

## Study Of Rocks In Thin Section

"A concise, straightforward, and balanced presentation of the theory and techniques of optical mineralogy. Design fro students to have a hand in the labratory." --Back cover.

This volume addresses the multi-disciplinary topic of engineering geology and the environment, one of the fastest growing, most relevant and applied fields of research and study within the geosciences. It covers the fundamentals of geology and engineering where the two fields overlap and, in addition, highlights specialized topics that address principles, concepts and paradigms of the discipline, including operational terms, materials, tools, techniques and methods as well as processes, procedures and implications. A number of well known and respected international experts contributed to this authoritative volume, thereby ensuring proper geographic representation, professional credibility and reliability. This superb volume provides a dependable and ready source of information on approximately 300 topical entries relevant to all aspects of engineering geology. Extensive illustrations, figures, images, tables and detailed bibliographic citations ensure that the comprehensively defined contributions are broadly and clearly explained. The Encyclopedia of Engineering Geology provides a ready source of reference for several fields of study and practice including civil engineers, geologists, physical geographers, architects, hazards specialists, hydrologists, geotechnicians, geophysicists, geomorphologists, planners, resource explorers, and many others. As a key library reference, this book is an essential technical source for undergraduate and graduate students in their research. Teachers/professors can rely on it as the final authority and the first source of reference on engineering geology related studies as it provides an exceptional resource to train and educate the next generation of practitioners.

An introduction to the use of thin sections in the study of petrography--the scientific description of rocks. It covers all rock types--igneous, sedimentary and metamorphic--and provides readers with an excellent overview of the subject.--Publisher's description.

The Second Edition of this concise, clear, and handy-sized volume, highly respected and successful authors explain to the reader, with the help of 180 superb color photomicrographs, how to observe, describe and identify thin section samples of rocks and minerals using the polarising microscope. The book is aimed at the introductory undergraduate level and highlights important diagnostic features of minerals and deals with all rock types— igneous, sedimentary and metamorphic—with equal emphasis and authority, giving students the knowledge and confidence to begin to identify specimens for themselves. Each photograph has been specially prepared for the book and has been reproduced in a generous size to the highest quality. In addition to its value to students and instructors in geology, geography, civil engineering and materials science, the book stands on its own as a beautiful collection of photomicrographs and a permanent source of reference and fascination for all those interested in the nature and science of the world of rocks and minerals.

An Elementary Text-book of Petrology

Ceramic Petrography: The Interpretation of Archaeological Pottery & Related Artefacts in Thin Section

A Key for Identification of Rock-Forming Minerals in Thin Section

A Practical Introduction to Optical Mineralogy

Minerals in Thin Section

Advanced textbook outlining the physical, chemical, and biological properties of sedimentary rocks through petrographic microscopy, geochemical techniques, and field study.

This is an ideal textbook for both advanced undergraduates and graduate students. It contains valuable coverage of the optical properties of minerals, as well as up-to-date descriptions of common rock-forming minerals. The chapters on optical theory include discussions of the nature and properties of light, the petrographic microscope, and the behavior of light in isotropic materials and in uniaxial and biaxial anisotropic materials. Thoroughly revised to include recent developments in the field, the book includes step-by-step procedures to guide students through the determination of all optical properties by which minerals are routinely identified with a petrographic microscope. Readers will find descriptive information on over 125 common rock forming minerals, and many photomicrographs and illustrations. The book also includes a flow sheet to guide students through the process of identifying an unknown mineral.

Methods of optical mineralogy; Descriptions of minerals; Mineral identification tables; Petrography of igneous tocks and related; Volcanic and hypabyssal socks-basalts, dia-bases, and related rocks; Andesites, dacites, and related rocks; Quartz latites (rhyodadites) and rhyolites; Latites, trachytes, phonolites, and leucite trachytes; Tuffs and pyroclastics; The plutonic rocks-gabbro, norite, and related rocks; The alkali gabbos-essexite, theralite, and related rocks; Quartz diorite, granodiorite, granite, and related rocks; Diorites, monzonites, syenites, and related rocks; Nepheline syenites and other fedspathoidal; Ultrabasic rocks-peridotite, pyroxenite, and hornblendite; Lamprophyres; Sedimentary rocks in thin section; Conglomerates and breccias; Sandsto nes and arkoses; Greywackes; Argillaceous rocks; Limestones and dolomites; Cherts, iron formations, glauconitic sediments, phosphatic sediments, saline rocks, and coals; Metamorphic rocks; Dynamic metamorphism; Thermal metamorphism; Regional metamorphism; Metasomatism; Petrography of ores.

Structured in the form of a dichotomous key, comparable to those widely used in botany, the mineral key provides an efficient and systematic approach to identifying rock-forming minerals in thin-section. This unique approach covers 150 plus of the most commonly encountered rock-forming minerals, plus a few rarer but noteworthy ones. Illustrated in

Introduction to Optical Mineralogy

The Encyclopedia of Mineralogy

Petrogenesis of Metamorphic Rocks

Introduction to Mineralogy and Petrology

Ore Microscopy

"Physical Geology is a comprehensive introductory text on the physical aspects of geology, including rocks and minerals, plate tectonics, earthquakes, volcanoes, glaciation, groundwater, streams, coasts, mass wasting, climate change, planetary geology and much more. It has a strong emphasis on examples from western Canada, especially British Columbia, and also includes a chapter devoted to the geological history of western Canada. The book is a collaboration of faculty from Earth Science departments at Universities and Colleges across British Columbia and elsewhere"--BCcampus website.

Microscopy is a servant of all the sciences, and the microscopic examina tion of minerals is an important technique which should be mastered by all students of geology early in their careers. Advanced modern text books on both optics and mineralogy are available, and our intention is not that this new textbook should replace these but that it should serve as an introductory text or a first stepping-stone to the study of optical mineralogy. The present text has been written with full awareness that it will probably be used as a laboratory handbook, serving as a quick reference to the properties of minerals, but nevertheless care has been taken to present a systematic explanation of the use of the microscope as well as theoretical aspects of optical mineralogy. The book is therefore suitable for the novice either studying as an individual or participating in classwork.

Both transmitted-light microscopy and reflected-light microscopy are dealt with, the former involving examination of transparent minerals in thin section and the latter involving examination of opaque minerals in polished section. Reflected-light microscopy is increasing in importance in undergraduate courses on ore mineralisation, but the main reason for combining the two aspects of microscopy is that it is no longer acceptable to neglect opaque minerals in the systematic petrographic study of rocks. Dual purpose microscopes incorporating transmitted- and reflected-light modes are readily available, and these are ideal for the study of polished thin sections.

Provides a very clear guide to sedimentary rock types as seen under the microscope supported by practical aspects of slide preparation.

Rock microstructures provide clues for the interpretation of rock history. A good understanding of the physical or structural relationships of minerals and rocks is essential for making the most of more detailed chemical and isotopic analyses of minerals. Ron Vernon discusses the basic processes responsible for the wide variety of microstructures in igneous, sedimentary, metamorphic and deformed rocks, using high-quality colour illustrations. He discusses potential complications of interpretation, emphasizing pitfalls, and focussing on the latest techniques and approaches.

Opaque minerals (sulphides and oxides) are referred to where appropriate. The comprehensive list of relevant references will be useful for advanced students wishing to delve more deeply into problems of rock microstructure. Senior undergraduate and graduate students of mineralogy, petrology and structural geology will find this book essential reading, and it will also be of interest to students of materials science.

Deformation Microstructures and Mechanisms in Minerals and Rocks

The Study of Rocks

Geology: A Very Short Introduction

Rocks and Minerals in Thin Section, Second Edition

Rock and Mineral Identification for Engineers

This extensive revision deals with the minerals talc, pyrophyllite, chlorite, serpentine, stilpnomelane, zussmanite, prehnite and apophyllite. The text has been completely rewritten and very much expanded to take account of the many advances that have been made in all aspects of the Earth sciences, not least mineralogy. Each chapter is headed by a brief tabulation of mineral data and ends with full references. Crystal structures are described and illustrated, followed by discussion of structural information gained from spectroscopic as well as X-ray and electron-optic methods. Chemical sections include many analyses and structural formulae, phase relations, igneous, metamorphic and sedimentary geochemistry, alteration and weathering. Examples are given of a range of mineral parageneses. Correlation between the various aspects of mineralogy are emphasized in order to provide a scientific understanding of minerals as well as their description and identification. So great has been the expansion of research on layered silicates that a separate volume (3A, 2003) was devoted entirely to micas and another (3C), entirely for clay minerals will also be published. Rock-Forming Minerals is an essential reference work for professionals, researchers and postgraduate students in Earth science and related fields in chemistry, physics, engineering, environmental and soil sciences.

The earlier editions of this book have been used by successivegenerations of students for more than 20 years, and it is thestandard text on the subject in most British universities and manyothers throughout the world. The study of sediments and sedimentary rocks continues to be acore topic in the Earth Sciences and this book aims to provide aconcise account of their composition, mineralogy, textures,structures, diagenesis and depositional environments. This latest edition is noteworthy for the inclusion of 16 plateswith 54 colour photomicrographs of sedimentary rocks inthin-section. These bring sediments to life and show their beautyand colorful appearance down the microscope; they will aid thestudent enormously in laboratory petrographic work. The text hasbeen revised where necessary and the reference and further readinglists brought up-to-date. New tables have been included to helpundergraduates with rock and thin-section description andinterpretation. New 16-page colour section will mean students do not need tobuy Longman Atlas All illustrations redrawn to higher standard Complete revision of text - new material on sedimentarygeochemistry, etc

The Encyclopedia of Mineralogy provides comprehensive, basic treatment of the science of mineralogy. More than 140 articles by internationally known scholars and research workers describe specific areas of mineralogical interest, and a glossary of 3000 entries defines all valid mineral species and many related mineral names. In addition to traditional topics - descriptions of major structural groups, methods of mineral analysis, and the paragenesis of mineral species - this volume embraces such subjects as asbestiform minerals, minerals found in caves and in living beings, and gems and gemology. It includes current data on the latest in our geological inventories - lunar minerals. It describes the properties, characteristics, and uses of industrial resources such as abrasive materials and Portland cement. A directory will guide traveling mineralogists to the major mineralogical museums of the world, with their special interests noted. Clear technical illustrations supplement the text throughout. To help the student and professional find particular information there are a comprehensive subject index, extensive cross-references of related topics (whether in this volume or others in the series), and reference lists to background information and detailed advanced treatment of all topics. The Encyclopedia of Mineralogy is a valuable reference and source for professionals in all geological sciences, for science teachers at all levels, for collectors and 'rock hounds', and for all who are curious about the minerals on earth or those brought back from outer space.

This book is the successor to A practical introduction to optical mineralogy, which was written in the early 1980s, and published by George Allen & Unwin in 1985. Our intention, once again, is to introduce the student of geology to the microscopic examination of minerals, by both transmitted and reflected light. These techniques should be mastered by students early in their careers, and this text has been proposed in the full awareness that it will be used as a laboratory handbook, serving as a quick reference to the properties of minerals. However, care has been taken to present a systematic explanation of the use of the microscope, as well as to include an extended explanation of the theoretical aspects of optical crystallography in transmitted light. The book is therefore intended as a serious text that introduces the study of minerals under the microscope to the intending honours student of geology, as well as providing information for the novice or interested layman.

Microtextures of Igneous and Metamorphic Rocks

Encyclopedia of Geoarchaeology

Petrography ; an introduction to the study of rocks in thin sections

Rock Forming Minerals

Atlas of Metamorphic Rocks and Their Textures

*Provides an up-to-date introduction to the subject of ore microscopy, emphasizing the basic skills required for the study of opaque minerals in polished sections. Describes the modern ore microscope, the preparation of polished and polished-thin sections of opaque minerals and ores, and the identification of these minerals using both qualitative techniques and the quantitative methods of reflectance and microhardness measurement. Later sections discuss the interpretation of textural intergrowths of ore minerals and the determination of their paragenesis, along with the examination of coexisting minerals for determining their physio-chemical conditions of formation. Appendices contain the data necessary to identify approximately 100 of the more common ore minerals and those frequently encountered by the professional scientist.*

*This book is the outgrowth of a week-long conference on sandstone organized by the authors, first held at Banff, Alberta, in 1964 under the auspices of the Alberta Association of Petroleum Geologists and the University of Alberta, and again, in 1965, at Bloomington, Indiana, under the sponsorship of the Indiana Geological Survey and the Department of Geology, Indiana University. A 2- page syllabus was prepared for the second conference and published by the Indiana Geological Survey. Continuing interest in and demand for the syllabus prompted us to update and expand its contents. The result is this book. We hope this work will be useful as a text or supplementary text for advanced undergraduate and graduate courses in sedimentation, sedimentary petrology, or general petrology and perhaps will be helpful to the teachers of such courses. Though we have focussed on sandstones we have necessarily included much of interest to students of all sediments. We hope also that it will be a useful reference work for the professional geologist, especially those concerned with petroleum, ground-water, and economic geology either in industry or government. Because the subject is so closely tied to surface processes it may also be of interest to geo morphologists and engineers who deal with beaches and rivers where sand is in transit.*

*Ranging across the 4.6 billion year history of the planet, geology is the subject that encompasses almost all that we see around us, in one way or another, and also much that we cannot see, beneath our feet, and on other planets. The fruits of geology provide most of the materials that give us shelter, and most of the energy that drives our modern lives. Within the study of geology lie some of the clues to the extraordinary impact our species is going to play out on the planet, in centuries and millennia to come. In this Very Short Introduction Jan Zalasiewicz gives a brief introduction to the fascinating field of geology. Describing how the science developed from its early beginnings, he looks at some of the key discoveries that have transformed it, before delving into its various subfields, such as sedimentology, tectonics, and stratigraphy. Analysing the geological foundations of the Earth, Zalasiewicz explains the interlocking studies of tectonics, geophysics, and igneous and metamorphic petrology and geochemistry; and describes how rocks are dated by radiometric dating. Considering the role and importance of geology in the finding and exploitation of resources (including fracking), he also discusses its place in environmental issues, such as foundations for urban structures and sites for landfill, and in tackling issues associated with climate change. Zalasiewicz concludes by discussing the exciting future and frontiers of the field, such as the exploration of the geology of Mars. ABOUT THE SERIES: The Very Short Introductions series from Oxford University Press contains hundreds of titles in almost every subject area. These pocket-sized books are the perfect way to get ahead in a new subject quickly. Our expert authors combine facts, analysis, perspective, new ideas, and enthusiasm to make interesting and challenging topics highly readable. This open access proceedings of the 14th International Council for Applied Mineralogy Congress (ICAM) in Belgorod, Russia cover a wide range of topics including applied mineralogy, advanced and construction materials, ore and industrial minerals, mineral exploration, cultural heritage, etc. It includes contributions to geometallurgy, industrial minerals, oil and gas reservoirs as well as stone artifacts and their preservation. The International Congress on Applied Mineralogy strengthens the relation between the research on applied mineralogy and the industry. This work was published by Saint Philip Street Press pursuant to a Creative Commons license permitting commercial use. All rights not granted by the work's license are retained by the author or authors.*

Petrography

Geology of Caves

Thin-section Petrography of Stone and Ceramic Cultural Materials

Sedimentary Petrology

*The Study of Rocks in Thin Section*

Thin section ceramic petrography is a versatile interdisciplinary analytical tool for the characterization and interpretation of archaeological pottery. Using over 200 photomicrographs of thin sections from a diverse range of artefacts, time periods and geographic regions, this provides comprehensive guidelines for their study within archaeology.

This book is a systematic guide to the recognition and interpretation of deformation microstructures and mechanisms in minerals and rocks at the scale of a thin section. Diagnostic features of microstructures and mechanisms are emphasized, and the subject is extensively illustrated with high-quality color and black and white photomicrographs, and many clear diagrams. After introducing three main classes of deformation microstructures and mechanisms, low- to high-grade deformation is presented in a logical sequence in Chapters 2 to 5. Magmatic/submagmatic deformation, shear sense indicators, and shock microstructures and metamorphism are described in Chapters 6 to 8, which are innovative chapters in a structural geology textbook. The final chapter shows how deformation microstructures and mechanisms can be used quantitatively to understand the behavior of the earth. Recent experimental research on failure criteria, frictional sliding laws, and flow laws is summarized in tables, and palaeopiezometry is discussed. Audience: This book is essential to all practising structural and tectonic geologists who use thin sections, and is an invaluable research tool for advanced undergraduates, postgraduates, lecturers and researchers in structural geology and tectonics.

A comprehensive manual of thin-sections of cultural stone and ceramic objects.

The microscope is a familiar tool in the biological and medical sciences, and its application to the study of plant and animal tissues is well known. That it can be applied to the study of rocks, minerals, and ceramics may come as a surprise to many people, including experienced microscopists. The principle requirement is that a section or slice, thin enough to be transparent to transmitted light, can be prepared. This is a practical guide to the preparation of thin sections. All that is needed are some simple equipment, a modicum of manual dexterity, and a measure of patience. Above all, thin sections can be made without expensive machinery, although a brief account of mechanical aids is included here. Methods of making polished sections for reflected light microscopy, staining sections, making peels, and extracting heavy mineral suites from sands are covered in later chapters. The book will be appreciated as a handy laboratory guide by geologists, earth scientists, materials scientists, ceramicists, and microscopists.

Sand and Sandstone

A Colour Atlas

Encyclopedia of Engineering Geology

Principles and Practice

Earth Materials

*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 warrants 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). Petrofabric analysis of metamorphic rocks is not discussed, because this is a special field of study.*

*Identification of rock-forming minerals in thin section is a key skill needed by all earth science students and practising geologists. This translation of the completely revised and updated German second edition (by Leonore Hoke, Institute of Geological and Nuclear Sciences, New Zealand) provides a comprehensive guide to identifying 140 of the most important rock-forming mineral species. The book is divided into three main parts. Part A is a practical guide to the fundamentals of crystal optics, polarization microscopy and the practical use of microscopes. Part B gives a detailed description of the characteristic optical features, special features, and the paragenesis of the most common rock-forming minerals. This well-illustrated part is divided into opaque minerals, isotropic, uniaxial and optical biaxial mineral groups. Part C contains identification tables for the minerals and diagrams showing the international classification of magmatic rocks, as well as a colour plate section showing crystal forms of minerals. The book will provide an invaluable guide to all undergraduate earth scientists, as well as to professional geologists requiring an overview of mineral identification in thin section.*

*At a time when 'textural' evidence is regarded as being 'obvious' ( . . . ) it becomes more and more difficult to find illustrations or even descriptions of the arrangements of the various constituents of 'traumatized' rocks. It is helpful in consequence to advise geology students that the study of thin sections is not only concerned with the identification of their mineral content. To do so would mean they could not see the wood for the trees. Accurate identification of the individual minerals that form rocks is fundamental in their description but the analysis of their textures and habits is also essential. Study of textural features enforces constraints upon the interpretation of the origin and history of a rock. The analysis of micro textures cannot and should never be an aim in itself, out must be supported by qualitative and quantitative correlations with theories of petrogenesis. The aim here is to help the reader to bridge the gap between his observations of rocks under the microscope and petrogenetic theories. The habits or architectures of crystals in rocks may resemble those studied by metallurgists and glass scientists. Analysis of micro textures is undergoing change engendered by comparison between manufactured and hence minerals. This can be seen from the increased number of publications dealing with crystal growth or deformation processes at microscopic scales to which the name of 'nanotectonics' has been applied.*

*There has been a great advance in the understanding of processes of metamorphism and of metamorphic rocks since the last edition of this book appeared. Methods for determining temperatures and pressures have become almost routine, and there is a wide appreciation that there is not a single temperature and pressure of metamorphism, but that rocks may preserve, in their minerals, chemistry and textures, traces of their history of burial, heating, deformation and permeation by fluids. However, this exciting new knowledge is still often difficult for non-specialists to understand, and this book, like the first edition, aims at enlightenment. I have concentrated on the interpretation of the plate tectonic settings of metamorphism, rather than following a geochemical approach. Although there is an impressive degree of agreement between the two, I believe that attempting to discover the tectonic conditions accompanying rock recrystallization will more readily arouse the interest of the beginner. I have used a series of case histories, as in the first edition, drawing on my own direct experience as far as possible. This is*

14th International Congress for Applied Mineralogy (ICAM2019)

An Introduction to the Study of Rocks in Thin Sections

Petrology of the Metamorphic Rocks

Atlas of Sedimentary Rocks Under the Microscope

A Practical Guide to Rock Microstructure

The earlier editions of this book have been used by successive generations of students for more than 20 years, and it is the standard text on the subject in most British universities and many others throughout the world. The study of sediments and sedimentary rocks continues to be a core topic in the Earth Sciences and this book aims to provide a concise account of their composition, mineralogy, textures, structures, diagenesis and depositional environments. This latest edition is noteworthy for the inclusion of 16 plates with 54 colour photomicrographs of sedimentary rocks in thin-section. These bring sediments to life and show their beauty and colorful appearance down the microscope; they will aid the student enormously in laboratory petrographic work. The text has been revised where necessary and the reference and further reading lists brought up-to-date. New tables have been included to help undergraduates with rock and thin-section description and interpretation. New 16-page colour section will mean students do not need to buy Longman Atlas All illustrations redrawn to higher standard Complete revision of text - new material on sedimentary geochemistry, etc

Introduction to Mineralogy and Petrology presents the essentials of both disciplines through an approach accessible to industry professionals, academic researchers, and students. Mineralogy and petrology stand as the backbone of the geosciences. Detailed knowledge of minerals and rocks and the process of formation and association are essential for practicing professionals and advanced students. This book is designed as an accessible, step-by-step guide to exploring, retaining, and implementing the core concepts of mineral and hydrocarbon exploration, mining, and extraction. Each topic is fully supported by working examples, diagrams and full-color images. The inclusion of petroleum, gas, metallic deposits and economic aspects enhance the book's value as a practical reference for mineralogy and petrology. Authored by two of the world's premier experts, this book is a must for any young professional, researcher, or student looking for a thorough and inclusive guide to mineralogy and petrology in a single source. Authored by two of the world's experts in mineralogy and petrology, who have more than 70 years of experience in research and instruction combined Addresses the full scope of the core concepts of mineralogy and petrology, including crystal structure, formation and grouping of minerals and soils, definition, origin, structure and classification of igneous, sedimentary and metamorphic rocks Features more than 150 figures, illustrations, and color photographs to vividly explore the fundamental principles of mineralogy and petrology Offers a holistic approach to both subjects, beginning with the formation of geologic structures followed by the hosting of mineral deposits and concluding with the exploration and extraction of lucrative, usable products to improve the health of global economies

Key concepts in mineralogy and petrology are explained alongside beautiful full-color illustrations, in this concisely written textbook.

Geoarchaeology is the archaeological subfield that focuses on archaeological information retrieval and problem solving utilizing the methods of geological investigation. Archaeological recovery and analysis are already geoarchaeological in the most fundamental sense because buried remains are contained within and removed from an essentially geological context. Yet geoarchaeological research goes beyond this simple relationship and attempts to build collaborative links between specialists in archaeology and the earth sciences to produce new knowledge about past human behavior using the technical information and methods of the geosciences. The principal goals of geoarchaeology lie in understanding the relationships between humans and their environment. These goals include (1) how cultures adjust to their ecosystem through time, (2) what earth science factors were related to the evolutionary emergence of humankind, and (3) which methodological tools involving analysis of sediments and landforms, documentation and explanation of change in buried materials, and measurement of time will allow access to new aspects of the past. This encyclopedia defines terms, introduces problems, describes techniques, and discusses theory and strategy, all in a format designed to make specialized details accessible to the public as well as practitioners. It covers subjects in environmental archaeology, dating, materials analysis, and paleoecology, all of which represent different sources of specialist knowledge that must be shared in order to reconstruct, analyze, and explain the record of the human past. It will not specifically cover sites, civilizations, and ancient cultures, etc., that are better described in other encyclopedias of world archaeology. The Editor Allan S. Gilbert is Professor of Anthropology at Fordham University in the Bronx, New York. He holds a B.A. from Rutgers University, and his M.A., M.Phil., and Ph.D. were earned at Columbia University. His areas of research interest include the Near East (late prehistory and early historic periods) as well as the Middle Atlantic region of the U.S. (historical archaeology). His specializations are in archaeozoology of the Near East and geoarchaeology, especially mineralogy and compositional analysis of pottery and building materials. Publications have covered a range of subjects, including ancient pastoralism, faunal quantification, skeletal microanatomy, brick geochemistry, and two co-edited volumes on the marine geology and geoarchaeology of the Black Sea basin.

Rock-forming Minerals in Thin Section

Recognition of Invertebrate Fossil Fragments in Rocks and Thin Sections

Optical Mineralogy

Layered Silicates Excluding Micas and Clay Minerals, Volume 3B

Introduction to the Study of Rocks and Guide to the Rock Collections in Kelsingrove Museum