

Petroleum Geology Of Libya

Provides an introduction to petroleum exploration methods, referring to both geophysical and geochemical techniques and the logistics of various drilling techniques and well logging methods for oil and gas exploration. The second part of the book focuses on using these methods for petroleum exploration within the context of northern Africa. The geology of northern Africa is described and computerized lithographic correlation charts are presented and applied to petroleum exploration targets from the region.

The wealth of petroleum has made the Middle East one of the most actively explored regions of the world. The volume of geological, geophysical and geochemical data collected by the petroleum industry in recent decades is enormous. The Middle East may be a unique region in the world where the volume of subsurface data and information exceeds that based on surface outcrop. This book reviews the tectonic and geological history of the Middle East and the regional hydrocarbon potential on a country by country basis in the context of current ideas developed through seismic and sequence stratigraphy and incorporating the ideas of global sea level change. Subsurface data have been used as much as possible to amplify the descriptions. The paleogeographic approach provides a means to view the area as a whole. While the country by country approach inevitably leads to some repetition, it enhances the value of the volume as a teaching tool and underlines some of the changing lithologies within formations carrying the same name.

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

Full text engineering e-book.

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A practical book for geologists involved in petroleum production, here is a comprehensive review of basic techniques in production geology, the links with related subjects, and the function of geologists in the planning and operation of all phases of oilfield development. The first part discusses the basic techniques used in the analysis and graphic representation of the stratigraphy, tectonic structure, reservoir sedimentology and hydrocarbon distribution of an oilfield. The second part describes how this knowledge is applied in the various phases of field development. The mutual support between production geology and neighbouring disciplines such as seismology, log interpretation, reservoir engineering is stressed. Throughout the book, the text is secondary to the illustrations; these are examples, mostly hypothetical, of conditions and techniques discussed, designed so as to bring out as clearly as possible the importance of the points made. It is thus an ideal book for graduate students, specializing in petroleum geology and for participants in post-graduate courses, in universities or within industry.

A reference volume on the geology of North Africa, this volume deals with Egypt, Libya, Algeria, Tunisia and Morocco. In great detail the geology, tectonic elements, the geology of the Pan-African Shield, the Phanerozoic geological evolution and most of the lithostratigraphic units of the five countries are described. Moreover, the petroleum geology and petroleum systems are discussed, as well as the history of geological exploration. With the incentive to provide a reference to the geology of North Africa that can be used both by professionals and students, this review work provides a large amount of data, based on more than 2500 references. Written in a clear, straight-forward and structured style, and with many schematic maps, it allows the reader to easily search a topic and find further information with help of the extensive bibliography. This volume is intended for senior undergraduate and graduate students, professional geologists and geophysicists, who are working in North Africa and the Middle East. It is ideally suited for any professional who is looking for a quick, round-up reference on the geology of North Africa. It is an expanded and revised version of 'The Geology of Egypt and Libya' by the same author (Balkema, 2001).

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

This monograph presents a unique combination of structural and tectonic modelling with applied petroleum geological problems. Focussing on the Norwegian Continental Shelf and neighbouring areas, it includes discussion covering all scales - from development of sedimentary basins, to formation of fractures and joints on a microscale - and from exploration, to the exploitation of hydrocarbons. The book's coverage of structural and tectonic modelling, petroleum geology applications, and the treatment of the Norwegian Continental Shelf should make this book an invaluable resource book for advanced students of structural and tectonic modelling, teachers, and researchers; as well as for geologists and geophysicists in the petroleum industry.

Petroleum Geology

With the social, political and economic changes taking place in Myanmar (formerly Burma) there is a keen interest among international resource companies to explore opportunities for investment in the country. As early as the 1700s oil was being produced onshore from deep, hand-dug wells and was exported as far afield as India. But in the petroleum sector the most dramatic change has been the discovery offshore of major gasfields. The present volume is the first to bring together information on the offshore as well as the onshore petroleum geology. The readership is likely to include not only those in the petroleum industry seeking an overview of the habitat of Myanmar's oil and gas, but also researchers in the broader field of SE Asian geology. As in many parts of the world, it has been the petroleum industry that has provided data of value to stratigraphers, structural geologists and those seeking to decipher the tectonic history of the region.

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

Everyone working in a problem as complex as continental drift, must at some time have felt the need for an objective data summary in fields other than his own. It is a scientific dilemma that, although there is evident need for researchers with competence in many fields (the classical natural scientist), the time involved in acquiring such broad experience is so great as to render the task largely impossible. The alternative seems to be the team approach, and we have espoused it in this volume. Editors and contributors alike have tried in this book to keep the accent upon factual information and to reduce interpretation to a minimum. Interpretation there must be, however, since without it science is but an intellectual pastime comparable to philately. The librarian's need to classify results in the appearance of our names upon the spine of this volume, however, we would like to make it clear that the book has been a truly cooperative effort and could not have succeeded but for the active help of the individual contributors, whose assistance seldom was restricted to their chapters. Special thanks must be given to our South American colleagues, for the tolerance with which they viewed our editorial attempts, and to Dr. E. Machens, for his careful review of the translation of his manuscript. We wish also to acknowledge the help of Dr. C. W.

Hydrocarbon Fluid Inclusions in Petroliferous Basins trains readers to detect Hydrocarbon Fluid Inclusions (HCFIs) in sedimentary rocks, particularly the wafer preparation techniques to visualize HCFIs, its distinction from aqueous inclusions, petrographic approaches to HCFIs, microthermometric observations on HCFIs, fluorescence emission spectra and Raman spectra of HCFIs, and their interpretations for the petroleum industry. The book features case studies from the Mumbai and Kerala Konkan Basins of the Western Offshore of India - two representative basins where new, non-destructive, fluid inclusion techniques were tested. This book is essential reading for students of petroleum geology and those working in exploration in the oil and gas industry. Helps readers to identify Hydrocarbon Fluid Inclusions (HCFIs) in sedimentary basins Covers how to determine the oil window, API gravity and chemical constituents in HCFIs Includes case studies on key offshore basins

Libya has the largest petroleum reserves of any country in Africa and since production began in 1961 over 20 billion barrels of oil have been produced. Libya is scheduled to reach the mid-point of depletion of reserves in 2001 and this provides a timely point at which to review the state of petroleum exploration in Libya. A large amount of data has been published on the geology of Libya, but it is 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 find. This book represents the first attempt to produce a comprehensive synthesis of the petroleum geology of Libya. It is based exclusively on published data, supplemented by the author's experience gained during ten years work in Libya. The aim of the book is to systematically review the plate tectonics, structural evolution, stratigraphy, geochemistry, and petroleum systems of Libya, and provides valuable new data on fields, production, and reserves. This volume will provide a ready source of reference to individuals and companies who wish to obtain an overview of the petroleum geology of Libya, and will save

them the laborious task of sifting through hundreds of publications to find the data they require. The book includes 148 newly drawn figures.

Methods and Applications in Petroleum and Mineral Exploration and Engineering Geology is an interdisciplinary book bridging the fields of earth sciences and engineering. It covers topics on natural resources exploration as well as the application of geological exploration methods and techniques to engineering problems. Each topic is presented through theoretical approaches that are illustrated by case studies from around the globe. Methods and Applications in Petroleum and Mineral Exploration and Engineering Geology is a key resource for both academics and professionals, offering both practical and applied knowledge in resources exploration and engineering geology. Features new exploration technologies including seismic, satellite images, basin studies, geochemical modeling and analysis Presents cases studies from different countries such as the Hoggar area (Algeria), Urals and Siberia (Russia), North of Chile (II and III regions), and North of Italy (Trentino Alto adige) Includes applications of the novel methods discussed

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The first work of its kind, Volcanic Reservoirs in Petroleum Exploration summarizes the current research and exploration techniques of volcanic reservoirs as a source of oil and gas. With a specific focus on the geological features and development characteristics of volcanic reservoirs in China, it presents a series of practical exploration and evaluation techniques based on this research. Authored by an award-winning petroleum geologist, it introduces exploration and outcome prediction techniques that can be used by scientists in any volcanic region worldwide. Volcanic reservoirs as new sources of petroleum resources are a hot topic in petroleum exploration. Although volcanic rock cannot generate hydrocarbons, it can serve as a reservoir for hydrocarbons when conditions permit. This book explains the differences between volcanic reservoirs and other major reservoir types, and describes effective methods for examining volcanic distribution and predicting volcanic reservoirs, providing a framework for systematic studies throughout the world. Includes an entire section dedicated to current trends in volcanic prediction and evaluation technology More than 90 full-color photos illustrate the text in greater detail Case studies conclude each chapter, helping scientists apply the book's concepts to real-life scenarios

The Murzuq Basin is a large intracratonic sag basin located in southwestern Libya. Exploration efforts started in this vast and remote Saharan region already in 1957 and 60 exploratory wells have been drilled to date, resulting in over 20 discoveries with around 4,000 million barrels of oil in place. Most discoveries have been made in Ordovician sandstone reservoirs sourced by hot shales of the Lower Silurian Tanezzuft Formation. Oil is already being produced and exported from the area, but the basin's total hydrocarbon potential is still poorly understood. Recent exploration - especially the major discovery and initial development of the Giant "Elephant" Field - has greatly increased interest for the area's potential. Many petroleum geologists and companies now believe that the basin may well develop into a new major hydrocarbon province which will significantly contribute to Europe's energy needs in the next decades. This book presents papers from a conference held at Sebha University - on the eastern margins of the Murzuq Basin - in September 1998. The book continues an ongoing series of presentations of the geology of Libya, but the 25 contributions herein mostly centre on the Murzuq Basin itself and on nearby areas. There are still many unresolved questions in terms of geological and hydrocarbon exploration in these difficult desert areas, but the papers herein will hopefully present a first comprehensive overview of an exciting frontier exploration region. About half of the papers are directly related to hydrocarbon exploration, and to source rock and reservoir development, but a wide variety of other features are also described, ranging from palaeontology and biostratigraphy to ore geology and water resources, covering the entire geological column from the Precambrian to the Holocene. The book concludes with a bibliography covering all geological aspects of this challenging but very promising frontier area.

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.

Petroleum Geoscience is a comprehensive introduction to the application of geology and geophysics to the search for and production of oil and gas. Uniquely, this book is structured to reflect the sequential and cyclical processes of exploration, appraisal, development and production. Chapters dedicated to each of these aspects are further illustrated by case histories drawn from the authors' experiences. Petroleum Geoscience has a global and 'geo-temporal' backdrop, drawing examples and case histories from around the world and from petroleum systems ranging in age from late-Pre-Cambrian to Pliocene. In order to show how geoscience is integrated at all levels within the industry, the authors stress throughout the links between geology and geophysics on the one hand, and drilling, reservoir engineering, petrophysics, petroleum engineering, facilities design, and health, safety and the environment on the other. Petroleum Geoscience is designed as a practical guide, with the basic theory augmented by case studies from a wide spread of geographical locations. Covers all the key aspects of the origin of petroleum, exploration, and production. It takes account of the modern emphasis on the efficient utilisation of reserves, on new methods in exploration (such as 3-D seismics). Book takes 'value-chain' approach to Petroleum Geoscience. First new text on petroleum geology for geology undergraduates to be published in the last ten years. Packed full of real-life case studies from Petroleum industry.

Treating the geology of Egypt and Libya as one entity, this unquestionably thorough text is divided into six parts covering the following key areas: · the tectonic framework of Egypt and Libya and the main tectonic elements in the two countries · the geology of the Pan-African Shield · the Phanerozoic stratigraphy of Egypt, with a review of the stratigraphic nomenclature · a review of the stratigraphy of Libya · a synthesis of the geological evolution of Egypt and Libya, and how this fits into global tectonics and sea-level fluctuations. · a bibliographic list of more than 2000 references used in the compilation of the book.

Following on from the first 2 books in the series, Sedimentary Basins of the World, which covered Chinese Sedimentary Basins (Volume 1) and South Pacific Sedimentary Basins (Volume 2), comes Volume 3, on African Basins. Africa covers a larger land area than the USA, Europe, India and the ASEAN nations put together. It is rich in natural resources, including oil, gas, coal and nearly every metalliferous mineral. Yet Africa is still one of the least explored continents. This book brings together in one volume, concise reviews of basins previously documented in a vast array of diffuse literature. It also contains some of the first detailed accounts of several basins which have never before been described in such depth. These include the onshore Owambo, lullemeden, and Sudanese rift basins, and the offshore basins of southern Africa. The contributions are by authors, and teams of authors, with great knowledge and experience of the basins that they describe. The thirteen chapters are arranged in 3 parts covering North Africa, Central Africa and Southern Africa and the book is illustrated by maps, cross-sections, stratigraphic sections and seismic lines. Each chapter includes a comprehensive bibliography and the book concludes with a subject index. For academic geologists researching the geology of Africa, and for industrial geologists seeking natural resources within African sedimentary rocks, this book is an invaluable source of information.

Practical Petroleum Geochemistry for Exploration and Production provides readers with a single reference that addresses the principle concepts and applications of petroleum geochemistry used in finding, evaluating, and producing petroleum deposits. Today, there are few reference books available on how petroleum geochemistry is applied in exploration and production written specifically for geologists, geophysicists, and petroleum engineers. This book fills that void and is based on training courses that the author has developed over his 37-year career in hydrocarbon exploration and production. Specific topical features include the origin of petroleum, deposition of source rock, hydrocarbon generation, and oil and gas migrations that lead to petroleum accumulations. Also included are descriptions on how these concepts are applied to source rock evaluation, oil-to-oil, and oil-to-source rock correlations, and ways of interpreting natural gas data in exploration work. Finally, a thorough description on the ways petroleum geochemistry can assist in development and production work, including reservoir continuity, production allocation, and EOR monitoring is presented. Authored by an expert in petroleum geochemistry, this book is the ideal reference for any geoscientist looking for exploration and production content based on extensive field-based research and expertise. Emphasizes the practical application of geochemistry in solving exploration and production problems Features more than 200 illustrations, tables, and diagrams to underscore key concepts Authored by an expert geochemist that has nearly 40 years of experience in field-based research, applications, and instruction Serves as a refresher reference for geochemistry specialists and non-specialists alike

This Third Edition of Elements of Petroleum Geology is completely updated and revised to reflect the vast changes in the field since publication of the Second Edition. This book 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. Elements of Petroleum Geology begins with an account of the physical and chemical properties of petroleum, reviewing methods of petroleum exploration and production. These methods include drilling, geophysical exploration techniques, wireline logging, and subsurface geological mapping. After describing the temperatures and pressures of the subsurface environment and the hydrodynamics of connate fluids, Selley examines the generation and migration of petroleum, reservoir rocks and trapping mechanisms, and the habit of petroleum in sedimentary basins. The book contains an account of the composition and formation of tar sands and oil shales, and concludes with a brief review of prospect risk analysis, reserve estimation, and other economic topics. Updates the Second Edition completely Reviews the concepts and methodology of petroleum exploration and production Written by a preeminent petroleum geologist and sedimentologist with decades of petroleum exploration in remote corners of the world Contains information pertinent to geophysicists, geologists, and petroleum reservoir engineers Updated statistics throughout Additional figures to illustrate key points and new developments New information on drilling activity and production methods including crude oil, directional drilling, thermal techniques, and gas plays Added coverage of 3D seismic interpretation New section on pressure compartments New section on hydrocarbon adsorption and absorption in source rocks Coverage of The Orinoco Heavy Oil Belt of Venezuela Updated chapter on unconventional petroleum

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