

## Chapter 2 Merox Process Theory Principles

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### LOWERY TRAVIS

[Algae as a New Source of Biodiesel](#) Lulu.com

The reduction of the fire hazard of fuel is critical to improving survivability in impact-survivable aircraft accidents. Despite current fire prevention and mitigation approaches, fuel flammability can overwhelm post-crash fire scenarios. The Workshop on Aviation Fuels with Improved Fire Safety was held November 19-20, 1996 to review the current state of development, technological needs, and promising technology for the future development of aviation fuels that are most resistant to ignition during a crash. This book contains a summary of workshop discussions and 11 presented papers in the areas of fuel and additive technologies, aircraft fuel system requirements, and the characterization of fuel fires.

[Biokerosene](#) Elsevier

Petroleum refining involves refining crude petroleum as well as producing raw materials for the petrochemical industry. This book covers current refinery processes and process-types that are likely to come on-stream during the next three to five decades. The book includes (1) comparisons of conventional feedstocks with heavy oil, tar sand bitumen, and bio-feedstocks; (2) properties and refinability of the various feedstocks; (3) thermal processes versus hydroprocesses; and (4) the influence of refining on the environment.

[Handbook of Solid Waste Management and Waste Minimization Technologies](#) Gulf Professional Publishing

Catalysis, Green Chemistry and Sustainable Energy: New Technologies for Novel Business Opportunities offers new possibilities for businesses who want to address the current global transition period to adopt low carbon and sustainable energy production. This comprehensive source provides an integrated view of new possibilities within catalysis and green chemistry in an economic context, showing how these potential new technologies may become useful to business.

Fundamentals and specific examples are included to guide the transformation of idea to innovation and business. Offering an overview of the new possibilities for creating business in catalysis, energy and green chemistry, this book is a beneficial tool for students, researchers and academics in chemical and biochemical engineering. Discusses new developments in catalysis, energy and green chemistry from the perspective of converting ideas to innovation and business Presents case histories, preparation of business plans, patent protection and IP rights, creation of start-ups, research funds and successful written proposals Offers an interdisciplinary approach combining science and business

[The Deep Mixing Method](#) Springer Science & Business Media

The Deep Mixing Method (DMM), a deep in-situ soil stabilization technique using cement and/or lime as a stabilizing agent, was developed in Japan and in the Nordic countries independently in the 1970s. Numerous research efforts have been made in these areas investigating properties of treated soil, behavior of DMM improved ground under static and

[Principles and Practices](#) CRC Press

Fundamentals of Petroleum Refining presents the fundamentals of thermodynamics and kinetics, and it explains the scientific background essential for understanding refinery operations. The text also provides a detailed introduction to refinery engineering topics, ranging from the basic principles and unit operations to overall refinery economics. The book covers important topics, such as clean fuels, gasification, biofuels, and environmental impact of refining, which are not commonly discussed in most refinery textbooks. Throughout the source, problem sets and examples are given to help the reader practice and apply the fundamental principles of refining. Chapters 1-10 can be used as core materials for teaching undergraduate courses. The first two chapters present an introduction to the petroleum refining industry and then focus on feedstocks and products.

Thermophysical properties of crude oils and petroleum fractions, including processes of atmospheric and vacuum distillations, are discussed in Chapters 3 and 4. Conversion processes, product blending, and alkylation are covered in chapters 5-10. The remaining chapters discuss hydrogen production, clean fuel production, refining economics and safety, acid gas treatment and removal, and methods for environmental and effluent treatments. This source can serve both professionals and students (on undergraduate and graduate levels) of Chemical and Petroleum Engineering, Chemistry, and Chemical Technology. Beginners in the engineering field, specifically in the oil and gas industry, may also find this book invaluable. Provides balanced coverage of fundamental and operational topics Includes spreadsheets and process simulators for showing trends and simulation case studies Relates processing to planning and management to give an integrated picture of refining

[Petroleum Processing Handbook](#) National Academies Press

In Chemistry of Petrochemical Processes, readers find a handy and valuable source of information containing insights into petrochemical reactions and products, process technology, and polymer synthesis. The book reviews and describes the reactions and processes involved in transforming petroleum-based hydrocarbons into the chemicals that form the basis of the multi-billion dollar petrochemical industry. In addition, the book includes information on new process developments for the production of raw materials and intermediates for petrochemicals that have surfaced since the book's first edition. Provides a quick understanding of the chemical reactions associated with oil and gas processing Contains insights into petrochemical reactions and products, process technology, and polymer synthesis

[Applied Science & Technology Index](#) John Wiley & Sons

An exhaustive review on all things algae would require a multi-volume encyclopedic work. Even then, such a tome would prove to be of limited value, as in addition to being quite complex, it would soon be outdated, as the field of phycology is full of continual revelations and new discoveries.

[Algae: Anatomy, Biochemistry, and Biotechnology](#) o

[Gas Purification](#) Springer Science & Business Media

A reference that details the pertinent chemical reactions and emphasizes the plant design and operations of petroleum processing procedures. The handbook is divided into four sections: products, refining, manufacturing processes, and treating processes. Wherever possible, shortcut methods of calcula

[Analytical Techniques in the Oil and Gas Industry for Environmental Monitoring](#) CRC Press

Handbook of Refinery Desulfurization describes the operation of the various desulfurization process

units in a petroleum refinery. It also explains the processes that produce raw materials for the petrochemical industry. It illustrates all the possible processes to lower the sulfur contents in petroleum and its fractions to decrease emissions of sulfur oxides. This book introduces you to desulfurization concepts, including biodesulfurization, as well as technology, giving guidance on how to accomplish desulfurization in various refining processes. It contains background chapters on the composition and evaluation of feedstocks and includes diagrams and tables of feedstocks and their respective produce. It also outlines how to decide which method should be employed to remove sulfur from different feedstocks. A practical and thorough discussion of the field, Handbook of Refinery Desulfurization gives you a strong grasp of the various processes involved with industrial desulfurization while giving you pointers on which procedures to use under certain conditions.

**Oil and Gas Production Handbook: An Introduction to Oil and Gas Production** CRC Press  
This book provides a comprehensive description of theories and applications of high-solid and multi-phase bioprocess engineering, which is considered as an important way to address the challenges of "high energy consumption, high pollution and high emissions" in bio-industry. It starts from specifying the solid-phase matrix properties that contribute to a series of "solid effects" on bioprocess, including mass transfer restrictions in porous media, water binding effects, rheological changes. Then it proposes the new principles of periodic intensification which combines the normal force and physiologic characteristics of microorganism for the bioprocess optimization and scale-up. Further breakthroughs in key periodic intensification techniques such as periodic peristalsis and gas pressure pulsation are described in detail which provide an industrialization platform and lay the foundation for high-solid and multi-phase bioprocess engineering. This book offers an excellent reference and guide for scientists and engineers engaged in the research on both the theoretical and practical aspects of high-solid and multi-phase bioprocess.

[Theoretical Chemical Engineering Abstracts](#) Fundamentals of Petroleum Refining

This significantly updated second edition of a classic work on the subject identifies the issues and constraints for each stage in the production of petroleum products - what they are, who is imposing them and why, their technical and financial implications. It then looks in detail at the technological solutions which have been found or are being developed. It also places these developments in their legal and commercial context.

CRC Press

Diagnose and Troubleshoot Problems in Chemical Process Equipment with This Updated Classic!  
Chemical engineers and plant operators can rely on the Third Edition of A Working Guide to Process Equipment for the latest diagnostic tips, practical examples, and detailed illustrations for pinpointing trouble and correcting problems in chemical process equipment. This updated classic contains new chapters on Control Valves, Cooling Towers, Waste Heat Boilers, Catalytic Effects, Fundamental Concepts of Process Equipment, and Process Safety. Filled with worked-out calculations, the book examines everything from trays, reboilers, instruments, air coolers, and steam turbines...to fired heaters, refrigeration systems, centrifugal pumps, separators, and compressors. The authors simplify complex issues and explain the technical issues needed to solve all kinds of equipment problems. Comprehensive and clear, the Third Edition of A Working Guide to Process Equipment features: Guidance on diagnosing and troubleshooting process equipment problems Explanations of how theory applies to real-world equipment operations Many useful tips, examples, illustrations, and worked-out calculations New to this edition: Control Valves, Cooling Towers, Waste Heat Boilers, Catalytic Effects, and Process Safety Inside this Renowned Guide to Solving Process Equipment Problems • Trays • Tower Pressure • Distillation Towers • Reboilers • Instruments • Packed Towers • Steam and Condensate Systems • Bubble Point and Dew Point • Steam Strippers • Draw-Off Nozzle Hydraulics • Pumparounds and Tower Heat Flows • Condensers and Tower Pressure Control • Air Coolers • Deaerators and Steam Systems • Vacuum Systems • Steam Turbines • Surface Condensers • Shell-and-Tube Heat Exchangers • Fire Heaters • Refrigeration Systems • Centrifugal Pumps • Separators • Compressors • Safety • Corrosion • Fluid Flow • Computer Modeling and Control • Field Troubleshooting Process Problems

[Springer Handbook of Petroleum Technology](#) McGraw Hill Professional

Handbook of Solid Waste Management and Waste Minimization Technologies is an essential tool for plant managers, process engineers, environmental consultants, and site remediation specialists that focuses on practices for handling a broad range of industrial solid waste problems. In addition to equipment and process options, the author presents information on waste minimization practices that can be used in conjunction with or can provide alternatives to equipment and process investments. Environmental cost accounting measures and energy-efficient technologies are provided. Valuable information for those concerned with meeting government regulations and with the economic considerations (such as fines for violations and cost-effective methods) is presented in a practical manner. Included in the text are sidebar discussions, questions for thinking and discussion, recommended resources for the reader (including Web sites), and a comprehensive glossary. Two companion books by Cheremisinoff are available: Handbook of Water and Wastewater Treatment Technologies, and Handbook of Air Pollution Control Technologies. Covers leading edge technology and standard equipment for managing industrial solid waste problems Valuable in meeting government regulations Presents in-depth analysis of the financial impact of alternative technologies available

[Petroleum Week](#) Springer

This volume contains a comprehensive overview of peptide-lipid interactions by leading researchers. The first part covers theoretical concepts, experimental considerations, and thermodynamics. The second part presents new results obtained through site-directed EPR, electron microscopy, NMR, isothermal calorimetry, and fluorescence quenching. The final part covers problems of biological interest, including signal transduction, membrane transport, fusion, and adhesion. Key Features \* world-renowned experts \* state-of-the-art experimental methods \* monolayers, bilayers, biological membranes \* theoretical aspects and computer simulations \* rafts \* synaptic transmission \* membrane fusion \* signal transduction

[Handbook of Petroleum Processing](#) Springer

A thorough introduction to environmental monitoring in the oil and gas industry Analytical Techniques in the Oil and Gas Industry for Environmental Monitoring examines the analytical side of the oil and gas industry as it also provides an overall introduction to the industry. You'll discover how oil and natural gas are sourced, refined, and processed. You can learn about what's produced from oil and natural gas, and why evaluating these sourced resources is important. The book

discusses the conventional analyses for oil and natural gas feeds, along with their limitations. It offers detailed descriptions of advanced analytical techniques that are commercially available, plus explanations of gas and oil industry equipment and instrumentation. You'll find technique descriptions supplemented with a list of references as well as with real-life application examples. With this book as a reference, you can prepare to apply specific analytical methods in your organization's lab environment. Analytical Techniques can also serve as your comprehensive resource on key techniques in the characterization of oil and gas samples, within both refinery and environmental contexts. Understand of the scope of oil and gas industry techniques available Consider the benefits and limitations of each available process Prepare for applying analytical techniques in your lab See real examples and a list of references for each technique Read descriptions of off-line analytics, as well as on-line and process applications As a chemist, engineer, instructor, or student, this book will also expand your awareness of the role these techniques have in environmental monitoring and environmental impact assessments.

[Technology Policy and Practice in Africa](#) Hemisphere Pub

Technology Policy and Practice in Africa

**Petroleum Refining Design and Applications Handbook** Elsevier

Handbook of Natural Gas Transmission and Processing gives engineers and managers complete coverage of natural gas transmission and processing in the most rapidly growing sector to the petroleum industry. The authors provide a unique discussion of new technologies that are energy efficient and environmentally appealing at the same time. It is an invaluable reference on natural gas engineering and the latest techniques for all engineers and managers moving to natural gas processing as well as those currently working on natural gas projects. Provides practicing engineers critical information on all aspects of gas gathering, processing and transmission First book that treats multiphase flow transmission in great detail Examines natural gas energy costs and pricing with the aim of delivering on the goals of efficiency, quality and profit

[Algae Energy](#) CRC Press

Algae Energy covers the production of algae culture and the usage of algal biomass conversion products. It also reviews modern biomass-based transportation fuels, including biodiesel, bio-oil, biomethane and biohydrogen. Each chapter opens with fundamental explanations suitable for those with a general interest in algae energy and goes on to provide in-depth scientific details for more expert readers. Algae energy is discussed within the wider context of green energy, with chapters

covering topics such as: green energy facilities, algae technology, energy from algae and biodiesel from algae. Algae Energy addresses the needs of energy researchers, chemical engineers, fuel and environmental engineers, postgraduate and advanced undergraduate students, and others interested in a practical tool for pursuing their interest in bio-energy.

**nondramatic literary works. Fourth series. Part 1** CRC Press

Gas hydrates represent one of the world's largest untapped reservoirs of energy and, according to some estimates, have the potential to meet global energy needs for the next thousand years. "Methane Gas Hydrate" examines this potential by focusing on methane gas hydrate, which is increasingly considered a significant source of energy. "Methane Gas Hydrate" gives a general overview of natural gas, before delving into the subject of gas hydrates in more detail and methane gas hydrate in particular. As well as discussing methods of gas production, it also discusses the safety and environmental concerns associated with the presence of natural gas hydrates, ranging from their possible impact on the safety of conventional drilling operations to their influence on Earth's climate. "Methane Gas Hydrate" is a useful reference on an increasingly popular energy source. It contains valuable information for chemical engineers and researchers, as well as for postgraduate students.

**Handbook of Petroleum Refining** John Wiley & Sons

The book includes the basics of physical properties of natural gas necessary to understand natural gas processing and process calculations. Items covered in the first chapter are gas molecular weight, density at operating conditions, heating value, compressibility factor, ..etc. The second chapter covers the basics of phase behavior. The third chapter covers a brief oil and gas separation where a detailed were presented in the firs book (Fundamentals of Oil and Gas Processing). The fourth chapter covers Natural gas hydrates, prediction and inhibition. The fifth chapter covers dehydration of natural gas. The sixth chapter covers natural gas sweetening and sulfur recovery. The book includes the basics of physical properties of natural gas necessary to understand natural gas processing and process calculations. Items covered are gas molecular weight, density at operating conditions, heating value, compressibility factor, ..etc. The second chapter covers the basics of phase behavior. The third chapter covers a brief oil and gas separation where a detailed were presented in the firs book (Fundamentals of Oil and Gas Processing). The fourth chapter covers Natural gas hydrates, prediction and inhibition. The fifth chapter covers dehydration of natural gas. The sixth chapter covers natural gas sweetening and sulfur recovery. and The seventh chapter covers hydrocarbon recovery.