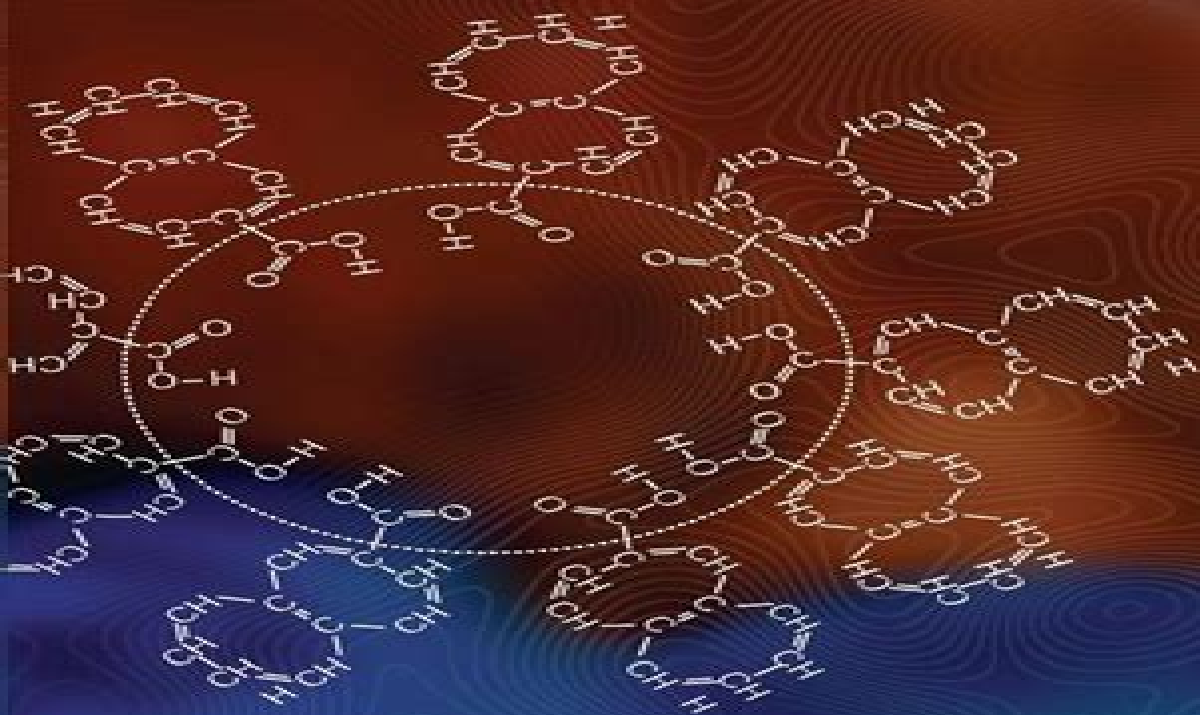


# CRUDE OIL

## Waxes, Emulsions, and Asphaltenes



J.R. Becker

# Crude Oil Waxes Emulsions Asphaltenes

**Jitendra Sangwai, Abhijit Dandekar**



## **Crude Oil Waxes Emulsions Asphaltenes:**

**Crude Oil Waxes, Emulsions, and Asphaltenes** J. R. Becker, 1997 Oilfield waxes and emulsions are petroleum byproducts that increase the costs of production transportation and refining by causing equipment failures plugged pipelines and decreased throughput This book is the first of its kind in explaining the physical chemical problems associated with waxes and emulsions and the new technologies for treatment of these problems *Production Chemicals for the Oil and Gas Industry* Malcolm A. Kelland, 2016-04-19 Modern production methods and environmental constraints demand chemical solutions And as oilfields age the need for chemicals to ensure steady production increases *Production Chemicals for the Oil and Gas Industry* describes classes of production chemicals for use topside and downhole in the upstream oil and gas industry It includes coverage of **Crude Oil Emulsions** Manar Abdel-Raouf, 2012-03-02 Petroleum black gold is the most important nonrenewable source of energy It is a complex mixture of different phases and components Refining it provides a vast number of organic compounds all of them of which are used to produce petroleum based products for numerous applications from industry to medicine from clothing to food industries We can find petroleum based products all around us This book deals with some important topics related to petroleum such as its chemical composition and stability It is well known that the chemical composition of crude oil differs according to the site of production and its grade varies from waxy to asphaltenic crude Both of them are refined to produce different products The stability of crude oil on aging and transportation is governed by several factors and these factors are included within this book Some new technologies for petroleum characterization are also introduced This book is aimed at researchers chemical engineers and people working within the petroleum industry **Emulsions and Emulsion Stability** Johan Sjöblom, 2005-11-21 *Emulsions and Emulsion Stability* Second Edition provides comprehensive coverage of both theoretical and practical aspects of emulsions The book presents fundamental concepts and processes in emulsified systems such as flocculation coalescence stability precipitation deposition and the evolution of droplet size distribution The book *Emulsions* Johan Sjöblom, 2012-12-06 Proceedings of the NATO Advanced Research Workshop Bergen Norway June 24 25 1991 *Encyclopedic Handbook of Emulsion Technology* Johan Sjöblom, 2001-03-16 A discussion of fundamental characteristics theories and applications for liquid liquid colloidal dispersions It profiles experimental and traditional measurement techniques in a variety of emulsified systems including rheology nuclear magnetic resonance dielectric spectroscopy microcalorimetry video enhanced microscopy and conductivity *Asphaltenes, Heavy Oils, and Petroleomics* Oliver C. Mullins, Eric Y. Sheu, Ahmed Hammami, Alan G. Marshall, 2007-11-08 With substantial contributions from experienced industrial scientists and engineers this work will have real application towards improving process efficiency and improvement in the trillion dollar global petroleum industry It presents an overview of the emerging field of petroleomics which endeavors to understand the fundamental components of crude oil Petroleomics promises to revolutionize petroleum science in much the same way that genomics transformed the study of

medicine not long ago Asphaltenes are a particular focus with many chapters devoted to the analysis of their structure and properties      Structures and Dynamics of Asphaltenes Oliver C. Mullins, Eric Y. Sheu, 2013-11-11 The investigative assault upon the enigmatic asphaltenes has recently resulted in significant advances in many varied disciplines Taken individually each discipline exposes certain facets of asphaltenes but each alone can never reveal asphaltenes from all vantages Even seemingly narrowly focused issues such as the molecular structures of asphaltenes or the colloidal structures of asphaltenes require a confluence of many lines of investigation to yield an understanding which differs from truth by diminishing uncertainty An holistic treatment of the asphaltenes is a powerful approach to evolve further their understanding For example examination of asphaltenes at the highest resolution yields molecular structure A slight increase in scale probes asphaltene colloidal structure Weaving together asphaltene studies performed at different length scales results in a fabric which envelops an encompassing vision of asphaltenes At the same time the interfaces of these hierarchical studies provide additional constraints on imagination more than investigations at individual length scales alone These considerations shaped the timing format and the content of our book The editors are very appreciative of the diligence and hard work manifest in each of the contributed chapters herein We thank the contributing authors for making this project a success Oliver C Mullins Eric Y Sheu vii CONTENTS I Asphaltenes Types and Sources      The Use of Chemicals in Oil Spill Response Peter Lane, 1995 Laboratory work and ecological and operational considerations of using chemical dispersants as responses to oil spills are updated by 11 papers from a symposium in Victoria British Columbia in October 1994 The topics tend to be narrower and deeper than those presented in previous symposia on the      **Response to Marine Oil Pollution** Douglas Cormack, 2013-04-17 Response to Marine Oil Pollution Review and Assessment is the essential source book now updated for all involved in marine oil pollution consequences and response It covers policy planning and operations and provides technical assessment of the true nature of the problem of the means to maximise the performance of current techniques and equipment and of the bases for future improvements This book provides a fundamental understanding of the oil properties and processes which determine the persistence and impacts of oils in the marine environment It establishes parameters against which to evaluate performance of all current techniques and equipment and the environmental impacts of their use It identifies design parameters and makes proposals for the creation and development of more effective equipment and techniques The book also shows how a fresh approach to cargo transfer and the scaling of spillage response provision to oil releases on immediate impact will be more effective overall and will ensure that approved waste handling and disposal facilities are not overwhelmed The recent Sea Empress incident is reviewed to illustrate the points made and conclusions reached and to emphasise the need for thorough salvage planning for all future incidents      *Practical Aspects of Flow Assurance in the Petroleum Industry* Jitendra Sangwai, Abhijit Dandekar, 2022-07-07 With easily accessible oil reserves dwindling petroleum engineers must have a sound understanding of how to access technically challenging resources

especially in the deepwater environment These technically challenging resources bring with them complexities around fluid flow not normally associated with conventional production systems and engineers must be knowledgeable about navigating these complexities Practical Aspects of Flow Assurance in the Petroleum Industry aims to provide practical guidance on all aspects of flow assurance to offer readers a ready reference on how to ensure uninterrupted transport of processed fluids throughout the flow infrastructure by covering all practical aspects of flow assurance being written in such a way that any engineer dealing with the oil and gas industry will be able to understand the material containing solved examples on most topics placing equal emphasis on experimental techniques and modeling methods and devoting an entire chapter to the analysis and interpretation of published case studies With its balance of theory and practical applications this work provides petroleum engineers from a variety of backgrounds with the information needed to maintain and enhance productivity

**Subsea Engineering Handbook** Yong Bai,Qiang Bai,2012-01-13 Subsea production systems overview of subsea engineering subsea field development subsea distribution system Flow assurance and system engineering Subsea structure and equipment Subsea umbilical risers and flowlines

**Physicochemistry of Petroleum Dispersions in Refining Technology** Maciej Paczuski,2024-03-06 The book describes the results of research dealing with two types of petroleum dispersions water in petroleum fractions and fuels as well as asphaltenes in crude oil Such industrial research is aimed at acquiring new knowledge useful for improving processes and products The main goal of the research carried out was to solve problems of refining technology and the exploitation of petroleum products Some of the developed solutions have been patented and applied in industry The problem of solubilizing a small technological amount of water in gasoline and diesel fuels with the aid of surfactant compositions has been successfully resolved This solution has been used in business practice it also increases the water tolerance of gasoline with 5% ethanol and allows for the effective use of LPG The coalescence on fibrous barriers for dewatering fractions from the atmospheric distillation of crude oil allowed for the economic removal of dispersed water and additionally the removal from diesel distillates of a significant part of the mineral contaminations A coalescing method of removing sodium lye dispersed in heavy gasoline from the FCC process was successfully used in an industrial plant replacing the sand filter used in Merox technology The deep dehydration of the hydrotreated kerosene fraction by evaporating water into an inert gas a nitrogen blanket was developed The product was additionally protected against the aging processes The influence of pyrolysis oil a waste product of the pyrolysis process on the physical structure of crude oil was investigated The results of the laboratory tests were verified in industrial trials in the AVD plant Positive test results made it possible to use pyrolysis oil on an industrial scale changing the dispersion structure and properties of crude oil as well as distillation results

**Handbook of Oil Spill Science and Technology** Merv Fingas,2015-02-02 Provides a scientific basis for the cleanup and for the assessment of oil spills Enables Non scientific officers to understand the science they use on a daily basis Multi disciplinary approach covering fields as diverse as biology microbiology chemistry physics

oceanography and toxicology Covers the science of oil spills from risk analysis to cleanup and through the effects on the environment Includes case studies examining and analyzing spills such as Tasman Spirit oil spill on the Karachi Coast and provides lessons to prevent these in the future      Essentials of Flow Assurance Solids in Oil and Gas Operations Abdullah Hussein, 2022-10-19 Flow assurance solids deposition is one of the main challenges in oil and gas production operations with millions of dollars spent annually on their mitigation Essentials of Flow Assurance Solids in Oil and Gas Operations works as an all inclusive reference for engineers and researchers covering all the different types of solids that are commonly encountered in oil and gas fields Structured to flow through real world operations the reference branches through each solid deposit problem where the root causes are as well as modeling monitoring characterization and management strategies all comprehensively reviewed in the light of contemporary research breakthroughs Backed by several field case studies Essentials of Flow Assurance Solids in Oil and Gas Operations gives petroleum and reservoir engineers a resource to correlate between the theoretical fundamentals and field practical applications allowing for sustainable and optimal operations Provides the main operations of oil and gas fields the characteristics of produced fluids and the main flow assurance challenges Furnishes the basic principles of deposits formation and mitigation starting with a full investigation of the problems then mechanisms causes predictions modelling and sample analysis followed by management Distinctively discusses the operational and environmental implications of flow assurance solids and their management using chemical and nonchemical methods Teaches engineers through impactful visuals and data sets included in every chapter      *Petroleum Spills in the Marine Environment* James R. Payne, 2018-05-04 This book covers research completed between 1981 and May 1985 and includes reviews of recent studies sitings and investigations at spills of opportunity as well as results of recent arctic and sub Arctic oil weathering experiments and observations on the behavior of crude oil in the presence of ice Topics covered include the following laboratory studies of formation and stability of water in oil emulsions selected case histories of the more detailed chemistry studies of mousse behavior and long term fate in near coastal and open ocean oil spills blowouts tar ball formation and distribution and algorithms and computer programs to simulate the formation of water in oil emulsion

*Surfactants in Upstream E&P* Theis Solling, Muhammad Shahzad Kamal, Syed M. Shakil Hussain, 2021-06-19 This edited book explores the use of surfactants in upstream exploration and production E P It provides a molecular mechanistic and application based approach to the topic utilising contributions from the leading researchers in the field of organic surfactant chemistry and surfactant chemistry for upstream E P The book covers a wide range of problems in enhanced oil recovery and surfactant chemistry which have a large importance in drilling fracking hydrate inhibition and conformance It begins by discussing the fundamentals of surfactants and their synthesis It then moves on to present their applicability to a variety of situations such as gas injections shale swelling inhibition and acid stimulation This book presents research in an evolving field making it interesting to academics postgraduate students and experts within the field of oil and gas      Oilfield

Chemistry and its Environmental Impact Henry A. Craddock, 2018-08-06 Consolidates the many different chemistries being employed to provide environmentally acceptable products through the upstream oil and gas industry This book discusses the development and application of green chemistry in the oil and gas exploration and production industry over the last 25 years bringing together the various chemistries that are utilised for creating suitable environmental products Written by a highly respected consultant to the oil and gas industry it introduces readers to the principles and development of green chemistry in general and the regulatory framework specific to the oil and gas sector in the North Sea area and elsewhere in the world It also explores economic drivers pertaining to the application of green chemistry in the sector Topics covered in *Oilfield Chemistry and its Environmental Impact* include polymer chemistry surfactants and amphiphiles phosphorus chemistry inorganic salts low molecular weight organics silicon chemistry and green solvents It also looks at sustainability in an extractive industry examining the approaches used and the other methodologies that could be applied in the development of better chemistries along with discussions about where the application of green chemistry is leading in this industry sector Provides the reader with a ready source of reference when considering what chemistries are appropriate for application to oilfield problems and looking for green chemistry solutions Brings together the pertinent regulations which workers in the field will find useful alongside the chemistries which meet the regulatory requirements Written by a well known specialist with a combined knowledge of chemistry manufacturing procedures and environmental issues *Oilfield Chemistry and its Environmental Impact* is an excellent book for oil and gas industry professionals as well as scientists academic researchers students and policy makers

**Heavy Crude Oils** Alain-Yves Huc, 2011 Heavy oils extra heavy oils and tar sands are major players for the future of energy They represent a massive world resource at least the size of conventional oils They are found all over the world but Canada and Venezuela together account by themselves for more than half of world deposits They share the same origin as the lighter conventional oils but their geological fate drove them into thick viscous tar like crude oils Most of them result from alteration processes mediated by microbial degradation They are characterized by a low content of lighter cuts and a high content of impurities such as sulfur and nitrogen compounds and metals so their production is difficult and deployment of specific processes is required in order to enhance their transportability and to upgrade them into valuable products meeting market needs and honouring environmental requirements Although these resources are increasingly becoming commercially producible less than 1% of total heavy crude oil deposits worldwide are under active development The voluntarily wide scope of this volume encompasses geology production transportation upgrading economics and environmental issues of heavy oils It does not pretend to be exhaustive but to provide an authoritative view of this very important energy resource

*Oil Spill Dispersants* Clayton/Payne, 2020-08-26 *Oil Spill Dispersants Mechanisms of Action and Laboratory Tests* provides a comprehensive summary of current information available regarding the general formulation of commercial dispersants and their function to lower oil water interfacial tension The book considers how chemical

dispersants work for oil spills the properties and chemistry of oils including weathering state the variables that affect dispersant performance and the relationships between laboratory methods and field situations The book also considers the strengths and limitations of specific laboratory tests including brief discussions of the applicability of results for estimating dispersant performance in field trials or conditions encountered during real spill events Laboratory tests are separated into four groups tank tests shake flask tests interfacial surface tension tests and flume tests Rapid screen field tests are considered as a separate group Recommendations for improvements in future laboratory testing are offered as well Oil Spill Dispersants will be useful for regulators evaluating dispersant agents field personnel involved with using dispersants laboratory scientists studying performance and behavior of oil and dispersants and managers responsible for designing studies related to the treatment of oil slicks with dispersants



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