing and technological capabilities with new concepts has provided a vast array of novel petrological tools and high-resolution/high-sensitivity techniques for microanalysis and imaging. Such novel approaches are proving fundamental to untangling the enigma represented by metamorphism with an unprecedented level of detail and confidence. As a result, the first decade and a half of this century has already seen the tumultuous development of new research avenues in metamorphic petrology. This book aims to provide a timely overview of the state of the art of this field, of newly developed petrological techniques, future advancements and significant new case
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Volume 26 of Reviews in Mineralogy provides a multidisciplinary review of our current knowledge of contact metamorphism. As in any field of endeavor, we are provided with new questions, thereby dictating future directions of study. Hopefully, this volume will provide inspiration and direction for future research on contact metamorphism. The Mineralogical Society of America sponsored the short course on Contact Metamorphism, October 17-19, 1991, at the Pala Mesa Resort, Fallbrook, California, prior to its annual meeting with the Geological Society of America.

Contact Metamorphism - Derrill M. Kerrick - 2018-12-17

Metamorphic Geology - S. Ferrero - 2019-04-17


Contact Metamorphism - Derrill M. Kerrick - 2018-12-17


The Geology of Ore Deposits - John M. Guilbert - 2007-02-09

Modern civilizations dependence upon an increasing volume and diversity of minerals makes the search for new ore deposits ever more difficult. Now available from Waveland Press, Guilbert & Parks text presents ideas, principles, and data fundamental for beginning economic geologists to understand the genesis and localization of ore deposits and of the minerals associated with them. The authors comprehensively describe the physical and chemical characteristics of ore deposits and correlate them with environments and conditions of deposition, since ore deposits are best interpreted as extensions of the environments responsible for their enclosing rocks. Examples and illustrations emphasize structural, chemical, and temporal controls and encourage the three-dimensional thinking used by productive explorationists as they face unsolved problems. This upper-level undergraduate text is fully illustrated and meticulously indexed. Its reliable, authoritative coverage assumes an upper-level command of chemistry and physics, as well as mineralogy, petrology, and structural
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Minerals - Wenk, Hans-Rudolf and Bulakh, Andrey - 2016-10-25


Mineralogical and Structural Evolution of the Metamorphic Rocks - Francis J. Turner - 1948

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The United States Geological Survey in Alaska, Accomplishments During - - 1980

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The Environment Dictionary - David Kemp - 2002-01-04
The Environment Dictionary provides an essential source of information on all aspects of the environment. It includes all the basic scientific terms and concepts along with socio-economic, cultural, historical and political elements which impact on the environment. This dictionary provides the interdisciplinary approach required to understand environmental issues worldwide. Designed for a wide range of readers, the dictionary is up-to-date, easy to read and to reference and clearly and attractively presented. Selected environmental issues which have particular importance are treated in greater depth through a series of boxed case studies. A wide range of maps, diagrams, figures and photos illustrate the texts and extensive cross-referencing between entries ensures readers can build on their knowledge. References and further reading sections are drawn from a wide range of accessible sources - from newspaper articles and popular magazines to academic texts and journals and provide easy access to further study and development of readers’ specific interests.

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Handbook of Rocks, Minerals, and Gemstones - Walter Schumann - 1993
Shows and describes different kinds of rocks and minerals, and tells how to identify rocks by testing for hardness, streak color, and density

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Minerals - Hans-Rudolf Wenk - 2016-01-04
The new edition of this popular textbook, once again, provides an indispensable guide for the next generation of mineralogists. Designed for use on one- or two-semester courses, this second edition has been thoughtfully reorganised, making it more accessible to students, whilst still being suitable for an advanced mineralogy course. Additions include expanded introductions to many chapters, a new introductory chapter on crystal chemistry, revised figures, and an extended plates section containing beautiful colour photographs. Text boxes include historical background and case studies to engage students, and end-of-chapter questions help them reinforce concepts. With new online resources to support learning and teaching, including laboratory exercises, PowerPoint slides, useful web links and mineral identification tables, this is a sound investment for students in the fields of geology, materials science and environmental science, and a valuable reference for researchers, collectors and anyone interested in minerals.

Geological Survey Research 1972 - Geological Survey (U.S.) - 1972

Encyclopedia of Geology - - 2020-12-16
Encyclopedia of Geology, Second Edition presents in six volumes state-of-the-art reviews on the various aspects of geologic research, all of which have moved on considerably since the writing of the first edition. New areas of discussion include extinctions, origins of life, plate tectonics and its influence on faunal provinces, new types of mineral and hydrocarbon deposits, new methods of dating rocks, and geological processes. Users will find this to be a fundamental resource for teachers and students of geology, as well as researchers and non-geology professionals seeking up-to-date reviews of geologic research. Provides a comprehensive and accessible one-stop shop for information on the subject of geology, explaining

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**Metamorphic Processes** - R. H. Vernon - 2012-12-06
This book is for senior undergraduate or postgraduate students who want an insight into some modern approaches to metamorphic petrology. Its aims are to explain, in reasonably simple, informal terms, the processes underlying (i) metamorphic reactions and (ii) the production of microstructures in metamorphic rocks, these currently being the things that interest me most, geologically. The first aim requires discussion of equilibrium factors, reaction kinetics and reaction mechanisms, emphasising both the complexity of realistic reactions and the need to combine the chemical and microstructural approaches to them. The second aim requires discussion of deformation, recovery, recrystallisation and grain growth processes, with emphasis on experiments on silicate minerals. The book concludes with a general attempt to relate chemical and physical processes in metamorphism, although it will be clear from reading earlier chapters (especially Chapter 4) that the two aspects can rarely be separated completely in detailed metamorphic studies. Petrological and experimental investigations of metamorphic reactions and microstructural development are advancing so rapidly these days that students are faced with an ever-increasing volume of information and a relatively rapid obsolescence of data. So, in this book I do not try to be comprehensive, or to present much so-called ‘factual’ information. Instead, I deal more with basic principles, in the hope that these will guide the student in his or her encounters with the details of specific metamorphic problems.
Metamorphic Reactions - A.B. Thompson - 2012-12-06
The fourth volume in this series consists of eleven chapters. The first five deal with more theoretical aspects of the kinetics and mechanisms of metamorphic reactions, and the next six consider the interdependence of deformation and metamorphism. All papers deal with natural processes that interact on various time scales and with different degrees of mass and heat transfer. Consequently, many fundamental axioms of metamorphic petrology and structural geology are questioned both for their accuracy and their usefulness. In raising such questions, most contributors have pointed to ways in which the answers could be forthcoming from appropriate experimental studies or observations on natural materials. In their discussion of how order/disorder can influence mineral assemblages, Carpenter and Putnis emphasize that metastable crystal growth is common in metamorphic systems and state “there may be some reluctance (among many earth scientists) to accept that significant departures from equilibrium could occur.” On the basis of presented evidence, they question whether reactions ever occur close to an equilibrium boundary. The necessity for pressure or temperature overstepping is also required by nucleation rate theory. In any case, the degree of order is severely influenced by these kinetic effects in igneous, sedimentary, and metamorphic environments.