

Petroleum Geochemistry And Geology

A collection of poems personifying fifteen different colors.

Understanding the origin and fate of hydrocarbons in the subsurface was the major endeavor of organic geochemists during the second half of the twentieth century. They succeeded to the point where the deciphered interplaying of elements and processes paved the way for the revolutionary concept of the petroleum system, a unifying paradigm that plays an important role in decision making associated with oil and gas exploration. The chemistry and physics involved have been addressed in a quantitative way and integrated into the other aspects of petroleum geology, giving rise to the development of numerical basin modeling. This book has been designed to offer an overview of different aspects of the geochemistry of fossil fuels, in particular the functioning of a petroleum system. In this respect, it can be viewed as a foundation for approaching basin modeling. This book will be of interest to a large audience including specialists in the field, nonspecialist professionals, and undergraduate and graduate students.

Petroleum geoscience comprises those geoscientific disciplines which are of greatest significance for the exploration and recovery of oil and gas. These include petroleum geology, of which sedimentary geology is the main foundation along with the contextual and modifying principles of regional, tectonic and structural geology. Additionally, biostratigraphy and micropalaeontology, organic geochemistry, and geophysical exploration and production techniques are all important tools for petroleum geoscientists in the 21st century. This comprehensive textbook present an overview of petroleum geoscience for geologists destined for the petroleum industry. It should also be useful for students interested in environmental geology, engineering geology and other aspects of sedimentary geology

Sedimentology and Petroleum Geology

Petroleum and Basin Evolution

Petroleum Geochemistry and Source Rock Potential of Carbonate Rocks

Volume 1

Illustrated Glossary of Petroleum Geochemistry

"This classic textbook integrates the vast contributions geology, geochemistry, geophysics, and other branches of geoscience have made to the study of petroleum."

This is a how-to encyclopedia of prospecting for oil and gas. The book, an addition to the Handbook set of the Treatise of Petroleum Geology, focuses on procedures and proven petroleum exploration techniques that are critical for generating viable prospects. The twenty-one chapters deal with exploration philosophy, the concept and critical elements of traps in a petroleum system, evaluating the elements of a petroleum province, and methods for predicting reservoir occurrence, quality, and performance.

Petroleum is not as easy to find as it used to be. In order to locate and develop reserves efficiently, it's vital that geologists and geophysicists understand the geological processes that affect a reservoir rock and the oil that is trapped within it. This book is about how and to what extent, these processes may be understood. The theme of the book is the characterization of fluids in sedimentary basins, understanding their interaction with each other and with rocks, and the application of this information to finding, developing and producing oil and gas. The first part of the book describes the techniques, and the second part relates real-life case histories covering a wide range of applications. Petroleum geology, particularly exploration, involves making the best of incomplete results. It is essentially an optimistic exercise. This book will remove some of the guesswork. Brings together the most important geochemical methods in a single volume. Authored by two well-respected researchers in the oil industry. Real-life, international case histories.

International Geology Review, 1968-1981

Stratigraphy, Petroleum Geochemistry and Petroleum Geology

Contributions to Petroleum Geochemistry

Petroleum Geochemistry and Geology

Petroleum Geology and Geochemistry of the Arctic National Wildlife Refuge 1002 Area

Petroleum Geology of Libya, Second Edition, systematically reviews the exploration history, plate tectonics, structural evolution, stratigraphy, geochemistry and petroleum systems of Libya, and includes valuable new chapters on oil and gas fields, production, and reserves. Since the previous edition, published in 2002, there have been numerous developments in Libya, including the lifting of sanctions, a new licensing system, with licensing rounds in 2004, 2005, 2006, and 2007, many new exploratory wells, discoveries and field developments, and a change of regime. A large amount of new data has been published on the geology of Libya in the past fourteen years, but it is widely scattered through the literature. Much of the older data has been superseded, and several of the key publications, especially those published in Libya, are difficult to access. This second edition provides an updated source of reference which incorporates much new information, particularly on petroleum systems, reserves, oil and gas fields, play fairways, and remaining potential. It presents the results of recent research and a detailed description of Libyan offshore geology. The book includes an extensive and comprehensive bibliography. Presents over 180 full colour illustrations including maps, diagrams and charts, illustrating the key concepts in a clear and concise manner Authored by two recognized world authorities on geology in Libya, with over 40 years' experience in Libya between them Provides an expanded and updated version of the bestselling previous edition, nicknamed the Explorationist's Bible Lays the foundation for the post-revolution exploration age in

Libya

An Introduction to Organic Geochemistry explores the fate of organic matter of all types, biogenic and man-made, in the Earth System. It investigates the variety of pathways and biogeochemical transformations that carbon compounds can experience over a range of time scales and in different environments. The scope is widened to provide a broad and up-to-date background -structured to accommodate readers with varied scientific backgrounds. Essential terminology is defined fully and boxes are used to explain concepts introduced from other disciplines. Further study is aided by the incorporation of carefully selected literature references. It investigates the variety of pathways and biogeochemical transformations that carbon compounds can experience over a range of time scales and in different environments.

Carbonate rocks have diverse characteristics. They can be excellent reservoirs as well as prolific source rocks for oil. Oils from carbonate rocks commonly have distinctive bulk chemical and molecular characteristics that reveal their origin. The papers collected here are descriptions and interpretations (that is, case histories) of specific carbonate source rocks that range in age from Precambrian to Miocene.

Geochemistry in Petroleum Exploration

Petroleum Geochemistry and Exploration of Europe

Proceedings of the 13th International Meeting on Organic Geochemistry, Venice, Italy 21-25 September 1987

Unconventional Petroleum Geology

Petroleum Geology and Geochemistry of South-Central Escambia County, Alabama

Cutting-edge techniques have always been utilized in petroleum exploration and production to reduce costs and improve efficiencies. The demand for petroleum in the form of oil and gas is expected to increase for electricity production, transport and chemical production, largely driven by an increase in energy consumption in the developing world. Innovations in analytical methods will continue to play a key role in the industry moving forwards as society shifts towards lower carbon energy systems and more advantaged oil and gas resources are targeted. This volume brings together new analytical approaches and describes how they can be applied to the study of petroleum systems. The papers within this volume cover a wide range of topics and case studies, in the fields of fluid and isotope geochemistry, organic geochemistry, imaging and sediment provenance. The work illustrates how the current, state-of-the-art technology can be effectively utilised to address ongoing challenges in petroleum geoscience.

*This book discusses the progress that is being made through innovations in instrumental measurements of geologic and geochemical systems and their study using modern mathematical modeling. It covers the systems approach to understanding sedimentary rocks and their role in evolution and containment of subsurface fluids. Fundamental aspects of petroleum geology and geochemistry, generation, migration, accumulation, evaluation and production of hydrocarbons are discussed with worldwide examples. Various physical and chemical properties of subsurface waters, crude oils and natural gases are described which is especially important to production engineering. Among various properties of liquid and gaseous hydrocarbons the most important are wettability affecting production characteristics and ultimate recovery: relative permeability affecting reservoir fluid flow to the production wells; density differences between immiscible fluids which affects gravity drainage; viscosity of subsurface fluids affecting the relative mobility of each fluid; and fluid chemistry, which affects the absorption, ultimate recovery and monetary value of produced hydrocarbons. Discussion of the formation and accumulation of hydrocarbons includes (1) the changes in the chemical composition of hydrocarbons that originate from the debris of living plants and organisms to form crude oil and natural gas; (2) the origin of hydrocarbons in different areas of a single reservoir; (3) the conditions, which determine the distribution of water, oil and gas in the reservoir; (4) the migration of subsurface fluids until they eventually accumulate in isolated traps; (5) discussion of the traps as a function of sedimentary geology and tectonics. This is based on the systems approach to the specific geologic and geochemical systems using analytical and statistical principles and examples of modern mathematical modeling of static and dynamic systems. * Discusses fundamental aspects of petroleum geology and geochemistry, and generation, migration, accumulation, evaluation and production of hydrocarbons * Presents a systems approach to the specific geologic and geochemical systems*

The book on Petroleum Geochemistry the first of its kind in India, is useful for postgraduate students of Science (Geology, Applied Geology, Geophysics, Earth Sciences) and undergraduate students of Engineering and Technology (BE, B.Tech.) undertaking several courses in petroleum science and engineering in the Universities, IIT's and other Institutions. It is also useful to geoscientists, engineers and technologists working in the oil industries dealing with exploration, production and related aspects. The book provides basic information on geochemical processes involved in petroleum generation, migration and accumulation in sedimentary basins, maturation of source rocks, evaluation of their genetic potential and correlations. It deals with the principles and applications of sub-surface geochemical methods including high resolution geochemical technologies for delineation of hydrocarbon kitchens and surface geochemical prospecting of hydrocarbons for prioritising targets for future exploration. In addition to basic principles, the book deals with the occurrence and distribution of petroleum in worldwide sedimentary basins with special reference to Indian basins, geochemical basin modeling and its application to petroleum exploration, application of biomarkers and modern instrumental techniques for characterisation of organic matter in source rocks and identification of their depositional environments. Applications of oil field waters and their role in enhanced oil recovery (EOR) operations, implications of scale formation and

corrosion on drilling equipment and other installations are described comprehensively. Apart from conventional oil and natural gas the need for exploration and exploitation of unconventional petroleum resources such as Coal bed methane (CBM), Gas hydrates, Bituminous sands, Shale gas and Oil shale, Basinal gas and Tight gas sands, their origin, occurrence, characterisation of depositional environments, exploration and production strategies, environmental concerns and worldwide distribution with special emphasis to India are elaborated in detail.

Geochemistry of Fossil Fuels

Application of Analytical Techniques to Petroleum Systems

Inorganic Geochemistry

Insights from Petroleum Geochemistry, Geology and Basin Modeling

Elements of Petroleum Geology

Petroleum Geochemistry and Exploration in the Afro-Asian Region includes 29 papers presented at the 6th International Conference on Petroleum Geochemistry and Exploration in the Afro-Asian Region. Petroleum geochemistry has played a crucial role in determining effective source rocks, classifying petroleum systems and delineating the geneses of conve Petroleum geochemistry has turned out to be more than another step in the direction to quantify geology and geosciences in general. Petroleum geochemistry as it is today may very well be the triggering event that brings the other branches of geosciences like sedimentology, stratigraphy, structural geology, geophysics and others to a fruitful synthesis as evidenced by integrated basin studies.

This book is intended primarily as a textbook for geologists engaged in petroleum exploration. Its purpose is to introduce the reader to organic geochemistry and to show how to apply geochemistry advantageously in an exploration program. I have made the explicit assumption that most readers will have a sound background in geology but far less knowledge of, or interest in, chemistry. Because there is no need for an exploration geologist to be an expert in organic chemistry, the amount of chemistry used in the book is rather modest. It is, however, often important for a geologist to understand some basic vocabulary. The emphasis in this book is on applications of geochemistry to hydrocarbon exploration. Most of the analytical techniques are discussed only briefly, because although a geologist should know what a gas chromatograph is, he or she is unlikely to be asked to repair one. If more detailed knowledge does prove necessary, a laboratory is the proper place to learn. The strengths and weaknesses of the various analytical techniques are discussed so that a geologist will be able to anticipate pitfalls, cull bad data, and choose an appropriate analytical program. On-the-job experience will prove invaluable in converting the basic information from this text into a practical working knowledge.

Exploring for Oil and Gas Traps

The Gulf of Suez Area, Egypt

From Sedimentary Environments to Rock Physics

Applications to Petroleum Geology

Organic Geochemistry in Petroleum Exploration

Practical Petroleum Geochemistry for Exploration and Production, Second Edition provides readers with a single reference that addresses the principle concepts and applications of petroleum geochemistry used in finding, evaluating, and producing petroleum deposits. The revised volume includes a new chapter on environmental forensic applications of petroleum geochemistry. With the current emphasis on environmental issues (pollution, climate changes, and corporate responsibility), information about how petroleum geochemistry can be used to recognize these problems, determine their source, help identify who is responsible, and how these problems may be mitigated are vital to efficient and economical operation of a project from exploration to production to abandonment. Practical Petroleum Geochemistry for Exploration and Production, Second Edition will continue to serve as a foundational reference to understanding the underpinning of the science, as well as a source of references that the reader can use to find detailed descriptions of methods and protocols. Emphasizes the practical application of geochemistry in solving exploration and production problems Features more than 200 illustrations, tables, diagrams, and case studies to underscore key concepts Authored by an expert geochemist with over 40 years of experience in field-based research, applications, and instruction New edition includes a chapter on environmental issues (impact, climate change, pollution, and corporate responsibility), as well as expanded coverage of topics such as hydrates as unconventional resources; geomicrobial methods (especially DNA analysis) and the use of sea surface slicks from seafloor seeps in surface geochemistry; using GC x GC and asphaltene FTIR in oil correlation studies; and interpretation isotope data for the maturity of thermogenic natural gas

This book reviews the present status of organic geochemistry and its application to Petroleum Exploration. It is intended to be as practical as possible with all aspects of geochemistry illustrated by a great number of examples taken from case histories from all over the world which show that geochemistry must be used in the framework of a good geological/geophysical background. This book is written for: petroleum geologists and geophysicists; managers who should integrate the impact of geochemistry in exploration decision-making; specialized geochemists who need an accurate panorama of other aspects of geochemistry; university professors and students in petroleum geology. Unconventional Petroleum Geology is the first book of its kind to collectively identify, catalog, and assess the exploration and recovery potential of the Earth's unconventional hydrocarbons. Advances in hydrocarbon technology and petroleum development systems have recently made the exploration of unconventional hydrocarbons—such as shale gas, tight sandstone oil and gas, heavy oil, tar sand, and coalbed methane—the hottest trend in the petroleum industry. Detailed case studies act as real-world application templates, making the book's concepts immediately practical and useful by exploration geologists. The logical and intuitive three-part approach of systematically identifying an unconventional hydrocarbon, cataloguing its accumulation features, and assessing its exploration and recovery potential can be immediately implemented in the field—anywhere in the world. Provides a detailed assessment of the exploration and recovery potential of the full range of unconventional hydrocarbons More than 300 illustrations—many in full color—capture the detailed intricacies and associated technological advances in unconventional hydrocarbon exploration More than 20 case studies and examples from around the world conclude each chapter and aid in the application of key exploration and recovery techniques

Applied Petroleum Geochemistry

Geology and Geochemistry of Oil and Gas

Petroleum Formation and Occurrence

From Conventional to Unconventional Hydrocarbon Systems

Petroleum Geoscience

Often the source of confusion to those who have to interpret and apply research results, this glossary gives easy access to the basic nomenclature of petroleum geochemistry. The first part of the book provides a summary in the form of tables and diagrams. The main part gives self-contained explanations for the most common terms. Numerous illustrations and references for further reading are included.

This comprehensive textbook presents an overview of petroleum geoscience for geologists active in the petroleum industry, while also offering a useful guide for students interested in environmental geology, engineering geology and other aspects of sedimentary geology. In this second edition, new chapters have been added and others expanded, covering geophysical methods in general and electromagnetic exploration methods in particular, as well as reservoir modeling and production, unconventional resources and practical petroleum exploration.

Current and authoritative with many advanced concepts for petroleum geologists, geochemists, geophysicists, or engineers engaged in the search for or production of crude oil and natural gas, or interested in their habitats and the factors that control them, this book is an excellent reference. It is recommended without reservation. AAPG Bulletin.

Introduction to Organic Geochemistry

Advances in Petroleum Geochemistry

Proceedings of the 6th AAPG International Conference, Beijing, China, 12-14 October 2004

Practical Petroleum Geochemistry

Proceedings of a Norwegian Petroleum Society (NPF) conference Organic Geochemistry in Exploration of the Norwegian Shelf held in Stavanger, 22–24 October 1984

Elements of Petroleum Geology, Fourth Edition is a useful primer for geophysicists, geologists and petroleum engineers in the oil industry who wish to expand their knowledge beyond their specialized area. It is also an excellent introductory text for a university course in petroleum geoscience. This updated edition includes new case studies on non-conventional exploration, including tight oil and shale gas exploration, as well as coverage of the impacts on petroleum geology on the environment. Sections on shale reservoirs, flow units and containers, IOR and EOR, giant petroleum provinces, halo reservoirs, and resource estimation methods are also expanded. Written by a preeminent petroleum geologist and sedimentologist with decades of petroleum exploration in remote corners of the world Covers information pertinent to everyone working in the oil and gas industry, especially geophysicists, geologists and petroleum reservoir engineers Fully revised with updated references and expanded coverage of topics and new case studies

This volume is the record of a three day symposium entitled "Organic Geochemistry in Exploration of the Norwegian Shelf", which was sponsored by the Norwegian Petroleum Society (Norsk Petroleumsforening) and held at the Rogalands Regional College, Stavanger on 22-24 October 1984. Twenty-nine papers were presented, and all but one are published in full herein. The aim of the conference was to focus on the application of geochemical methods to the current and highly active exploration of the Norwegian offshore. Emphasis was on practical interpretation and case histories rather than laboratory methods and techniques, and a strong attendance was sought among geologists and seismic interpreters active in exploration in Norway and Northwest Europe generally. On all counts the symposium was a great success with a total of 213 participants registered. In his opening address Mr Egil Bergsager, director of the Norwegian Petroleum Directorate, observed that during the 1970s petroleum geochemistry emerged from being a somewhat academic pursuit into a practical aid in exploration for hydrocarbons. This first stage, when many of the basic methods were developed, has now led in the 1980s to an expansion into applications in regional geological studies, including mathematical modelling of thermal history, hydrocarbon migration and basin development.

This book has been prepared by the collaborative effort of two somewhat separate technical groups: the researchers at the Institute for Petroleum and Organic Geochemistry, Forschungszentrum Jillich (KFA), and the technical staff of Integrated Exploration Systems (IES). One of us, Donald R. Baker, from Rice University, Houston, has spent so much time at KFA as a guest scientist and researcher that it is most appropriate for him to contribute to the book. During its more than 20-year history the KFA group has made numerous and significant contributions to the understanding of petroleum evolution. The KFA researchers have emphasized both the field and laboratory approaches to such important problems as source rock recognition and evaluation, oil and gas generation, maturation of organic matter, expulsion and migration of hydrocarbons, and crude oil composition and alteration. IES Jillich has been a leader in the development and application of numerical simulation (basin modeling) procedures. The cooperation between the two groups has resulted in a very fruitful synergy effect both in the development of modeling software and in its application. The purpose of the present volume developed out of the 1994 publication by the American Association of Petroleum Geologists of a collection of individually authored papers entitled The Petroleum System - From Source to Trap, edited by L. B. Magoon and W. G. Dow.

Petroleum Geochemistry in Exploration of the Norwegian Shelf

Petroleum Geochemistry and Geology of the Midyan and Al Wajah Basins, Northern Red Sea, Saudi Arabia

Practical Petroleum Geochemistry for Exploration and Production

Petroleum Geochemistry, Genesis and Migration

Petroleum Geochemistry and Exploration in the Afro-Asian Region

This volume presents the most significant papers given during the 13th International Meeting in Organic Geochemistry. The intention of the publication is to provide the scholars of this science with its state-of-the-art and recent papers not only in academic research but above all in practical applications. Several papers attest to an increased use of organic geochemistry not only in the oil industry, during all phases of petroleum exploration, but also in the other research areas of coal origin and structure, metallogeny, sedimentology, molecular palaeontology, biochemistry and pollution. This text clearly integrates the contributions of geology, geophysics and other branches of geoscience into one complete, definitive volume. Abundant tables and figures, chapter summaries and references contribute to the book's clarity and comprehensiveness.

Petroleum and Basin Evaluation

Petroleum Geology of Libya

Petroleum Geochemistry and Basin Evaluation
Petroleum Geochemistry