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Enhanced Oil Recovery - Don W. Green  
2018

**Formulas and Calculations for  
Petroleum Engineering** - Cenk Temizel  
2019-08-15

Formulas and Calculations for Petroleum Engineering unlocks the capability for any petroleum engineering individual, experienced or not, to solve problems and locate quick answers, eliminating non-productive time spent searching for that right calculation. Enhanced with lab data experiments, practice examples, and a complimentary online software toolbox, the book presents the most convenient and practical reference for all oil and gas phases of a given project. Covering the full spectrum, this reference gives single-point reference to all critical modules, including drilling, production, reservoir engineering, well testing, well logging, enhanced oil recovery, well completion, fracturing, fluid flow, and even petroleum economics. Presents single-point access to all petroleum engineering equations, including calculation of modules covering drilling, completion and fracturing Helps readers

understand petroleum economics by including formulas on depreciation rate, cashflow analysis, and the optimum number of development wells

**Petroleum Engineer's Guide to Oil Field Chemicals and Fluids** - Johannes Fink  
2021-03-14

Petroleum Engineer's Guide to Oil Field Chemicals and Fluids, Third Edition delivers all the necessary lists of chemicals by use, their basic components, benefits and environmental implications. Instead of searching through various sources, this updated reference presents a one-stop, non-commercialized approach by organizing products by function, matching the chemical to the process for practical problem-solving, and extending coverage with additional resources and supportive materials. Updates include shale specific fluids and organic additives, including swellable polymers and multi-walled carbon

nanotubes. Covering the full spectrum, including fluid loss additives and oil spill treating agents, this book is ideal for every oil and gas operation with its options for lower costs, sustainable use and enhanced production. Helps readers effectively locate and utilize the right chemical application specific to their oil and gas operation Includes updated sections on shale specific fluids, defoamers and organic additives, including biodegradable waste and swellable polymers Covers environmental factors and risks for oil field chemicals, along with the pluses and minuses of each application

### **Enhanced Oil Recovery Field Case**

**Studies** - Russell T. Johns 2013-04-10

One of the most accepted and widely used technologies for enhanced oil recovery is injection of gas or solvent that is miscible or near miscible with reservoir oil.

Understanding gas flooding requires a good

understanding of the interaction of phase behavior and flow in the reservoir, and how oil and gas develop miscibility.

*Thermal Methods* - Abdolhossein Hemmati-Sarapardeh 2023-04-18

Thermal Methods, Volume Two, the latest release in the Enhanced Oil Recovery series, helps engineers focus on the latest developments in this fast-growing area. In the book, different techniques are described in addition to the latest technologies in data mining and hybrid processes. Supported field case studies are included to illustrate a bridge between research and practical applications, making it useful for both academics and practicing engineers. Structured to start with thermal concepts and steam flooding, the book's editors then advance to more complex content, guiding engineers into areas such as hybrid thermal methods and edgier technologies that bridge solar and nuclear

energy. Supported by a full spectrum of contributors, this book gives petroleum engineers and researchers the latest research developments and field applications to drive innovation for the future of energy. Presents the latest understanding surrounding the updated research and practical applications specific to thermal enhanced oil recovery methods Provides an analysis of editors' research on available technology, including hybrid thermal-solvent processes and dual pipe configurations Teaches about additional methods, such as data mining applications, and economic and environmental considerations

*Enhanced Oil Recovery* - Don W. Green  
1998

### **Principles of Enhanced Oil Recovery -**

Caili Dai 2023-05-11

This book presents the latest progress in

enhanced oil recovery technology and introduces the application of various enhanced oil recovery methods in oilfield development. Enhanced oil recovery (EOR) is a continuous theme in oilfield development. Due to the influence of geological conditions, development mode and physical and chemical factors, more than half of the proven oil reserves remain underground and cannot be accessed. Therefore, many enhanced oil recovery methods have been developed to achieve higher oil recovery. This book presents the basic principles and provides the chemistry knowledge related to enhanced oil recovery. It also expounds the applicable criteria of chemical agents. In addition, combined with field application examples, the limitations of existing enhanced oil recovery methods are analyzed, and the future development direction of enhanced oil recovery technology is highlighted. It is

worth noting that the integral profile control and water shutoff technology in this book is widely recognized in the enhanced oil recovery industry and has achieved remarkable economic benefits. Given its scope, this book is useful for the scientific and technical personnel engaged in the study of oil recovery chemistry and enhanced oil recovery and also as a teaching reference for teachers and students majoring in petroleum engineering and oilfield chemistry.

### **Chemical Enhanced Oil Recovery**

**(cEOR)** - Laura Romero-Zerón 2016-10-19

Commercial application of chemical enhanced oil recovery (cEOR) processes is expected to grow significantly over the next decade. Thus, Chemical Enhanced Oil Recovery (cEOR): A Practical Overview offers key knowledge and understanding of cEOR processes using an evidence-based approach intended for a broad audience

ranging from field operators, researchers, to reservoir engineers dealing with the development and planning of cEOR field applications. This book is structured into three sections; the first section surveys overall EOR processes. The second section focuses on cEOR processes, while the final section describes the electrorheology technology. These sections are presented using a practical and realistic approach tailored for readers looking to improve their knowledge and understanding of cEOR processes in a nutshell.

### **Chemical Nanofluids in Enhanced Oil Recovery**

- Rahul Saha 2021-09-14  
Sustainable world economy requires a steady supply of crude oil without any production constraints. Thus, the ever-increasing energy demand of the entire world can be mostly met through the enhanced production from crude oil from existing reservoirs. With the fact that newer

reservoirs with large quantities of crude oil could not be explored at a faster pace, it will be inevitable to produce the crude oil from matured reservoirs at an affordable cost. Among alternate technologies, the chemical enhanced oil recovery (EOR) technique has promising potential to recover residual oil from matured reservoirs being subjected to primary and secondary water flooding operations. Due to pertinent complex phenomena that often have a combinatorial role and influence, the implementation of chemical EOR schemes such as alkali/surfactant/polymer flooding and their combinations necessitates upon a fundamental understanding of the potential mechanisms and their influences upon one another and desired response variables. Addressing these issues, the book attempts to provide useful screening criteria, guidelines, and rules of thumb for the identification of process parametric sets

(including reservoir characteristics) and response characteristics (such as IFT, adsorption etc.,) that favor alternate chemical EOR systems. Finally, the book highlights the relevance of nanofluid/nanoparticle for conventional and unconventional reservoirs and serves as a needful resource to understand the emerging oil recovery technology. Overall, the volume will be of greater relevance for practicing engineers and consultants that wish to accelerate on field applications of chemical and nano-fluid EOR systems. Further, to those budding engineers that wish to improvise upon their technical know-how, the book will serve as a much-needed repository.

*Enhanced Oil Recovery Field Case Studies - James Sheng* 2013-04-10

Enhanced Oil Recovery Field Case Studies bridges the gap between theory and practice in a range of real-world EOR

settings. Areas covered include steam and polymer flooding, use of foam, in situ combustion, microorganisms, "smart water"-based EOR in carbonates and sandstones, and many more. Oil industry professionals know that the key to a successful enhanced oil recovery project lies in anticipating the differences between plans and the realities found in the field. This book aids that effort, providing valuable case studies from more than 250 EOR pilot and field applications in a variety of oil fields. The case studies cover practical problems, underlying theoretical and modeling methods, operational parameters, solutions and sensitivity studies, and performance optimization strategies, benefitting academicians and oil company practitioners alike. Strikes an ideal balance between theory and practice Focuses on practical problems, underlying theoretical and modeling methods, and

operational parameters Designed for technical professionals, covering the fundamental as well as the advanced aspects of EOR

Fundamentals of Enhanced Oil and Gas Recovery from Conventional and Unconventional Reservoirs - Alireza Bahadori 2018-08-18

Fundamentals of Enhanced Oil and Gas Recovery from Conventional and Unconventional Reservoirs delivers the proper foundation on all types of currently utilized and upcoming enhanced oil recovery, including methods used in emerging unconventional reservoirs. Going beyond traditional secondary methods, this reference includes advanced water-based EOR methods which are becoming more popular due to CO<sub>2</sub> injection methods used in EOR and methods specific to target shale oil and gas activity. Rounding out with a chapter devoted to optimizing the

application and economy of EOR methods, the book brings reservoir and petroleum engineers up-to-speed on the latest studies to apply. Enhanced oil recovery continues to grow in technology, and with ongoing unconventional reservoir activity underway, enhanced oil recovery methods of many kinds will continue to gain in studies and scientific advancements. Reservoir engineers currently have multiple outlets to gain knowledge and are in need of one product go-to reference. Explains enhanced oil recovery methods, focusing specifically on those used for unconventional reservoirs Includes real-world case studies and examples to further illustrate points Creates a practical and theoretical foundation with multiple contributors from various backgrounds Includes a full range of the latest and future methods for enhanced oil recovery, including chemical, waterflooding, CO2 injection and thermal

**Microemulsion** - Juan Mejuto 2019-09-18  
This book aims to provide readers with some of the current trends in microemulsions as scalable chemical nanoreactors. The chapters include discussions on microemulsions as reaction media, taking advantage of both the special behavior of trapped water inside their microdroplets and their potential use as a template for nanomaterials. The information contained in this book covers topics that will be of interest to students and researchers in physical chemistry, chemical engineering, and material science. In addition, this book will serve as a tribute in memoriam to Prof. Julio Casado, Professor of Physical Chemistry at the Universities of Santiago de Compostela and Salamanca and Doctor Honoris Causa from the University of Vigo, who died on April 2, 2018. Sit tibi terra levis.

**ICIPEG 2016** - Mariyamni Awang



2017-01-20

This book presents the proceedings of the 4th International Conference on Integrated Petroleum Engineering and Geosciences 2016 (ICIPEG 2016), held under the banner of World Engineering, Science & Technology Congress (ESTCON 2016) at Kuala Lumpur Convention Centre from August 15 to 17, 2016. It presents peer-reviewed research articles on exploration, while also exploring a new area: shale research. In this time of low oil prices, it highlights findings to maintain the exchange of knowledge between researchers, serving as a vital bridge-builder between engineers, geoscientists, academics, and industry.

### **Chemical Enhanced Oil Recovery -**

Patrizio Raffa 2019-07-22

This book aims at presenting, describing, and summarizing the latest advances in polymer flooding regarding the chemical

synthesis of the EOR agents and the numerical simulation of compositional models in porous media, including a description of the possible applications of nanotechnology acting as a booster of traditional chemical EOR processes. A large part of the world economy depends nowadays on non-renewable energy sources, most of them of fossil origin. Though the search for and the development of newer, greener, and more sustainable sources have been going on for the last decades, humanity is still fossil-fuel dependent. Primary and secondary oil recovery techniques merely produce up to a half of the Original Oil In Place. Enhanced Oil Recovery (EOR) processes are aimed at further increasing this value. Among these, chemical EOR techniques (including polymer flooding) present a great potential in low- and medium-viscosity oilfields. • Describes recent advances in chemical

enhanced oil recovery. • Contains detailed description of polymer flooding and nanotechnology as promising boosting tools for EOR. • Includes both experimental and theoretical studies. About the Authors Patrizio Raffa is Assistant Professor at the University of Groningen. He focuses on design and synthesis of new polymeric materials optimized for industrial applications such as EOR, coatings and smart materials. He (co)authored about 40 articles in peer reviewed journals. Pablo Druetta works as lecturer at the University of Groningen (RUG) and as engineering consultant. He received his Ph.D. from RUG in 2018 and has been teaching at a graduate level for 15 years. His research focus lies on computational fluid dynamics (CFD).

**Chemical Methods** - Abdolhossein Hemmati-Sarapardeh 2021-11-30  
Chemical Methods, a new release in the

Enhanced Oil Recovery series, helps engineers focus on the latest developments in one fast-growing area. Different techniques are described in addition to the latest technologies in data mining and hybrid processes. Beginning with an introduction to chemical concepts and polymer flooding, the book then focuses on more complex content, guiding readers into newer topics involving smart water injection and ionic liquids for EOR. Supported field case studies illustrate a bridge between research and practical application, thus making the book useful for academics and practicing engineers. This series delivers a multi-volume approach that addresses the latest research on various types of EOR. Supported by a full spectrum of contributors, this book gives petroleum engineers and researchers the latest developments and field applications to drive innovation for the future of energy.

Presents the latest research and practical applications specific to chemical enhanced oil recovery methods Helps users understand new research on available technology, including chemical flooding specific to unconventional reservoirs and hybrid chemical options Includes additional methods, such as data mining applications and economic and environmental considerations

**A Comprehensive Study of CO2 Enhanced Oil Recovery in the Langgak Field** - Dr.-Eng, Muslim 2021-04-08

This book is based on the laboratory and field research on Langgak Field, operated by SPR Langgak as one of Province-Owned Oil Company. This book is written to be a guideline and to add knowledge related to enhanced oil recovery (EOR) activity, particularly CO2 Injection. The authors are aware that the information about EOR activity in Indonesia is still limited, so with

the presence of this book, we hope it can be made as a reference, not only for students but also for engineers and other researchers who would like to carry out or perform EOR project using CO2 Injection. The authors realize that there are some flaws in the completion of this book. Nonetheless, the authors believe this book will serve as a foundation for other CO2 EOR projects in Indonesia and improve the readers' understanding of CO2 Injection activity. Special thanks are given to the Director of PT. SPR Langgak, Mr Ikin Faizal, who gave us excellent support in the making of this book.

**Economically and Environmentally Sustainable Enhanced Oil Recovery** - M. R. Islam 2020-03-17

There have been many books on the topic of Enhanced Oil Recovery (EOR) over the last 100 years. They all, however, focus on how to recover more oil faster, taking a rather

myopic approach. The solutions presented all work fantastically in theory and even in the laboratory, but each fails to produce results in the field with long-term success. The petroleum industry is almost resigned to the belief that for an EOR technique to be successful, it must be propped up with public funds or must compromise environmental integrity. In line with modern engineering practices, previous books discuss how existing technologies can be tweaked to accommodate for any shortcomings that just came to light. This book is unlike any other book on the topic of recovery in particular and engineering in general. This groundbreaking volume is a continuation of the author's and his research group's work that started publishing on the subject of global sustainability involving energy and the environment, dating back to early 2000s. Starting with a paradigm shift in

engineering that involves a long-term focus, rather than looking for short-term solutions, the methods and theories presented here delve into applying green engineering and zero waste principles to EOR. Historically, EOR has received mixed success, mainly because innovations in these disciplines relied heavily on processed materials, which are both uneconomical and toxic to the environment. This book explains how engineers missed entirely the causes of unsustainability in these technologies due to the prevalence of many myths that are embedded in modern engineering. Once these myths are deconstructed, the appropriate technologies emerge and the merits of them both in terms of economic and environmental benefits become clear. The book reveals how previous practices in EOR can be replaced with their sustainable versions while saving in material costs. A number of innovative technologies are

introduced that can render well known technologies, such as steam flood, in situ combustion, chemical flooding, and microbial EOR environmentally sustainable and economically attractive. A triple dividend is received once these technologies are applied in otherwise marginal reservoirs, unconventional plays and even abandoned formations. The overall reserve, which reflects recoverable oil with new technologies, goes up drastically. Further benefits are drawn when processes such as value addition of waste material is performed. Overall this book shows how EOR can be rendered green while increasing the profitability. This is in stark contrast to the past practices that considered environmental integrity as a drain on profitability. This book proves that a paradigm shift can turn a “technological disaster” into a technological marvel.

**Waterflooding** - G. Paul Willhite 1986  
Waterflooding begins with understanding the basic principles of immiscible displacement, then presents a systematic procedure for designing a waterflood.

**Enhanced Oil Recovery Processes** -  
Ariffin Samsuri 2019-12-18

Concerned with production decline, shortages of new oil reserves, and increasing world energy demand, the oil sector continues to search for economic and efficient techniques to enhance their oil recovery from the existing oil field using several enhanced oil recovery techniques (EOR) methods. Despite its high efficiency, widely acclaimed potentials, and limitations, the Low Salinity Water Flooding (LSWF), hybrid, and nanotechnology applications have gained vast interest with promising future to increase ultimate oil recovery, tackle operational challenges, reduce environmental damage, and allow

the highest feasible recoveries with lower production costs. This synergistic combination has opened new routes for novel materials with fascinating properties. This book aims to provide an overview of EOR technology such as LSWF, hybrid, and nanotechnology applications in EOR processes.

**Natural Surfactants** - Neha Saxena  
2021-07-15

This book focuses on the use of natural surfactants in enhanced oil recovery, providing an overview of surfactants, their types, and different physical-chemical properties used to analyse the efficiency of surfactants. Natural surfactants discuss the history of the surfactants, their classification, and the use of surfactants in petroleum industry. Special attention has been paid to natural surfactants and their advantages over synthetic surfactants, including analysing their properties such as

emulsification, interfacial tension, and wettability and how these can be used in EOR. This book offers an overview for researchers and graduate students in the fields of petroleum and chemical engineering, as well as oil and gas industry professionals.

**Primer on Enhanced Oil Recovery** -  
Vladimir Vishnyakov 2019-11-05

Primer on Enhanced Oil Recovery gives the oil and gas market the introductory information it needs to cover the physical and chemical properties of hydrocarbon reservoir fluids and rock, drilling operations, rock-fluid interactions, recovery methods, and the economy of enhanced oil recovery projects. Beginning with introductory materials on basic physics and oil-rock interaction, the book then progresses into well-known types of EOR, such as gas injection and microbial EOR. Other sections cover hybrid EOR, smart

water/low salinity and solar EOR. Worldwide case study examples give engineers the go-to starting point they need to understand the fundamentals of EOR techniques and data. Discusses basic physics and chemistry in oil, oil-rock interaction, variation of oil, and interaction properties with temperature Helps readers understand why and when EOR can be used Includes data on EOR implementation and economics

### **Advances in Petroleum Technology -**

Subrata Borgohain Gogoi 2020-11-25

An impending energy crisis is looming globally, which has led to the use of effluents from paper mills for enhanced oil recovery (EOR), CO2 flooding and wastewater treatment by biosurfactants, and the current market demand for cost-competitive and environment-friendly alternatives to synthetic chemicals. This up-to-date book on petroleum technology

provides a comprehensive review of the background and recent advances in the field of petroleum technology and highlights various facets of the fascinating world of upstream, midstream and downstream petroleum technologies. It comprises 25 chapters, each representing the progress, prospects and challenges in petroleum research, and focuses on the tremendous progress made by the scientific community in this research field. The book covers in detail EOR processes, reservoir engineering, production operation and optimisation, pipeline transportation and storage, CO2 capture and sequestration, wastewater management and innovative treatment, refining technologies, environmental chemistry, and biochemistry and biotechnology for the petroleum industry.

### **Proceedings of the ... Wyoming Enhanced Oil Recovery Symposium -**

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1991

Sustainability Issues in Environmental Geotechnics - Hesham Ameen 2018-10-27

This edited volume deals with the attempts made by the scientists and practitioners to address contemporary issues in geoenvironmental engineering such as characterization of dredged sediments, geomaterials and waste, valorization of waste, sustainability in waste management and some other geoenvironmental issues that are becoming quite relevant in today's world especially in view of the high urbanization rates, advancement in technologies, and changes in consumption behavior of people. In this regard, wastes generated through the daily activities of individuals and organizations pose many challenges in their management. The volume is based on the best contributions to the 2nd GeoMEast International Congress

and Exhibition on Sustainable Civil Infrastructures, Egypt 2018 - The official international congress of the Soil-Structure Interaction Group in Egypt (SSIGE).

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Recovery Improvement - Qiwei Wang 2022-09-06

Oil and Gas Chemistry Management Series brings an all-inclusive suite of tools to cover all the sectors of oil and gas chemicals from drilling, completion to production, processing, storage, and transportation. The third reference in the series, Recovery Improvement, delivers the critical chemical basics while also covering the latest research developments and practical solutions. Organized by the type of enhanced recovery approaches, this volume facilitates engineers to fully understand underlying theories, potential challenges, practical problems, and keys for successful



deployment. In addition to the chemical, gas, and thermal methods, this reference volume also includes low-salinity (smart) water, microorganism- and nanofluid-based recovery enhancement, and chemical solutions for conformance control and water shutoff in near wellbore and deep in the reservoir. Supported by a list of contributing experts from both academia and industry, this book provides a necessary reference to bridge petroleum chemistry operations from theory into more cost-efficient and sustainable practical applications. Covers background information and practical guidelines for various recovery enhancement domains, including chapters on enhanced oil recovery in unconventional reservoirs and carbon sequestration in CO<sub>2</sub> gas flooding for more environment-friendly and more sustainable initiatives Provides effective solutions to control chemistry-related issues

and mitigation strategies for potential challenges from an industry list of experts and contributors Delivers both up-to-date research developments and practical applications, featuring various case studies CO<sub>2</sub> Storage Coupled with Enhanced Oil Recovery - Kun Sang Lee 2020-03-09 This book provides a comprehensive and detailed description of the various mechanisms of the CCS-EOR process. Whereas previous texts have primarily focused on carbon capture and storage (CCS) and enhanced oil recovery (EOR) separately, this book provides a general overview of both technologies when used together. Coupled CCS-EOR technology has become increasingly important, as it overcomes the respective shortcomings of the two technologies. The book presents an integrated numerical model including the hysteresis effect, solubility trapping, miscibility, and formation damage by

asphaltene deposition. The experimental and model-based evaluation of fluid properties is also discussed. The book concludes by discussing the latest research into CO<sub>2</sub> storage coupled with EOR, most notably performance control by including additives in CO<sub>2</sub> injection, and CO<sub>2</sub> injection into shale reservoirs. Ideally suited for graduate students and researchers in the fields of carbon capture, utilisation, and storage, the book shares essential insights into maximising the efficiency of CCS and EOR alike.

*Enhanced Oil Recovery Field Case Studies* - James J. Sheng 2013-04-10

This chapter first reviews thermal properties of rock and fluids and related energy concepts. The fundamentals of heat transfer and heat loss, theories to estimate the heated area and oil recovery performance are briefly presented. The mechanisms and screening criteria of steam

flooding are discussed. After the general practice in steam flooding projects is discussed, field cases are presented which include Kern River in California, Duri steam flood in Indonesia, West Coalinga Field in California, Karamay Field and the Qi-40 block in Laohe, China.

**Enhanced Oil Recovery** - Vladimir Alvarado 2010-07-30

Enhanced-Oil Recovery (EOR) evaluations focused on asset acquisition or rejuvenation involve a combination of complex decisions, using different data sources. EOR projects have been traditionally associated with high CAPEX and OPEX, as well as high financial risk, which tend to limit the number of EOR projects launched. In this book, the authors propose workflows for EOR evaluations that account for different volumes and quality of information. This flexible workflow has been successfully applied to oil property evaluations and EOR feasibility studies in

many oil reservoirs. The methodology associated with the workflow relies on traditional (look-up tables, XY correlations, etc.) and more advanced (data mining for analog reservoir search and geology indicators) screening methods, emphasizing identification of analogues to support decision making. The screening phase is combined with analytical or simplified numerical simulations to estimate full-field performance by using reservoir data-driven segmentation procedures. Case Studies from Asia, Canada, Mexico, South America and the United States Assets evaluated include reservoir types ranging from oil sands to condensate reservoirs. Different stages of development and information availability are discussed

**Introduction to Enhanced Oil Recovery (EOR) Processes and Bioremediation of Oil-Contaminated Sites** - Laura Romero-Zerón 2012-05-23

This book offers practical concepts of EOR processes and summarizes the fundamentals of bioremediation of oil-contaminated sites. The first section presents a simplified description of EOR processes to boost the recovery of oil or to displace and produce the significant amounts of oil left behind in the reservoir during or after the course of any primary and secondary recovery process; it highlights the emerging EOR technological trends and the areas that need research and development; while the second section focuses on the use of biotechnology to remediate the inevitable environmental footprint of crude oil production; such is the case of accidental oil spills in marine, river, and land environments. The readers will gain useful and practical insights in these fields.

**Modern Chemical Enhanced Oil Recovery** - James Sheng 2010-11-25

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Crude oil development and production in U.S. oil reservoirs can include up to three distinct phases: primary, secondary, and tertiary (or enhanced) recovery. During primary recovery, the natural pressure of the reservoir or gravity drive oil into the wellbore, combined with artificial lift techniques (such as pumps) which bring the oil to the surface. But only about 10 percent of a reservoir's original oil in place is typically produced during primary recovery. Secondary recovery techniques to the field's productive life generally by injecting water or gas to displace oil and drive it to a production wellbore, resulting in the recovery of 20 to 40 percent of the original oil in place. In the past two decades, major oil companies and research organizations have conducted extensive theoretical and laboratory EOR (enhanced oil recovery) researches, to include validating pilot and field trials relevant to much needed

domestic commercial application, while western countries had terminated such endeavours almost completely due to low oil prices. In recent years, oil demand has soared and now these operations have become more desirable. This book is about the recent developments in the area as well as the technology for enhancing oil recovery. The book provides important case studies related to over one hundred EOR pilot and field applications in a variety of oil fields. These case studies focus on practical problems, underlying theoretical and modelling methods, operational parameters (e.g., injected chemical concentration, slug sizes, flooding schemes and well spacing), solutions and sensitivity studies, and performance optimization strategies. The book strikes an ideal balance between theory and practice, and would be invaluable to academicians and oil company practitioners alike. Updated chemical EOR

fundamentals providing clear picture of fundamental concepts Practical cases with problems and solutions providing practical analogues and experiences Actual data regarding ranges of operation parameters providing initial design parameters Step-by-step calculation examples providing practical engineers with convenient procedures

Gas Injection Methods - Zhaomin Li  
2022-09-27

The Enhanced Oil Recovery Series delivers a multivolume approach that addresses the latest research on various types of EOR. The second volume in the series, Gas Injection Methods, helps engineers focus on the latest developments in one of the fastest growing areas. Different techniques are described in addition to the latest technology such as data mining and unconventional reservoirs. Supported field case studies are included to show a bridge

between research and practical application, making it useful for both academics and practicing engineers. Structured to start with an introduction on various gas types and different gas injection methods, screening criteria for choosing gas injection method, and environmental issues during gas injection methods, the editors then advance on to more complex content, guiding the engineer into newer topics involving CO<sub>2</sub> such as injection in tight oil reservoirs, shale oil reservoirs, carbonated water, data mining, and formation damage. Supported by a full spectrum of contributors, this book gives petroleum engineers and researchers the latest research developments and field applications to drive innovation for the future. Helps readers understand the latest research and practical applications specific to foam flooding and gas injection Provides readers with the latest technology,

including nanoparticle-stabilized foam for mobility control and carbon storage in shale oil reservoirs Teaches users about additional methods such as data mining applications and economic and environmental considerations

**Oil Field Chemicals** - Johannes Fink  
2003-08-19

Oil field chemicals are gaining increasing importance, as the resources of crude oil are decreasing. An increasing demand of more sophisticated methods in the exploitation of the natural resources emerges for this reason. This book reviews the progress in the area of oil field chemicals and additives of the last decade from a rather chemical view. The material presented is a compilation from the literature by screening critically approximately 20,000 references. The text is ordered according to applications, just in the way how the jobs are emerging in

practice. It starts with drilling, goes to productions and ends with oil spill. Several chemicals are used in multiple disciplines, and to those separate chapters are devoted. Two index registers are available, an index of chemical substances and a general index. \* Gives an introduction to the chemically orientated petroleum engineer. \* Provides the petroleum engineer involved with research and development with a quick reference tool. \* Covers interdisciplinary matter, i.e. connects petroleum recovery and handling with chemical aspects.

**Enhanced Oil Recovery in Shale and Tight Reservoirs** - James J. Sheng  
2019-11-07

Oil Recovery in Shale and Tight Reservoirs delivers a current, state-of-the-art resource for engineers trying to manage unconventional hydrocarbon resources. Going beyond the traditional EOR methods, this book helps readers solve key

challenges on the proper methods, technologies and options available. Engineers and researchers will find a systematic list of methods and applications, including gas and water injection, methods to improve liquid recovery, as well as spontaneous and forced imbibition. Rounding out with additional methods, such as air foam drive and energized fluids, this book gives engineers the knowledge they need to tackle the most complex oil and gas assets. Helps readers understand the methods and mechanisms for enhanced oil recovery technology, specifically for shale and tight oil reservoirs Includes available EOR methods, along with recent practical case studies that cover topics like fracturing fluid flow back Teaches additional methods, such as soaking after fracturing, thermal recovery and microbial EOR

## **Formation Damage during Improved Oil**

**Recovery** - Bin Yuan 2018-05-31  
Formation Damage during Improved Oil Recovery: Fundamentals and Applications bridges the gap between theoretical knowledge and field practice by presenting information on formation damage issues that arise during enhanced oil recovery. Multi-contributed technical chapters include sections on modeling and simulation, lab experiments, field case studies, and newly proposed technologies and methods that are related to formation damage during secondary and tertiary recovery processes in both conventional and unconventional reservoirs. Focusing on both the fundamental theories related to EOR and formation damage, this reference helps engineers formulate integrated and systematic designs for applying EOR processes while also considering formation damage issues. Presents the first complete reference addressing formation damage as

a result of enhanced oil recovery Provides the mechanisms for formation damage issues that are coupled with EOR Suggests appropriate preventative actions or responses Delivers a structured approach on how to understand the fundamental theories, practical challenges and solutions *Flow and Transport in Subsurface Environment* - Natarajan Narayanan 2018-04-26

This book presents a collection of contributions from experts working on flow and transport in porous media around the globe. The book includes chapters authored by engineers, scientists, and mathematicians on single and multiphase flow and transport in homogeneous as well as heterogeneous porous media. Addressing various experimental, analytical, and modeling aspects of transport in subsurface domains, the book offers a valuable resource for graduate students,

researchers, and professionals alike. [Surfactants for Enhanced Oil Recovery Applications](#) - Muhammad Sagir 2020-01-29 This book provides a concise treatise on the use of surfactants in enhanced oil recovery (EOR), including information on key types of surfactants and their respective applications in the wider petroleum industry. The authors discuss carbon dioxide EOR, alkaline-surfactant-polymer flooding strategies, and the use of surfactants as a means of reducing interfacial tension, while also paying special attention to the challenges involved in using surfactants for enhanced oil recovery, such as the difficult issue of surfactant adsorption on reservoir rock. All chapters highlight and are based on the authors' own laboratory-scale case studies. Given its content, the book offers a valuable asset for graduate students of petroleum and chemical engineering, as well as



researchers in the field of chemical enhanced oil recovery. It will also be of interest to professionals involved in enhanced industrial oil recovery.

**Microbial Enhanced Oil Recovery** - Lalit Pandey 2021-10-21

This book presents the fundamentals of the reservoir and interfacial engineering. The book systematically starts with the basics of primary, secondary and tertiary (enhanced) oil recovery and emphasizes on the theory of microbial-enhanced oil recovery (MEOR) and its potential toward recovery of oil in place. Different approaches of MEOR such as in-situ, ex-situ, and integration of chemical- and microbial-enhanced oil recovery (EOR) are discussed in detail. This book highlights the link between the effectiveness of MEOR and the local reservoir conditions, crude oil characteristics, and indigenous microbial community. The latest implementations of

MEOR across the globe are highlighted as case studies to outline the potential as well as the scope of MEOR. Given the topics covered, this book will be useful for professionals and researchers working in the areas of petroleum science and engineering, chemical engineering, biotechnology, bioengineering, and other related fields.

**Theory and Practice in Microbial Enhanced Oil Recovery** - Kun Sang Lee 2020-07-18

Selection of the optimal recovery method is significantly influenced by economic issues in today's oil and gas markets. Consequently, the development of cost-effective technologies, which bring maximum oil recovery, is the main interest in today's petroleum research communities. Theory and Practice in Microbial Enhanced Oil Recovery provides the fundamentals, latest research and creditable field

applications. Microbial Enhanced Oil Recovery (MEOR) is potentially a low-priced and eco-friendly technique in which different microorganisms and their metabolic products are implemented to recover the remaining oil in the reservoir. Despite drastic advantages of MEOR technology, it is still not fully supported in the industry due to lack of knowledge on microbial activities and their complexity of the process. While some selected strategies have demonstrated the feasibility to be used on a mass scale through both lab and field trials, more research remains to implement MEOR into more oil industry practices. This reference delivers comprehensive descriptions on the fundamentals including basic theories on geomicrobiology, experiments and modeling, as well as current tested field applications. Theory and Practice in Microbial Enhanced Oil Recovery gives

engineers and researchers the tool needed to stay up to date on this evolving and more sustainable technology. Covers fundamental screening criteria and theories selective plugging and mobility control mechanisms Describes the basic effects on environmental parameters and the mechanics of simulation, including microbial growth kinetics Applies up to date practical applications proven in both the lab and the field

*Enhanced Oil Recovery Field Case Studies - Dongmei Wang 2013-04-10*

This chapter describes polymer flooding applications as a mobility control and profile modification process to enhance oil recovery from mature fields. Successful experience from the Daqing Oilfield, the largest oil field application of polymer flooding, is summarized. The experience will be of considerable value to future polymer flood applications elsewhere in oil

fields with appropriate reservoir conditions. Based on laboratory research and field applications at Daqing, technologies were developed that expand conventional ideas concerning favorable conditions for mobility improvement by polymer flooding. These include: 1. The oil strata and well pattern design should be optimized and integrated considering interwell connectivity and permeability differential among the oil zones. 2. The injection procedures and formulation are the key points when

designing a polymer project—such as profile modification before polymer injection and zone isolation during polymer injection, higher molecular weight (MW) of the polymer used in the injected slugs, large polymer bank size, higher polymer concentrations and injection rate based on the well spacing, and injection pressure. 3. Surface mixing, injection facilities, oil production, and produced water treatment are important to reservoir engineering aspects of polymer flooding.