Fuels Furnaces And Refractories Op Gupta | cf6484353d3a714c67e26c675195a9a7

Chemistry of Fossil Fuels and Biofuels
Industrial and Process Furnaces
Modern Weed Management
Boilers and Burners
Handbook of Industrial Refractories Technology
Fundamentals of Electric Propulsion
Elements of Fuels, Furnaces and Refractories
Chemical Metallurgy
Refractories Handbook
EMC ’91: Non-Ferrous Metallurgy—Present and Future
Power Plant Engineering
Power Electronics
Archaeometallurgy
Guide to Energy Efficiency Opportunities in Canadian Foundries
Principles of Metallurgical Thermodynamics
Apatites and their Synthetic Analogues
Refractories: Production and Properties
Hazardous Chemicals Handbook
Advances in Molten Slags, Fluxes, and Salts
Fundamentals of Air Pollution Engineering
Saugus Iron Works
Synthetic Fuels Handbook
Advances in High Temperature Gas Cooled Reactor Fuel Technology
The Coal Question
Numerical Methods for Engineering Applications
Environmental Pollution Control Engineering
Te Linde's Operative Gynecology
Heat Treatment : Principles and Techniques
Handbook of Petroleum Refining
Metallurgical Engineering Handbook
Introduction to Permanent Plug and Abandonment of Wells
Fluid Fuel Reactors
IRON MAKING AND STEELMAKING
Handbook of Biomass Downdraft Gasifier Engine Systems
65th Conference on Glass Problems
Khanna's Objective Type Questions & Answers in Chemical Engineering
FUELS, FURNACES AND REFRACTORIES
Clean Utilization of Coal
Biomass Chars: Elaboration, Characterization and Applications II
Fuels, Furnaces and Refractories focuses on the sources and efficient use of energy available to modern industry. This book begins with the classification, properties, tests, and different kinds of fuels, as well as trends in fuel utilization. This text also tackles the generation and distribution of electricity from both chemical and nuclear energy sources. Subsequent chapters focus on the thermodynamics, physics, chemistry, and kinetics of combustion of fuels; the burner design; the heat transfer and flow of gases through furnaces and flues; and ways of controlling energy supply rates and temperatures. The refractory materials, which are heat-resisting substances, are also described.

This Text-Cum-Reference Book Has Been Written To Meet The Manifold Requirement And Achievement Of The Students And Researchers. The Objective Of This Book Is To Discuss, Analyses And Design The Various Power Plant Systems Serving The Society At Present And Will Serve In Coming Decades India In Particular And The World In General. The Issues Related To Energy With Stress And Environment Up To Some Extent And Finally Find Ways To Implement The Outcome. Salient Features# Utilization Of Non-Conventional Energy Resources# Includes Green House Effect# Gives Latest Information S In Power Plant Engineering# Include Large Number Of Problems Of Both Indian And Foreign Universities# Rich Contents, Lucid Manner

This comprehensive reference details the technical, chemical, and mechanical aspects of high-temperature refractory composite materials for step-by-step guidance on the selection of the most appropriate system for specific manufacturing processes. The book surveys a wide range of lining system geometries and material combinations and covers a broad
Chemical metallurgy is a well founded and fascinating branch of the wide field of metallurgy. This book provides detailed information on both the first steps of separation of desirable minerals and the subsequent mineral processing operations. The complex chemical processes of extracting various elements through hydrometallurgical, pyrometallurgical or electrometallurgical operations are explained. In the choice of material for this work, the author made good use of the synergy of scientific principles and industrial practices, offering the much needed and hitherto unavailable combination of detailed treatises on both compiled in one book.

Capitalize on the Vast Potential of Alternative Energy Sources Such as Fuel Cells and Biofuels Synthetic Fuels Handbook is a comprehensive guide to the benefits and trade-offs of numerous alternative fuels, presenting expert analyses of the different properties, processes, and performance characteristics of each fuel. It discusses the concept systems and technology involved in the production of fuels on both industrial and individual scales. Written by internationally renowned fuels expert James G. Speight, this vital resource describes the production and properties of fuels from natural gas and natural gas hydrate, sand bitumen, coal, oil, shale synthesis gas, crops, wood, biomass, industrial and domestic waste, landfill gas, and much more. Using both U.S. and SI units, Synthetic Fuels Handbook features: Information on conventional and nonconventional fuel sources Discussion of the production of alternative fuels on both industrial and individual scales Analyses of properties and uses of gaseous, liquid, and solid fuels from different sources Comparison of properties of alternative fuels with petroleum-based fuels Discover All the Benefits and Trade-Offs of Synthetic Fuels • Fuel
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sources: conventional and nonconventional • Natural gas and natural gas hydrates • Petroleum and heavy oil • Tar sand bitumen • Coal • Oil shale • Synthesis gas • Crops • Wood sources • Biomass • Industrial and domestic waste • Landfill gas • Comparison of the properties and uses of gaseous fuels from different sources • Comparison of the properties and uses of liquid fuels from different sources • Comparison of the properties and uses of solid fuels from different sources

This Revised Edition Of The Book On Environmental Pollution Control Engineering Features A Systematic And Thorough Treatment Of The Principles Of The Origin Of Air, Water And Land Pollutants, Their Effect On The Environment And The Methods Available To Control Them. The Demographic And Environmental Trends, Energy Consumption Patterns And Their Impact On The Environment Are Clearly Discussed. Application Of The Physical, And Chemical Engineering Concepts To The Design Of Pollution Control Equipment Is Emphasized. Due Importance Is Given To Modelling, Quality Monitoring And Control Of Specific Major Pollutants. A Separate Chapter On The Management Of Hazardous Wastes Is Added. Information Pertaining To Indian Conditions Is Given Wherever Possible To Help The Reader Gain An Insight Into India Sown Pollution Problems. This Book Is Mainly Intended As A Textbook For An Integrated One-Semester Course For Senior Level Undergraduate Or First Year Post-Graduate Engineering Students And Can Also Serve As A Reference Book To Practising Engineers And Decision Makers Concerned With Environmental Pollution Control.

This volume contains the papers that will be presented at 'EMC '91 '-the European Metals Conference-to be held in Brussels, Belgium, from 15 to 20 September 1991, and
organized by Benelux Metallurgie, GDMB (Gesellschaft Deutscher Metallhutten und Bergleute) and IMM (the Institution of Mining and Metallurgy). 'EMC '91' is the first of an intended major series organized at the European level with the aim of bringing together all those who are involved with the extraction and processing of non-ferrous metals-European metallurgists and their international colleagues-to provide them with the opportunity to exchange views on the state and evolution of their industry. The programme covers all the different aspects of the metallurgy of non-ferrous metals from mining to fabricated products. Particular attention is being paid to the European non-ferrous industry with respect to changes in demand, the technology used, pressures on the environment and the competitive position of manufacturers. The contributions of the plenary lecturers (copies of which will appear in the IMM journal Minerals Industry International in 1991-92) and the many authors are gratefully acknowledged. Thanks are also due to the referees of the papers, the sponsors, the companies that have allowed registrants to visit their operations, the chairmen of the technical sessions and the staffs of the organizing bodies for their efficient administrative work. Jean Vereecken Chairman, Organizing Committee July 1991

The Series in Metallurgy and Materials Science was initiated during the Diamond Jubilee of the Indian Institute of Metals (IIM). In the last decade the progress in the study and development of metallurgy and materials science, their applications, as well as the techniques for processing and characterizing them has been rapid and extensive. With the help of an expert editorial panel of international and national scientists, the series aims to make this information available to a wide spectrum of readers. This book is the
third textbook in the series. Principles of Metallurgical Thermodynamics deals with the thermodynamics of reactive systems, with emphasis on the reactivity of metals and materials being used by metallurgical and materials scientists all over the world. Though the focus is on equilibrium thermodynamics, it also touches upon some methods to incorporate non-equilibrium effects relevant to material scientists. This knowledge will enable students to solve the challenging problems faced during operation in different materials-processing routes. It will also help in the search for new substances that might revolutionize high as well as low temperature applications because of their super-fluid and super-conducting properties, outer space environmental adaptability, and more attractive electrical, magnetic, and dielectric properties.

This authoritative account covers the entire spectrum from iron ore to finished steel. It begins by tracing the history of iron and steel production, right from the earlier days to today’s world of oxygen steelmaking, electric steelmaking, secondary steelmaking and continuous casting. The physicochemical fundamental concepts of chemical equilibrium, activity-composition relationships, and structure-properties of molten metals are introduced before going into details of transport phenomena, i.e. kinetics, mixing and mass transfer in ironmaking and steelmaking processes. Particular emphasis is laid on the understanding of the fundamental principles of the processes and their application to the optimisation of actual processes. Modern developments in blast furnaces, including modelling and process control are discussed along with an introduction to the alternative methods of ironmaking. In the area of steelmaking, BOF plant practice including pre-treatment of hot metal, metallurgical features of oxygen steelmaking processes, and their control form part of the book. It also covers basic open hearth, electric arc furnace
and stainless steelmaking, before discussing the area of casting of liquid steel—ingot casting, continuous casting and near net shape casting. The book concludes with a chapter on the status of the ironmaking and steelmaking in India. In line with the application of theoretical principles, several worked-out examples dealing with fundamental principles as applied to actual plant situations are presented. The book is primarily intended for undergraduate and postgraduate students of metallurgical engineering. It would also be immensely useful to researchers in the area of iron and steel.

Written in a student-friendly manner, the book begins with the introduction to fuels, furnaces and refractories. It further exposes the reader to the different types of fuels with their testing methods. Besides covering the recent developments in the field of non-recovery coke ovens, dry coke cooling, use of coal in DRI and blast furnace, and new energy recovery system, the book also covers all the aspects of refractory systems. For better understanding of the text, the book includes a large number of illustrations. The book also facilitates a thorough understanding of different environmental issues associated with the use of fuel. Finally, the reader is made familiar with the Indian industrial scenario regarding fuels, furnaces and refractories.

Throughout most of the twentieth century, electric propulsion was considered the technology of the future. Now, the future has arrived. This important new book explains the fundamentals of electric propulsion for spacecraft and describes in detail the physics
and characteristics of the two major electric thrusters in use today, ion and Hall thrusters. The authors provide an introduction to plasma physics in order to allow readers to understand the models and derivations used in determining electric thruster performance. They then go on to present detailed explanations of: Thruster principles Ion thruster plasma generators and accelerator grids Hollow cathodes Hall thrusters Ion and Hall thruster plumes Flight ion and Hall thrusters Based largely on research and development performed at the Jet Propulsion Laboratory (JPL) and complemented with scores of tables, figures, homework problems, and references, Fundamentals of Electric Propulsion: Ion and Hall Thrusters is an indispensable textbook for advanced undergraduate and graduate students who are preparing to enter the aerospace industry. It also serves as an equally valuable resource for professional engineers already at work in the field.

TeLinde's Operative Gynecology has been the premier text in the field of gynecologic surgery for more than 60 years. This text covers all of the aspects of gynecologic surgery - from the most general topics of surgical ethics to instruction on detailed surgical procedures. General background/pathology for surgical problems is covered as are patient/treatment selection, step-by-step surgical techniques and post-operative concerns. For this updated Tenth Edition, an online website has been added with fully searchable text and videos of several surgical procedures including: para-aortic noted dissection, avascular spaces of the pelvis, pelvic node dissection, hypogastric artery ligation, and presacral neurectomy. Also, a new online chapter on Robotics has been added.

This open access book offers a timely guide to challenges and current practices to permanently plug and abandon hydrocarbon wells. With a focus on offshore North Sea, it analyzes the process of plug and abandonment of hydrocarbon wells through the establishment of permanent well barriers. It provides the reader with extensive knowledge on the type of barriers, their functioning and verification. It then discusses plug and abandonment methodologies, analyzing different types of permanent plugging materials. Last, it describes some tests for verifying the integrity and functionality of installed permanent barriers. The book offers a comprehensive reference guide to well plugging and abandonment (P & A) and well integrity testing. The book also presents new technologies that have been proposed to be used in plugging and abandoning of wells, which might be game-changing technologies, but they are still in laboratory or testing level. Given its scope, it addresses students and researchers in both academia and industry. It also provides information for engineers who work in petroleum industry and should be familiarized with P & A of hydrocarbon wells to reduce the time of P & A by considering it during well planning and construction.

This book is meant for diploma students of chemical engineering and petroleum
engineering both for their academic programmes as well as for competitive examination. This book contains 18 chapters covering the entire syllabus of diploma course in chemical engineering and petrochemical engineering. This book in its present form has been designed to serve as an encyclopedia of chemical engineering so as to be ready reckoner apart from being useful for all types of written tests and interviews faced by chemical engineering and petrochemical engineering diploma students of the country. Since branch related subjects of petrochemical engineering are same as that of chemical engineering diploma students, so this book will be equally useful for diploma in petrochemical engineering students.

This guidance document provides an introduction to the ways that the archaeological evidence for metalworking is studied. Archaeometallurgical evidence can include whole landscapes, buildings, features, artefacts and waste materials (eg slag and crucibles). Archaeometallurgy includes fieldwork investigations (survey and excavation) and the subsequent study of these data as well as any artefacts and residues recovered. Scientific approaches provide insights into the techniques used to produce different metals and how these were fabricated into artefacts.

This conference proceeding includes 18 papers.

This volume contains the lectures presented at the Advanced Study Institute on "Chemistry and Chemical Engineering of Catalytic Solid Fuel Conversion for the
Production of ae-an Synthetic Fuels" which was held at Ak-aray, Edremit, Tiirkiye, between July 21 and August 3, 1991. The book includes 23 chapters originally written for the meeting by distinguished scientists and technologists in the field. I would like to acknowledge the contribution of each of the authors in the book. Their efforts have shed light on our understanding in coal science research and better utilization of coal. Three main subjects: structure and reactivity of coal; cleaning of coal and its products, and factors affecting environmental balance of energy usage and solutions for future, were discussed in the Institute and these are presented under six groups in the book. I hope that of great use to research workers from academic and industrial background. The book will be Many people contributed to the success of the Institute on which this volume was based. I take this occasion to thank my colleagues who lectured in the Institute, both for their efforts during the two weeks and their expertly prepared lecture notes that reached to me in time. The Institute was generously sponsored by the Scientific and Environmental Affairs Division of the NATO and their contribution is deeply acknowledged.

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.

For students, research workers and manufacturers.
Biomass can be converted to energy, biofuels, and bioproducts via thermochemical conversion processes, such as combustion, pyrolysis, and gasification. Combustion technology is most widely applied on an industrial scale. However, biomass gasification and pyrolysis processes are still in the research and development stage. The major products from these processes are syngas, bio-oil, and char (called also biochar for agronomic application). Among these products, biomass chars have received increasing attention for different applications, such as gasification, co-combustion, catalysts or adsorbents precursors, soil amendment, carbon fuel cells, and supercapacitors. This Special Issue provides an overview of biomass char production methods (pyrolysis, hydrothermal carbonization, etc.), characterization techniques (e.g., scanning electronic microscopy, X-ray fluorescence, nitrogen adsorption, Raman spectroscopy, nuclear magnetic resonance spectroscopy, X-ray photoelectron spectroscopy, and temperature programmed desorption and mass spectrometry), their properties, and their suitable recovery processes.

Discusses the formation, composition, properties and processing of the principal fossil and biofuels, ideal for graduate students and professionals.

This is a comprehensive book for quick reference and review of metallurgical topics in an objective type question/answer format. Contains over 6,000 questions with answers. Features Can be used as a review for all types of examinations
This collection focuses on ferrous and non-ferrous metallurgy where ionic melts, slags, fluxes, or salts play important roles in industrial growth and economy worldwide. Technical topics included are: thermodynamic properties and phase diagrams and kinetics of slags, fluxes, and salts; physical properties of slags, fluxes, and salts; structural studies of slags; interfacial and process phenomena involving foaming, bubble formation, and drainage; slag recycling, refractory erosion/corrosion, and freeze linings; and recycling and utilization of metallurgical slags and models and their applications in process improvement and optimization. These topics are of interest to not only traditional ferrous and non-ferrous metal industrial processes but also new and upcoming technologies.

Apatite-type minerals and their synthetic analogues are of interest of many industrial branches and scientific disciplines including material sciences, chemical industry, agriculture, geology, medicine and dentistry. This book provides a basic overview of general knowledges of this topic in order to provide the comprehensive survey from a scientific and technological perspective. The book is divided into 10 chapters, which are devoted to the structure and properties of minerals from the supergroup of apatite, experimental techniques of preparation and characterization of synthetic analogues of apatite minerals, substitution in the structure of apatite as well as utilization of these materials in wide range of common and special advanced applications in industry, material sciences and research. Additionally, the phosphate rocks, their classification, geological role, mining and beneficiation of phosphate ore, production of elemental phosphorus, phosphoric acid and fertilizers are also described. Although this book is meant for chemist, material scientist and research engineers, the individual chapters
contain theoretical background, historical aspects as well as examples of synthetic and analytical methods which may be also interesting for students and non-expert readers as well.

A joint effort of three continents, this book is about rational utilization of the fossil fuels for generation of heat or power. It provides a synthesis of two scientific traditions: the high-performance, but often proprietary, Western designs, and the elaborate national standards based on less advanced Eastern designs; it presents both in the same Western format. It is intended for engineers and advanced undergraduate and graduate students with an interest in steam power plants, burners, or furnaces. The text uses a format of practice based on theory: each chapter begins with an explanation of a process, with basic theory developed from first principles; then empirical relationships are presented and, finally, design methods are explained by worked out examples. It will thus provide researchers with a resource for applications of theory to practice. Plant operators will find solutions to and explanations of many of their daily operational problems. Designers will find this book ready with required data, design methods and equations. Finally, consultants will find it very useful for design evaluation.

Encompasses the entire range of industrial refractory materials and forms: properties and their measurement, applications, manufacturing, installation and maintenance techniques, quality assurance, and statistical process control.

Furnaces sit at the core of all branches of manufacture and industry, so it is vital that these are designed and operated safely and efficiently. This reference provides all of the
furnace theory needed to ensure that this can be executed successfully on an industrial scale. Industrial and Process Furnaces: Principles, 2nd Edition provides comprehensive coverage of all aspects of furnace operation and design, including topics essential for process engineers and operators to better understand furnaces. This includes: the combustion process and its control, furnace fuels, efficiency, burner design and selection, aerodynamics, heat release profiles, furnace atmosphere, safety and emissions. These elements and more are brought together to illustrate how to achieve optimum design and operation, with real-world case studies to showcase their application. Up-to-date and comprehensive reference encompassing not only best practice of operation but the essential elements of furnace theory and design, essential to anyone working with furnaces, ovens and combustion-based systems. More case studies, more worked examples. New material in this second edition includes further application of Computational Fluid Dynamics (CFD), with additional content on flames and burners, costs, efficiencies and future trends.

State-of-the-art numerical methods for solving complex engineering problems Great strides in computer technology have been made in the years since the popular first edition of this book was published. Several excellent software packages now help engineers solve complex problems. Making the most of these programs requires a working knowledge of the numerical methods on which the programs are based. Numerical Methods for Engineering Application provides that knowledge. While it avoids intense mathematical detail, Numerical Methods for Engineering Application supplies more in-depth explanations of methods than found in the typical engineer's numerical "cookbook." It offers complete coverage of most commonly encountered algebraic,
interpolation, and integration problems. Ordinary differential equations are examined in
great detail, as are three common types of partial differential equations--parabolic,
elliptic, and hyperbolic. The author also explores a wide range of methods for solving
initial and boundary value problems. This complete guide to numerical methods for
solving engineering problems on computers provides: * Practical advice on how to select
the best method for a given problem * Valuable insights into how each method works and
why it is the best choice * Complete algorithms and source code for all programs covered
* Code from the book and problem-solving programs designed by the author available
from the author's website Numerical Methods for Engineering Application is a valuable
working resource for engineers and applied physicists. It also serves as an excellent
upper-level text for physics and engineering students in courses on modern numerical
methods.

Summarizes core information for quick reference in the workplace, using tables and
checklists wherever possible. Essential reading for safety officers, company managers,
engineers, transport personnel, waste disposal personnel, environmental health officers,
trainees on industrial training courses and engineering students. This book provides
concise and clear explanation and look-up data on properties, exposure limits,
flashpoints, monitoring techniques, personal protection and a host of other parameters
and requirements relating to compliance with designated safe practice, control of
hazards to people's health and limitation of impact on the environment. The book caters
for the multitude of companies, officials and public and private employees who must
comply with the regulations governing the use, storage, handling, transport and disposal
of hazardous substances. Reference is made throughout to source documents and
standards, and a Bibliography provides guidance to sources of wider ranging and more specialized information. Dr Phillip Carson is Safety Liaison and QA Manager at the Unilever Research Laboratory at Port Sunlight. He is a member of the Institution of Occupational Safety and Health, of the Institution of Chemical Engineers' Loss Prevention Panel and of the Chemical Industries Association's `Exposure Limits Task Force' and `Health Advisory Group'. Dr Clive Mumford is a Senior Lecturer in Chemical Engineering at the University of Aston and a consultant. He lectures on several courses of the Certificate and Diploma of the National Examining Board in Occupational Safety and Health. [Given 5 star rating] - Occupational Safety & Health, July 1994 - Loss Prevention Bulletin, April 1994 - Journal of Hazardous Materials, November 1994 - Process Safety & Environmental Prot., November 1994

This publication reports on the results of a coordinated research project on advances in high temperature gas cooled reactor (HTGR) fuel technology and describes the findings of research activities on coated particle developments. These comprise two specific benchmark exercises with the application of HTGR fuel performance and fission product release codes, which helped compare the quality and validity of the computer models against experimental data. The project participants also examined techniques for fuel characterization and advanced quality assessment/quality control. The key exercise included a round-robin experimental study on the measurements of fuel kernel and particle coating properties of recent Korean, South African and US coated particle productions applying the respective qualification measures of each participating Member State. The summary report documents the results and conclusions achieved by the project and underlines the added value to contemporary knowledge on HTGR fuel.