

# Thermal Recovery Of Oil And Bitumen

Enhanced Oil Recovery  
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Basic Concepts in Enhanced Oil Recovery  
Processes  
A Study of the Effect of the Curtailment of Production on Oil Recovery  
Applied  
Enhanced Oil Recovery  
Thermal Recovery of Oil and Bitumen  
Enhanced Oil  
Recovery  
Fundamentals of Enhanced Oil Recovery  
Enhanced Oil Recovery Potential in the  
United States  
Microbial Enhanced Oil Recovery  
Introduction to Enhanced Oil Recovery  
(EOR) Processes and Bioremediation of Oil-Contaminated Sites  
Fundamentals of Enhanced  
Oil Recovery  
Enhanced Oil Recovery  
Polymer-Improved Oil Recovery  
Enhanced Oil  
Recovery  
Enhanced Oil Recovery Processes  
Recovery Improvement  
Thermal Methods of Oil  
Recovery  
Heavy Crude Oil Recovery  
Chemical Enhanced Oil Recovery (cEOR) Marcel Latil  
M. M. Schumacher M. Baviere Interstate Oil Compact Commission. Secondary Recovery  
and Pressure Maintenance Committee Aurel Carcoana Roger M. Butler Larry W. Lake H.K.  
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presents in a step by step progression the complex problems of oil displacement in porous media using eor methods

describes the recovery of heavy oils and bitumen by in situ thermal methods and discusses the technical factors and problems involved the book summarizes in a quantitative manner techniques used in current petroleum industry practice

the use of microorganisms and their metabolic products to stimulate oil production is currently receiving renewed interest worldwide this technique involves the injection of selected microorganisms into the reservoir and the subsequent stimulation and transportation of their in situ growth products in order that their presence will aid in further reduction of residual oil left in the reservoir after secondary recovery is exhausted although unlikely to replace conventional microbial enhanced oil recovery this unique process seems superior in many respects self duplicating units namely the bacteria cells are injected into the reservoir and by their in situ multiplication they magnify beneficial effects this new approach to enhancement of oil recovery was initiated in 1980 and the first results were published in the proceedings of two international conferences this book evolved from these conferences and was designed to encompass all current aspects of microbial enhanced oil recovery the development of specific cultures increase of the population for field application various methods for field applications and the results and the environmental concerns associated with this newly developed technology it provides a comprehensive treatise of the subject and is arranged to show the laboratory development of microbes suited to microbial enhanced oil recovery and the perpetuation of the special cultures in a petroleum reservoir thus this book has specific usefulness in the laboratory the oilfield and the classroom although not written as a text book it can be used as a reference volume for graduate studies in enhanced oil recovery

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

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

the importance of oil in the world economy cannot be overstated and methods for recovering oil will be the subject of much scientific and engineering research for many years to come even after the application of primary depletion and secondary recovery processes usually waterflooding much oil usually remains in a reservoir and indeed in some heterogeneous reservoir systems as much as 70 of the original oil may remain thus there is an enormous incentive for the development of improved or enhanced methods of oil recovery aimed at recovering some portion of this remaining oil the techniques used range from improved secondary flooding methods including polymer and certain gas injection processes through to enhanced or tertiary methods such as chemical surfactant caustic foam gas miscible carbon dioxide gas reinjection and thermal steam soak and drive in situ combustion the distinction between the classification of the methods usually refers to the target oil that the process seeks to recover that is in improved recovery we are usually aiming to increase the oil sweep efficiency whereas in tertiary recovery we aim to mobilise and recover residual or capillary trapped oil there are a few books and collections of articles which give general overviews of improved and enhanced oil recovery methods however for each recovery method there is such a wide range of interconnected issues concerning the chemistry physics and fluid mechanics of flow in porous media that rarely are these adequately reviewed

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

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

within the last 10 years the world has come to a point where the easily explorable oil deposits have now been found and it is anticipated that such deposits will be depleted by the beginning of the twenty first century however the increasing demand of man kind for energy has caused technologists to look into ways of finding new sources or to reevaluate unconventional sources which in the past have not been economical in this respect heavy crude and tar sand oils are becoming important in fulfilling the world's energy requirements what are heavy crude and tar sand oils there is still some confusion as to their definitions inasmuch as they vary among organizations and countries in an effort to set agreed meanings unitar in a meeting in february 1982 in venezuela proposed the following definitions see also table 1 1 heavy crude oil and tar sand oil are petroleum or petroleum like liquids or semi solids naturally occurring in porous media the porous media are sands sandstone and carbonate rocks 2 these oils will be characterized by viscosity and density viscosity will be used to define heavy crude oil and tar sand oil and density oapi will be used when viscosity measurements are not available 3 heavy crude oil has a gas free viscosity of 100 10000 mpa s cp 3 o at reservoir temperatures or a density of 943 kg m 20 api 3 o o to 1000 kg m 10 api at 15.6 c and at atmospheric pressure

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

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