



# ***ANALYTICAL METHODS IN PETROLEUM UPSTREAM APPLICATIONS***



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**CRC Press**  
Taylor & Francis Group

# Analytical Methods In Petroleum Upstream Applications

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## **Analytical Methods In Petroleum Upstream Applications:**

Analytical Methods in Petroleum Upstream Applications Cesar Ovalles, Carl E. Rechsteiner Jr., 2015-02-12 Effective measurement of the composition and properties of petroleum is essential for its exploration production and refining however new technologies and methodologies are not adequately documented in much of the current literature **Analytical Methods in Petroleum Upstream Applications** explores advances in the analytical methods and instrument **Application of**

**Analytical Techniques to Petroleum Systems** P. Dowey, M. Osborne, H. Volk, 2020-11-10 Cutting edge techniques have always been utilized in petroleum exploration and production to reduce costs and improve efficiencies The demand for petroleum in the form of oil and gas is expected to increase for electricity production transport and chemical production largely driven by an increase in energy consumption in the developing world Innovations in analytical methods will continue to play a key role in the industry moving forwards as society shifts towards lower carbon energy systems and more advantaged oil and gas resources are targeted This volume brings together new analytical approaches and describes how they can be applied to the study of petroleum systems The papers within this volume cover a wide range of topics and case studies in the fields of fluid and isotope geochemistry organic geochemistry imaging and sediment provenance The work illustrates how the current state of the art technology can be effectively utilised to address ongoing challenges in petroleum geoscience *Subsurface Upgrading of Heavy Crude Oils and Bitumen* Cesar Ovalles, 2019-07-24 Heavy crude oils and bitumen represent more than 50% of all hydrocarbons available on the planet These feedstocks have a low amount of distillable material and high level of contaminants that make their production transportation and refining difficult and costly by conventional technologies *Subsurface Upgrading of Heavy Crude Oils and Bitumen* is of interest to the petroleum industry mainly because of the advantages compared to aboveground counterparts The author presents an in depth account and a critical review of the progress of industry and academia in underground or In Situ upgrading of heavy extra heavy oils and bitumen as reported in the patent and open literature This work is aimed to be a standalone monograph so three chapters are dedicated to the composition of petroleum and fundamentals of crude oil production and refining Key Features Offers a multidisciplinary scope that will appeal to chemists geologists biologists chemical engineers and petroleum engineers Presents the advantages and disadvantages of the technologies considered Discusses economic and environmental considerations for all the routes evaluated and offers perspectives from experts in the field working with highlighted technologies *Rheological Measurement Techniques and Analysis Methods* Jian Wang, 2024-12-04 Rheological

*Measurement Techniques and Analysis Methods* provides a comprehensive exploration of modern rheological analysis offering key insights into the flow and deformation behaviors of complex materials across various industries This edited volume brings together advanced techniques and methodologies with a particular focus on real time measurements modeling of viscoelastic materials and practical applications in fields such as plastics and petroleum By bridging theoretical concepts

with practical solutions the book serves as an invaluable resource for researchers and professionals seeking to understand and apply rheological principles in material design quality control and process optimization The book covers a wide range of topics from fundamental rheology to cutting edge applications making it a versatile tool for anyone working with fluids or investigating the mechanical properties of complex materials With clear explanations of rheological techniques and their relevance to industries such as manufacturing and energy this volume offers readers practical approaches to solving material challenges and optimizing performance Whether you are a researcher engineer or industry professional this book provides the tools needed to deepen your understanding of rheology and apply it to real world problems     *Analytical Advances for Hydrocarbon Research* Chang Samuel Hsu,2012-12-06 Determining the composition and properties of complex hydrocarbon mixtures in petroleum synthetic fuels and petrochemical products usually requires a battery of analytical techniques that detect and measure specific features of the molecules such as boiling point mass nuclear magnetic resonance frequencies etc there have always been a need for new and improved analytical technology to better understand hydrocarbon chemistry and processes This book provides an overview of recent advances and future challenges in modern analytical techniques that are commonly used in hydrocarbon applications Experts in each of the areas covered have reviewed the state of the art thus creating a book that will be useful to readers at all levels in academic industry and research institutions     *Applications of Artificial Intelligence (AI) and Machine Learning (ML) in the Petroleum Industry* Manan Shah,Ameya Kshirsagar,Jainam Panchal,2022-09-02 Today raw data on any industry is widely available With the help of artificial intelligence AI and machine learning ML this data can be used to gain meaningful insights In addition as data is the new raw material for today s world AI and ML will be applied in every industrial sector Industry 4 0 mainly focuses on the automation of things From that perspective the oil and gas industry is one of the largest industries in terms of economy and energy Applications of Artificial Intelligence AI and Machine Learning ML in the Petroleum Industry analyzes the use of AI and ML in the oil and gas industry across all three sectors namely upstream midstream and downstream It covers every aspect of the petroleum industry as related to the application of AI and ML ranging from exploration data management extraction processing real time data analysis monitoring cloud based connectivity system and conditions analysis to the final delivery of the product to the end customer while taking into account the incorporation of the safety measures for a better operation and the efficient and effective execution of operations This book explores the variety of applications that can be integrated to support the existing petroleum and adjacent sectors to solve industry problems It will serve as a useful guide for professionals working in the petroleum industry industrial engineers AI and ML experts and researchers as well as students     *Handbook of Research on Big Data Storage and Visualization Techniques* Segall, Richard S.,Cook, Jeffrey S.,2018-01-05 The digital age has presented an exponential growth in the amount of data available to individuals looking to draw conclusions based on given or collected information across industries Challenges associated with the analysis security sharing storage and visualization of large and

complex data sets continue to plague data scientists and analysts alike as traditional data processing applications struggle to adequately manage big data The Handbook of Research on Big Data Storage and Visualization Techniques is a critical scholarly resource that explores big data analytics and technologies and their role in developing a broad understanding of issues pertaining to the use of big data in multidisciplinary fields Featuring coverage on a broad range of topics such as architecture patterns programing systems and computational energy this publication is geared towards professionals researchers and students seeking current research and application topics on the subject

**Engineering Applications of Artificial Intelligence** Aziza Chakir,Johanes Fernandes Andry,Arif Ullah,Rohit Bansal,Mohamed Ghazouani,2024-02-19 Making intelligent devices and systems is the science and engineering of artificial intelligence AI In order to solve many of the most difficult problems in computer science this important multidisciplinary discipline plays a crucial role in the field of technology nowadays The book also addresses the topic of machine learning because it is closely related to AI By no means is the list of subjects below intended to be comprehensive The main objective of this book is to provide researchers scientists business professionals and academics insight into original theories and research findings on the use of human cognitive models in diverse real world computing applications Through this book the authors built an interdisciplinary forum where researchers from many fields may share their work and explore how to engineer human brain processes learning mechanisms and decision making processes

*Hydrocarbon Fluid Inclusions in Petroliferous Basins* Vivekanandan Nandakumar,J.L. Jayanthi,2021-06-24 Hydrocarbon Fluid Inclusions in Petroliferous Basins trains readers to detect Hydrocarbon Fluid Inclusions HCFIs in sedimentary rocks particularly the wafer preparation techniques to visualize HCFIs its distinction from aqueous inclusions petrographic approaches to HCFIs microthermometric observations on HCFIs fluorescence emission spectra and Raman spectra of HCFIs and their interpretations for the petroleum industry The book features case studies from the Mumbai and Kerala Konkan Basins of the Western Offshore of India two representative basins where new non destructive fluid inclusion techniques were tested This book is essential reading for students of petroleum geology and those working in exploration in the oil and gas industry Helps readers to identify Hydrocarbon Fluid Inclusions HCFIs in sedimentary basins Covers how to determine the oil window API gravity and chemical constituents in HCFIs Includes case studies on key offshore basins

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