

Optimization Studies On Hole Making Tools For High

Nature-Inspired Optimization in Advanced Manufacturing Processes and Systems Subject Guide: Engineering—Industrial and Manufacturing The manufacturing system is going through substantial changes and developments in light of Industry 4.0. Newer manufacturing technologies are being developed and applied. There is a need to optimize these techniques when applied in different circumstances with respect to materials, tools, product configurations, and process parameters. This book covers computational intelligence applied to manufacturing. It discusses nature-inspired optimization of processes and the design and development in manufacturing systems. It explores all manufacturing processes, at both macro and micro levels, and offers manufacturing philosophies. Nonconventional manufacturing, real industry problems and case studies, research on generative processes, and relevance of all this to Industry 4.0, is also included. Researchers, students, academicians, and industry professionals will find this reference title very useful.

This book comprises selected papers from the Fourth International Conference on Materials and Manufacturing Engineering (ICMME 2019). The contents focus on the latest developments in the synthesis and characterization of new materials, and highlights the challenges involved in the manufacturing and machinability of different materials. Advanced and cost-effective manufacturing processes and their applications are also discussed in the book. In addition, it covers topics like robotics, fluid dynamics, design and development, and different optimization techniques. The contents of this book will be beneficial to students, researchers, and industry professionals.

A comprehensive introduction to the tools, techniques and applications of convex optimization.

Detailed, practical guide to increasing your Web traffic through better search results Wonder how some companies pop up high in search engine rankings? It's all about search appeal. Master the strategies, techniques, and shortcuts in this detailed guide and you can improve your Web site's search rankings and drive the targeted traffic you want to your virtual door. Learn new ways to add social media to the SEO mix, make your site mobile Web-friendly, write SEO tags for maximum exposure, and more. Search Engine Optimization (SEO) is hot; the online advertising market is expected to grow at 34% CAGR between 2005 and 2010, and nine out of ten companies are estimated to be implementing SEO strategies Find out how to get listed in the major search engines, directories, and indexes, and learn strategies for planning and implementing a successful SEO campaign Take advantage of the case studies of readers who implemented the SEO techniques outlined in the first edition of this book and significantly improved search rankings Discover how to target and reach the customers you really want; optimize your site specifically for Google, MSN, or Yahoo!; demystify the role of links and linking in search; implement social media and mobile search optimization; and analyze your SEO efforts to see what works If you want to make SEO work for you, the new edition of this practical book is what you need to succeed.

Sterile Drug Products: Formulation, Packaging, Manufacturing, and Quality teaches the basic principles of the development and

manufacture of high quality sterile dosage forms. The author has 38 years of experience in the development and manufacture of sterile dosage forms including solutions, suspensions, ophthalmics and freeze dried products. This book is based on the courses he has delivered for over three decades, to over 3000 participants, and is intended to remain relevant for the indefinite future even as new technologies and new applications of old technologies become common. This is an ideal reference book for those working directly and indirectly with sterile dosage forms, be it product development (formulation, package, process, analytical), manufacturing, quality control, quality assurance, regulatory, purchasing, or project management. This book is also intended as an educational resource for the pharmaceutical and biopharmaceutical industry and pharmacy schools, providing basic knowledge and principles in four main areas of parenteral science and technology: Product development, including formulation, packaging, and process development. Manufacturing, including basic teaching on all the primary unit operations involved in preparation of sterile products and the underlying importance of contamination control. Quality and regulatory, including the application of good manufacturing practice regulations, aseptic processing guidelines, and unique quality control testing methods for the sterile dosage form Clinical aspects, including administration, potential hazards, and biopharmaceutics of sterile products in a clinical setting.

This book focuses on the design and analysis of collective decision-making strategies for the best-of-n problem. After providing a formalization of the structure of the best-of-n problem supported by a comprehensive survey of the swarm robotics literature, it introduces the functioning of a collective decision-making strategy and identifies a set of mechanisms that are essential for a strategy to solve the best-of-n problem. The best-of-n problem is an abstraction that captures the frequent requirement of a robot swarm to choose one option from of a finite set when optimizing benefits and costs. The book leverages the identification of these mechanisms to develop a modular and model-driven methodology to design collective decision-making strategies and to analyze their performance at different level of abstractions. Lastly, the author provides a series of case studies in which the proposed methodology is used to design different strategies, using robot experiments to show how the designed strategies can be ported to different application scenarios.

A unique and handy resource, Engineering Formulas for Metalcutting will enable users to calculate necessary speeds, feeds, and required machining power in order to maximize the productivity of cutting. Providing information on formulas and their applications in a concise and clearly arranged format, it describes mechanical properties of the most popular work materials, such as steels, cast irons, and nonferrous alloys. And it offers numerous formulas for calculating speeds, feeds, cutting forces, and machining power. What's more, practical examples of calculating the variety of such cutting parameters will make this a valuable source of knowledge in training and practice.

Hole-Making and Drilling Technology for Composites Advantages, Limitations and Potential Woodhead Publishing

Selected peer reviewed papers from the 2016 International Conference on Design, Materials and Manufacturing, March 25-27, 2016, Kuala Lumpur, Malaysia

Biomass, Biopolymer-Based Materials and Bioenergy: Construction, Biomedical and Other Industrial Applications covers a broad range of material types, including natural fiber reinforced polymer composites, particulate composites, fiberboard, wood fiber composites, and plywood composite that utilize natural, renewable and biodegradable agricultural biomass. In terms of bioenergy, the authors explore not only the well-known processing methods of biofuels, but also the kinetics of biofuels production pathways, a techno-economic analysis on biomass gasification, and biomass gasification with further upgrading into diesel additives and hybrid renewable energy systems for power generation. Further chapters discuss advanced techniques for the development of biomass-based composites, biopolymer-based composites, biomass gasification, thermal kinetic design and techno-economic analysis of biomass gasification. By introducing these topics, the book highlights a totally new research theme in biopolymer-based composite materials and bioenergy. Covers a broad range of different research fields, including biopolymer and natural fiber reinforcement used in the development of composites Demonstrates key research themes in materials science and engineering, including materials processing, polymer science, biofuel processing, and thermal and kinetic studies Presents valuable information for those working in research and development departments, and for graduate students (Masters and PhDs)

It is increasingly recognized that the economic value of forests is not merely the production of timber. Forests provide other key ecosystem services, such as being sinks for greenhouse gases, hotspots of biodiversity, tourism and recreation. They are also vitally important in preventing soil erosion and controlling water supplies, as well as providing non-timber forest products and supporting the livelihoods of many local people. This handbook provides a detailed, comprehensive and broad coverage of forest economics, including traditional forest economics of timber production, economics of environmental role of forests, and recent developments in forest economics. The chapters are grouped into six parts: fundamental topics in forest resource economics; economics of forest ecosystems; economics of forests, climate change, and bioenergy; economics of risk, uncertainty, and natural disturbances; economics of forest property rights and certification; and emerging issues and developments. Written by leading environmental, forest, and natural resource economists, the book represents a definitive reference volume for students of economics, environment, forestry and natural resource economics and management.

This book provides a detailed understanding of optimization methods as they are implemented in a variety of manufacturing, fabrication and machining processes. It covers the implementation of statistical methods, multi-criteria decision making methods and evolutionary techniques for single and multi-objective optimization to improve quality, productivity, and sustainability in manufacturing. It reports on the theoretical aspects, special features, recent research and latest development in the field. Optimization of Manufacturing Processes is a valuable source of information for researchers and practitioners, as it fills the gap where no dedicated book is available on intelligent manufacturing/modeling and optimization in manufacturing. Readers will develop an understanding of the implementation of statistical and evolutionary techniques for modeling and optimization in manufacturing.

Covering key topics in the field such as technological innovation, human-centered sustainable engineering and

manufacturing, and manufacture at a global scale in a virtual world, this book addresses both advanced techniques and industrial applications of key research in interactive design and manufacturing. Featuring the full papers presented at the 2014 Joint Conference on Mechanical Design Engineering and Advanced Manufacturing, which took place in June 2014 in Toulouse, France, it presents recent research and industrial success stories related to implementing interactive design and manufacturing solutions.

This two-volume book presents the outcomes of the 8th International Conference on Soft Computing for Problem Solving, SocProS 2018. This conference was a joint technical collaboration between the Soft Computing Research Society, Liverpool Hope University (UK), and Vellore Institute of Technology (India), and brought together researchers, engineers and practitioners to discuss thought-provoking developments and challenges in order to select potential future directions. The book highlights the latest advances and innovations in the interdisciplinary areas of soft computing, including original research papers on algorithms (artificial immune systems, artificial neural networks, genetic algorithms, genetic programming, and particle swarm optimization) and applications (control systems, data mining and clustering, finance, weather forecasting, game theory, business and forecasting applications). It offers a valuable resource for both young and experienced researchers dealing with complex and intricate real-world problems that are difficult to solve using traditional methods.

Hole-Making and Drilling Technology for Composites: Advantages, Limitations and Potential presents the latest information on hole-making, one of the most commonly used processes in the machining of composites. The book provides practical guidance on hole-making and drilling technology and its application in composite materials and structures. Chapters are designed via selected case studies to identify the knowledge gap in hole-making operations in composites and to highlight the deficiencies of current methods. The book documents the latest research, providing a better understanding of the pattern and characterization of holes produced by various technologies in composite materials. It is an essential reference resource for academic and industrial researchers and professional involved in the manufacturing and machining of composites. In addition, it is ideal for postgraduate students and designers working on the design and fabrication of polymeric composites in automotive and aerospace applications. Features updated information on the most relevant hole-drilling methods and their potential in aircraft and other structural applications. Features practical guidance for the end user on how to select the most appropriate method when designing fiber-reinforced composite materials. Demonstrates systematic approaches and investigations on the design, development and characterization of 'composite materials'

This book aims to provide recent information on advances in drilling technology. The use of advanced machines,

appropriate strategies and special drilling tools can significantly reduce the machining time required for drilling operations, and consequently the production costs, and improve the quality of the holes produced. For these reasons an improvement of the drilling technology is very important for the modern manufacturing industries. This book can be used as a research book for final undergraduate engineering course or at postgraduate level. It can also serve as a useful reference for academics, researchers, mechanical, industrial, production, manufacturing and materials engineers, professionals in drilling technology and related matters.

In many respects, compound semiconductor technology has reached the age of maturity when applications will have been defined, yields are high enough and well established, and gallium arsenide and related compounds have carved many important niches in electronics. This book reviews the state-of-the-art of compound semiconductor electronics. It covers the microwave, millimeter wave, and submillimeter wave devices, monolithic microwave and digital integrated circuits made from compound semiconductors and emerging wide band semiconductor materials. The book is written by leading experts in compound semiconductor electronics from industry and academia and strikes the balance between practical applications, record-breaking results, and design and modeling tools specific for compound semiconductor technology. Engineers, scientists, and graduate students working in solid state electronics and especially in the area of compound semiconductor electronics will find this book very useful. It could also be used as a text or a supplementary text for graduate courses in this field.

Delves into the core and functional areas in the upstream oil and gas industry covering a wide range of operations and processes Oil and gas exploration and production (E&P) activities are costly, risky and technology-intensive. With the rise in global demand for oil and fast depletion of easy reserves, the search for oil is directed to more difficult areas – deepwater, arctic region, hostile terrains; and future production is expected to come from increasingly difficult reserves – deeper horizon, low quality crude. All these are making E&P activities even more challenging in terms of operations, technology, cost and risk. Therefore, it is necessary to use scarce resources judiciously and optimize strategies, cost and capital, and improve business performance in all spheres of E&P business. Optimization and Business Improvement Studies in Upstream Oil and Gas Industry contains eleven real-life optimization and business improvement studies that delve into the core E&P activities and functional areas covering a wide range of operations and processes. It uses various quantitative and qualitative techniques, such as Linear Programming, Queuing theory, Critical Path Analysis, Economic analysis, Best Practices Benchmark, Business Process Simplification etc. to optimize Productivity of drilling operations Controllable rig time loss Deepwater exploration strategy Rig move time and activity schedule Offshore supply vessel fleet size Supply chain management system Strategic workforce and human resource productivity Base oil price

for a country Standardize consumption of materials Develop uniform safety standards for offshore installations Improve organizational efficiency through business process simplification The book will be of immense interest to practicing managers, professionals and employees at all levels/ disciplines in oil and gas industry. It will also be useful to academicians, scholars, educational institutes, energy research institutes, and consultants dealing with oil and gas. The work can be used as a practical guide to upstream professionals and students in petroleum engineering programs. This book comprises selected proceedings of the International Conference on Engineering Materials, Metallurgy and Manufacturing (ICEMMM 2018). It discusses innovative manufacturing processes, such as rapid prototyping, nontraditional machining, advanced computer numerical control (CNC) machining, and advanced metal forming. The book particularly focuses on finite element simulation and optimization, which aid in reducing experimental costs and time. This book is a valuable resource for students, researchers, and professionals alike.

Sustainable Oil and Gas Development Series: Drilling Engineering delivers research materials and emerging technologies that conform sustainability drilling criteria. Starting with ideal zero-waste solutions in drilling and long-term advantages, the reference discusses the sustainability approach through the use of non-linear solutions and works its way through the most conventional practices and procedures used today. Step-by-step formulations and examples are provided to demonstrate how to look at conventional practices versus sustainable approaches with eventually diverging towards a more sustainable alternative. Emerging technologies are covered and detailed sustainability analysis is included. Economic considerations, analysis, and long-term consequences, focusing on risk management round out the with conclusions and a extensive glossary. Sustainable Oil and Gas Development Series: Drilling Engineering gives today's petroleum and drilling engineers a guide how to analyze and evaluate their operations in a more environmentally-driven way. Proposes sustainable technical criteria and strategies for today's most common drilling practices such as horizontal drilling, managed pressure drilling, and unconventional shale activity Discusses economic benefits and development challenges to invest in environmentally-friendly operations Highlights the most recent research, analysis, and challenges that remain including global optimization

With regard to depleted oil and gas resources, increasing world energy demands and volatile economic and political world scenarios, oil and gas industry players are working very hard to find ways to cut exploration and production costs to sustain and develop the industry to provide the world with cheap energy without harming the environment. Therefore, this book intends to provide readers with a comprehensive overview of the current state of the art in drilling, such as advanced drilling operations and techniques used by the industry, particularly in floating, underbalanced drilling, smart drilling fluid, intelligent drilling, drilling optimization, and future drilling technology and development.

- Uses step-by-step tutorials designed for novice users
- Explains not only how but also why commands are used
- Covers part and assembly creation, creating engineering drawings and parametric solid modeling

The eleven lessons in this tutorial introduce you to the design capabilities of Creo Parametric 8.0. The tutorial covers the major concepts and frequently used commands

required to advance from a novice to an intermediate user level. Major topics include part and assembly creation, and creation of engineering drawings. Also illustrated are the major functions that make Creo Parametric a parametric solid modeler. Although the commands are presented in a click-by-click manner, an effort has been made, in addition to showing/illustrating the command usage, to explain why certain commands are being used and the relation of feature selection and construction to the overall part design philosophy. Simply knowing where commands can be found is only half the battle. As is pointed out numerous times in the text, creating useful and effective models of parts and assemblies requires advance planning and forethought. Moreover, since error recovery is an important skill, considerable time is spent exploring the created models. In fact, some errors are intentionally induced so that users will become comfortable with the "debugging" phase of model creation. At the end of each lesson is a short quiz reviewing the new topics covered in that chapter. Following the quiz are several simple "exercise" parts that can be created using new commands taught in that lesson. In addition to these an ongoing project throughout the book is also included. This project consists of several parts that are introduced with the early lessons and finally assembled at the end. Who this book is for This book has been written specifically with students in mind. Typically, students enter their first CAD course with a broad range of abilities both in spatial visualization and computer skills. The approach taken here is meant to allow accessibility to persons of all levels. These lessons, therefore, were written for new users with no previous experience with CAD, although some familiarity with computers is assumed. The tutorials in this textbook cover the following topics: • Introduction to the program and its operation • The features used in part creation • Modeling utilities • Creating engineering drawings • Creating assemblies and assembly drawings

Comprises ten papers discussing topics including methods for the measurement of surface crack size, multiple site cracking, and cracking under nonisothermal conditions using AC potential difference procedures; influences of crack deflection and crack splitting on DC potential calibrations; complianc

Parenteral Medications is an authoritative, comprehensive reference work on the formulation and manufacturing of parenteral dosage forms, effectively balancing theoretical considerations with practical aspects of their development. Previously published as a three-volume set, all volumes have been combined into one comprehensive publication that addresses the plethora of changes in the science and considerable advances in the technology associated with these products and routes of administration. Key Features: Provides a comprehensive reference work on the formulation and manufacturing of parenteral dosage forms Addresses changes in the science and advances in the technology associated with parenteral medications and routes of administration Includes 13 new chapters and updated chapters throughout Contains the contributors of leading researchers in the field of parenteral medications Uses full color detailed illustrations, enhancing the learning process The fourth edition not only reflects enhanced content in all the chapters but also highlights the rapidly advancing formulation, processing, manufacturing parenteral technology including advanced delivery and cell therapies. The book is divided into seven sections: Section 1 - Parenteral Drug Administration and Delivery Devices; Section 2 - Formulation Design and Development; Section 3 - Specialized Drug Delivery

Systems; Section 4 - Primary Packaging and Container Closure Integrity; Section 5 - Facility Design and Environmental Control; Section 6 - Sterilization and Pharmaceutical Processing; Section 7 - Quality Testing and Regulatory Requirements

Drilling is an old and well-known operation, and over the years significant improvements have been achieved in the performance of drilling operations. This book presents the latest findings of scientists and engineers for enhancing the quality and performance of drilling in various industries. It covers interesting topics on conventional and multi-spindle drilling operations, challenges of machining widely used aluminum alloys, non-conventional drilling using the hybrid EDM+ECM method, development of CNC machines, and the loss of circulation in the drilling of oil wells. This book is a useful resource for engineers, researchers, students, and those who work in industries involved in various forms of drilling operations.

This volume provides an up-to-date overview of major advances, emerging trends, and projected industrial applications in the field of multidisciplinary optimization. It concentrates on the current status of the field, exposes commonalities, innovative, promising, and speculative methods. This book provides a view of today's multidisciplinary optimization environment through a balanced theoretical and practical treatment. The contributors are the foremost authorities in each area of specialisation.

Intelligent computing refers greatly to artificial intelligence with the aim at making computer to act as a human. This newly developed area of real-time intelligent computing integrates the aspect of dynamic environments with the human intelligence. This book presents a comprehensive practical and easy to read account which describes current state-of-the art in designing and implementing real-time intelligent computing to robotics, alert systems, IoT, remote access control, multi-agent systems, networking, mobile smart systems, crowd sourcing, broadband systems, cloud computing, streaming data and many other applications areas. The solutions discussed in this book will encourage the researchers and IT professional to put the methods into their practice.

Engineered composites materials display superior properties to pristine materials. Glass fibres have been used for years in the production of light weight composites. This book is a much needed update as to the processing methods and technologies present in the manufacturing of GFRP. Coverage of machining, cutting, tools, and thermal loads are discussed. Ideal for researchers in academia and industry.

As energy technology has emerged as an essential way to provide efficiency and environmental safety, monitoring these energy sources is a way of measuring the effectiveness of the applications and the fundamentals of each design. Technology and Energy Sources Monitoring: Control, Efficiency, and Optimization provides an overall understanding of the technology and energy processes of renewable energy sources, biomaterials and more. By outlining the primary intent of the applications of energy technology and sustainable energy systems development, this book aims to bring a deeper understanding of the innovations and measures taken towards the monitoring of energy sources.

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