

# Reservoir Rock Properties

Characterizing Porous Media by Correlating Reservoir Rock Properties  
 Petroleum Reservoir Engineering: Physical properties  
 Correlation of Reservoir Rock Properties in Porous Media  
 Petrophysics  
 Determination of Dispersivity and Its Correlation with Reservoir Rock Properties  
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 Working Guide to Reservoir Rock Properties and Fluid Flow  
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 New Technologies in the Oil and Gas Industry  
 Fundamentals of Reservoir Rock Properties  
 Petroleum Reservoir Rock and Fluid Properties, Second Edition  
 Petroleum Reservoir Rock and Fluid Properties  
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 Properties of Reservoir Rocks  
 A Stochastic Model for Predicting Variations in Reservoir Rock Properties

Reservoir Rock Properties

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## CAMILA COLON

*Characterizing Porous Media by Correlating Reservoir Rock Properties* Elsevier

This book explains the fundamentals of reservoir engineering and their practical application in conducting a comprehensive field study. Two new chapters have been included in this second edition: chapter 14 and 15.

*Petroleum Reservoir Engineering: Physical properties* Academic Press

This book explains the basic technologies, concepts, approaches, and terms used in relation to reservoir rocks. Accessible to engineers in varying roles, it provides the tools necessary for building reservoir characterization and simulation models that improve resource definition and recovery, even in complex depositional environments. The book is enriched with numerous examples from a wide variety of applications, to help readers understand the topics. It also describes in detail the key relationships between the different rock properties and their variables. As such, it is of interest to researchers, engineers, lab technicians, and postgraduate students in the field of petroleum engineering.

*Correlation of Reservoir Rock Properties in Porous Media* John Wiley & Sons

The fifth edition of the Glossary of Geology contains nearly 40,000 entries, including 3,600 new terms and nearly 13,000 entries with revised definitions from the previous edition. In addition to definitions, many entries include background information and aids to syllabication. The Glossary draws its authority from the expertise of more than 100 geoscientists in many specialties who reviewed definitions and added new terms.

*Petrophysics* Elsevier

A strong foundation in reservoir rock and fluid properties is the backbone of almost all the activities in the petroleum industry. *Petroleum Reservoir Rock and Fluid Properties* offers a reliable representation of fundamental concepts and practical aspects that encompass this vast subject area. The book provides up-to-date coverage of vari

*Determination of Dispersivity and Its Correlation with Reservoir Rock Properties* Cambridge University Press

Introduction to Mineralogy -- Introduction to Petroleum Geology -- Porosity and Permeability -- Formation Resistivity and Water Saturation -- Capillary Pressure -- Wettability -- Applications of Darcy's Law -- Naturally Fractured Reservoirs -- Effect of Stress on Reservoir Rock Properties -- Fluid-Rock Interactions -- Modeling and Simulations -- Appendix.

## Rock Properties and Reservoir Engineering: A Practical View

Springer Science & Business Media

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*An Optimized Ensemble for Predicting Reservoir Rock Properties in Petroleum Industry* Cambridge University Press

This book offers a compact guide to geological core analysis, covering both theoretical and practical aspects of geological studies of reservoir cores. It equips the reader with the knowledge needed to precisely and accurately analyse cores. The book begins by providing a description of a coring plan, coring, and core sampling and continues with a sample preparation for geological analysis. It then goes on to explain how the samples are named, classified and integrated in order to understand the geological properties that dictate reservoir characteristics. Subsequently, porosity and permeability data derived from routine experiments are combined to define geological rock types and reduce reservoir heterogeneity. Sequence stratigraphy is introduced for reservoir zonation. Core log preparation is also covered, allowing reservoirs to be analysed even more accurately. As the study of core samples is the only way to accurately gauge reservoir properties, this book provides a useful guide for all geologists and engineers working with subsurface samples.

*Physical Properties of Rocks* AAPG

The need for this book has arisen from demand for a current text from our students in Petroleum Engineering at Imperial College and from post-experience Short Course students. It is, however, hoped that the material will also be of more general use to practising petroleum engineers and those wishing for an introduction into the specialist literature. The book is arranged to provide both background and overview into many facets of petroleum engineering, particularly as practised in the offshore environments of North West Europe. The material is largely based on the authors' experience as teachers and consultants and is supplemented by worked problems where they are believed to enhance understanding. The authors would like to express their

sincere thanks and appreciation to all the people who have helped in the preparation of this book by technical comment and discussion and by giving permission to reproduce material. In particular we would like to thank our present colleagues and students at Imperial College and at ERC Energy Resource Consultants Ltd. for their stimulating company, Jill and Janel for typing seemingly endless manuscripts; Dan Smith at Graham and Trotman Ltd. for his perseverance and optimism; and Lesley and Joan for believing that one day things would return to normality. John S. Archer and Colin G. Wall 1986 ix Foreword Petroleum engineering has developed as an area of study only over the present century. It now provides the technical basis for the exploitation of petroleum fluids in subsurface sedimentary rock reservoirs.

*Unconventional Reservoir Geomechanics* Springer Science & Business Media

An accessible resource, covering the fundamentals of carbonate reservoir engineering includes discussions on how, where and why carbonate are formed, plus reviews of basic sedimentological and stratigraphic principles to explain carbonate platform characteristics and stratigraphic relationships. Offers a new, genetic classification of carbonate porosity that is especially useful in predicting spatial distribution of pore networks. Includes a solution manual

*Fundamentals of Fractured Reservoir Engineering* Gulf Professional Publishing

This book comprehensively identifies most reservoir rock properties using a very simple approach. It aids junior and senior reservoir and geology engineers to understand the main fundamentals of rock properties. The book provides examples and solutions that can help the readers to quickly understand the topic. This book covers reservoir rock properties and their relationship to each other. The book includes many figures, tables, exercises, and flow diagrams to simplify the topics in different approaches.

*Geological Core Analysis* Hassell Street Press

"This book was written for students, new professionals in oil companies, and for anyone with an interest in reservoir geology. It explains the background to production geology in the context of oil field subsurface operations. It also gives practical guidelines as to how a production geologist can analyze the reservoir geology and fluid flow characteristics of an oil field with the aim of improving hydrocarbon recovery. Advice is given on how to search for the remaining oil volumes in a producing field, where these pockets are typically found, and then how to plan wells to target these volumes."--Publisher's description.

*Elements of Petroleum Geology* John Wiley & Sons

In the modern language of reservoir engineering by reservoir

description is understood the totality of basic local information concerning the reservoir rock and fluids which by various procedures are extrapolated over the entire reservoir. Fracture detection, evaluation and processing is another essential step in the process of fractured reservoir description. In chapter 2, all parameters related to fracture density and fracture intensity, together with various procedures of data processing are discussed in detail. After a number of field examples, developed in Chap. 3, the main objective remains the quantitative evaluation of physical properties. This is done in Chap. 4, where the evaluation of fractures porosity and permeability, their correlation and the equivalent ideal geometrical models versus those parameters are discussed in great detail. Special rock properties such as capillary pressure and relative permeability are reexamined in the light of a double-porosity reservoir rock. In order to complete the results obtained by direct measurements on rock samples, Chap. 5 examines fracturing through indirect measurements from various logging results. The entire material contained in these five chapters defines the basic physical parameters and indicates procedures for their evaluation which may be used further in the description of fractured reservoirs.

*Seismic Reflections of Rock Properties* Springer Nature

This book explains the basic technologies, concepts, approaches, and terms used in relation to reservoir rocks. Accessible to engineers in varying roles, it provides the tools necessary for building reservoir characterization and simulation models that improve resource definition and recovery, even in complex depositional environments. The book is enriched with numerous examples from a wide variety of applications, to help readers understand the topics. It also describes in detail the key relationships between the different rock properties and their variables. As such, it is of interest to researchers, engineers, lab technicians, and postgraduate students in the field of petroleum engineering.

*The Effect of Rock Properties on Bacteria Plugging in Reservoir Rocks* Cambridge University Press

The essential resource to an integrated approach to reservoir modelling by highlighting both the input of data and the modelling results Reservoir Modelling offers a comprehensive guide to the procedures and workflow for building a 3-D model. Designed to be practical, the principles outlined can be applied to any modelling project regardless of the software used. The author — a noted practitioner in the field — captures the heterogeneity due to structure, stratigraphy and sedimentology that has an impact on flow in the reservoir. This essential guide follows a general workflow from data QC and project management, structural modelling, facies and property modelling to upscaling and the requirements for dynamic modelling. The author discusses structural elements of a model and reviews both seismic interpretation and depth conversion, which are known to contribute most to volumetric uncertainty and shows how large-scale stratigraphic relationships are integrated into the reservoir framework. The text puts the focus on geostatistical modelling of facies and heterogeneities that constrain the distribution of reservoir properties including porosity, permeability and water saturation. In addition, the author discusses the role of uncertainty analysis in the static model and its impact on volumetric estimation. The text also addresses some typical approaches to modelling specific reservoirs through a mix of case

studies and illustrative examples and: Offers a practical guide to the use of data to build a successful reservoir model Draws on the latest advances in 3-D modelling software Reviews facies modelling, the different methods and the need for understanding the geological interpretation of cores and logs Presents information on upscaling both the structure and the properties of a fine-scale geological model for dynamic simulation Stresses the importance of an interdisciplinary team-based approach Written for geophysicists, reservoir geologists and petroleum engineers, Reservoir Modelling offers the essential information needed to understand a reservoir for modelling and contains the multidisciplinary nature of a reservoir modelling project.

*Petroleum Engineering* BoD – Books on Demand

Oil and gas are the most important non-renewable sources of energy. Exploring, producing and managing these resources in compliance with HSE standards are challenging tasks. New technologies, workflows and procedures have to be implemented. This book deals with some of these themes and describes some of the advanced technologies related to the oil and gas industry from HSE to field management issues. Some new technologies for geo-modelling, transient well testing and digital rock physics are also introduced. There are many more technical topics to be addressed in future books. This book is aimed at researchers, petroleum engineers, geoscientists and people working within the petroleum industry.

*Reservoir Modelling* Springer Nature

This book describes porous media and how their physical, petrophysical, mechanical, electric and superficial properties are determined. The different measuring methods and the corresponding equipment are described. Core analysis (conventional or special) required for any reservoir engineering operation or for using mathematical models is explained. Analyses of sidewall cores and whole cores are also described in detail. Actual core-analysis examples are given. The book will be invaluable for engineers and technicians in laboratories dealing with the physico-chemistry of hydrocarbon fields and the hydrology of underground nappes. Specialists in reservoir engineering will also find the book particularly useful.

*Geology of Carbonate Reservoirs* Springer Science & Business Media

A strong foundation in reservoir rock and fluid properties is the backbone of almost all the activities in the petroleum industry. Suitable for undergraduate students in petroleum engineering, *Petroleum Reservoir Rock and Fluid Properties, Second Edition* offers a well-balanced, in-depth treatment of the fundamental concepts and practical aspects that encompass this vast discipline. New to the Second Edition Introductions to Stone II three-phase relative permeability model and unconventional oil and gas resources Discussions on low salinity water injection, saturated reservoirs and production trends of five reservoir fluids, impact of mud filtrate invasion and heavy organics on samples, and flow assurance problems due to solid components of petroleum Better plots for determining oil and water Corey exponents from relative permeability data Inclusion of Rachford-Rice flash function, Plateau equation, and skin effect Improved introduction to reservoir rock and fluid properties Practice problems covering porosity, combined matrix-channel and matrix-fracture permeability, radial flow equations, drilling muds on fluid saturation, wettability concepts, three-phase oil relative permeability, petroleum reservoir fluids, various phase behavior

concepts, phase behavior of five reservoir fluids, and recombined fluid composition Detailed solved examples on absolute permeability, live reservoir fluid composition, true boiling point extended plus fractions properties, viscosity based on compositional data, and gas-liquid surface tension Accessible to anyone with an engineering background, the text reveals the importance of understanding rock and fluid properties in petroleum engineering. Key literature references, mathematical expressions, and laboratory measurement techniques illustrate the correlations and influence between the various properties. Explaining how to acquire accurate and reliable data, the author describes coring and fluid sampling methods, issues related to handling samples for core analyses, and PVT studies. He also highlights core and phase behavior analysis using laboratory tests and calculations to elucidate a wide range of properties.

*Working Guide to Reservoir Rock Properties and Fluid Flow* CRC Press

Presents numerical methods for reservoir simulation, with efficient implementation and examples using widely-used online open-source code, for researchers, professionals and advanced students. This title is also available as Open Access on Cambridge Core.

*Measurement of Reservoir Rock Properties in Their Natural Condition* CRC Press

This book brings together for the first time the results of research on the thermal properties and temperature-related behavior of rocks with their contained fluids, under subsurface environmental conditions. These data are of increasing importance with increased application of underground processes involving high temperature and, in some cases, low temperature environments. Some of the important processes are described in which thermal data are needed. Chapters deal with thermal properties of rocks, including heat capacities, thermal conductivities and thermal diffusivities under conditions simulating subsurface environments. Discussion about the difficulty in measuring thermal properties of rock/fluid systems is included along with newly-developed models for predicting thermal properties from more-easily measured properties. The effects of thermal reactions in rocks, differential thermal expansion, and thermal alterations are discussed in separate chapters. The effects of temperature on rock properties, as distinct from the irreversible effects of heating, are reviewed. Lastly the book deals with wellbore applications of thermal and high-temperature behavior of rocks and methods of deducing thermal properties from geophysical logs run in boreholes. Appendices include thermal units conversion factors and thermal properties of some typical reservoir rocks and fluids.

*Petrophysics* Gulf Professional Publishing

F. Jerry Lucia, working in America's main oil-rich state, has produced a work that goes after one of the holy grails of oil prospecting. One main target in petroleum recovery is the description of the three-dimensional distribution of petrophysical properties on the interwell scale in carbonate reservoirs. Doing so would improve performance predictions by means of fluid-flow computer simulations. Lucia's book focuses on the improvement of geological, petrophysical, and geostatistical methods, describes the basic petrophysical properties, important geology parameters, and rock fabrics from cores, and discusses their spatial distribution. A closing chapter deals with reservoir models as an input into flow simulators.