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DANIELA HOWARD

[Dynamic Balancing of Mechanisms and Synthesizing of Parallel Robots](#) Springer Nature

This book discusses the impact of fuels characteristics and their effects on the combustion processes in internal combustion engines. It includes the analysis of a variety of biofuels (alcohol fuels and biodiesel) and biogases (natural gas, hydrogen, etc.), providing valuable information related to consequent effects on performance and emissions. The contents focus on recent results and current trends of fuel utilization in the transport sector. State-of-the-art of clean fuels application are also discussed. Thighs book will be of interest to those in academia and industry involved in fuels, IC engines, engine instrumentation, and environmental research.

[Applied Mechatronics and Mechanics](#) CRC Press

This volume includes select papers presented during the 4th International and 19th National Conference on Machines and Mechanism (iNaCoMM 2019), held in Indian Institute of Technology, Mandi. It presents research on various aspects of design and analysis of machines and mechanisms by academic and industry researchers.

[Tribology in Materials and Manufacturing](#) Woodhead Publishing

This book presents the select proceedings of the International Conference on Evolution in Manufacturing (ICEM 2020), and examines a range of areas including evolution in manufacturing, intelligent networks, bio-Inspired models and algorithms, internet-of-things, and cyber manufacturing. This book intends to provide a contribution to the domain of collaborative and intelligent networks and systems to fill the gap in theories and practical applications through suitable methods and solutions applicable to a wide range of instances. Various topics covered include broad range of research challenges in the fields of artificial intelligence and addressing current and future trends in industry 4.0 oriented scenario, data analytics and big data, operation and manufacturing management. The book will be a valuable reference for beginners, researchers and professionals interested in artificial intelligence in engineering and production management and allied fields.

[Operations Management and Data Analytics Modelling](#) Springer Nature

This highly informative and carefully presented book focuses on the fields of ergonomics/human factors and discusses the future of the community vis-à-vis health problems, productivity, aging, etc. Ergonomic intercession must be seen in light of its effect on productivity because ergonomic solutions will improve productivity as the reduction of environmental stressors, awkward postures and efforts lead to a reduction in task execution time. The book provides promising evidence that the field of ergonomics continues to thrive and develop deeper insights into how work environments, products and systems can be developed to meet needs, demands and limitations of humans and how they can support productivity improvements. Some of the themes covered are anthropometry and workplace design, biomechanics and modelling in ergonomics, cognitive and environmental ergonomics, ergonomic intervention and productivity, ergonomics in transport, mining, agriculture and forestry, health systems, work physiology and sports ergonomics, etc. This book is beneficial to academicians, policymakers and the industry alike. ^

[Recent Innovations in Mechanical Engineering](#) Woodhead Publishing

Current Trends in Biomanufacturing focuses on cutting-edge research regarding the design, fabrication, assembly, and measurement of bio-elements into structures, devices, and systems. The field of biomaterial and biomanufacturing is growing exponentially in order to meet the increasing demands of for artificial joints, organs and bone-fixation devices. Rapid advances in the biological sciences and engineering are leading to newer and viable resources, methods and techniques that may providing better quality of life and more affordable health care services. The book covers the broad aspects of biomanufacturing, including: synthesis of biomaterials; implant coating techniques; spark plasma sintering; microwave processing; and cladding, powder metallurgy and electrospinning. The contributors illustrate the recent trends of biomanufacturing, highlighting the important aspects of biomaterial synthesis, and their use as feedstock of fabrication technologies and their characterization, along with their clinical practices. Current Trends in Biomanufacturing updates researchers and scientists the novelties and techniques

of the field, as it summarises numerous aspects of biomanufacturing, including synthesis of biomaterials, fabrication of biomedical structures, their in-vivo/ in-vitro, mechanical analysis and associated ISO standards.

[Integration of Process Planning and Scheduling](#) Walter de Gruyter GmbH & Co KG

Addresses assessment of polymeric materials in biomedical sciences including classification, properties, and development of polymeric implants Covers various topics in the field of tissue regeneration Discusses the biocompatibility, toxicity, and biodegradation of polymeric materials Explores wide scale characterization to study the effect of inclusion size on mechanical properties of polymeric materials Reviews limitations and future directions on polymeric material with emphasis on biocompatibility

[Manufacturing and Processing of Advanced Materials](#) Springer Nature

This book covers different aspects related to utilization of alcohol fuels in internal combustion (IC) engines with a focus on combustion, performance and emission investigations. The focal point of this book is to present engine combustion, performance and emission characteristics of IC engines fueled by alcohol blended fuels such as methanol, ethanol and butanol. The contents also highlight the importance of alcohol fuel for reducing emission levels. Possibility of alcohol fuels for marine applications has also been discussed. This book is a useful guide for researchers, academics and scientists. ^

[Primary and Secondary Manufacturing of Polymer Matrix Composites](#) Springer Nature

Tribology in Materials and Manufacturing - Wear, Friction and Lubrication brings an interdisciplinary perspective to accomplish a more detailed understanding of tribological assessments, friction, lubrication, and wear in advanced manufacturing. Chapters cover such topics as ionic liquids, non-textured and textured surfaces, green tribology, lubricants, tribolayers, and simulation of wear. [Sustainability of Green and Eco-friendly Composites](#) Elsevier Proceedings of 14th International Conference on Humanizing work and work Environment

[Intelligent Prognostics for Engineering Systems with Machine Learning Techniques](#) Springer Nature

Explore the world of advanced materials and their manufacturing processes through this authoritative and enlightening reference. Discover how these innovations are shaping the future of high-tech industries and making a profound impact on our world. Manufacturing and Processing of Advanced Materials compiles current research and updates on development efforts in advanced materials, manufacturing, and their engineering applications. The book presents 22 peer-reviewed chapters that cover new materials and manufacturing processes. Key Topics Materials for the Future: Properties, classifications, and harmful effects of advanced engineering Innovative Manufacturing Techniques: Nanotechnology in material processing and manufacturing innovation. Advanced Welding and Joining: laser welding and friction stir welding in manufacturing composite materials. Sustainable Practices: Eco-Friendly machining, water vapor cutting fluid, for high-speed milling, natural fiber reinforcement with materials like bamboo leaves. Advanced Materials Characterization and Modeling: Carbon nanotube (CNT)-reinforced nanocomposites and tribology for durable and reliable materials ensuring reliability. Materials for Energy and Electronics: Energy Storage Innovations and smart materials for electronic devices Novel Drilling and Machining Processes: Microwave drilling, electric discharge machining and die-sinking electric discharge machining for metal matrix composites. Innovations in Nanoparticle Production: Spark discharge method (SDM) for advanced nanoparticle production. The book caters to a diverse audience, offering an invaluable resource for researchers, engineers, graduate students, and professionals in materials science, engineering, chemistry, and physics. By enhancing their knowledge and expertise, readers are poised to become key contributors to various industries and technological advancements.

[Recent Advances in Smart Manufacturing and Materials](#) CRC Press

This book presents the selected peer-reviewed proceedings of the International Conference on Innovative Engineering Design (ICOIED 2020). The contents provide a multidisciplinary approach for the development of innovative product design and their benefits for the society. The book presents latest advances in various fields like design process, service development, micro/nano technology, sensors and MEMS, and sustainability in engineering design. This book can be useful for students,

researchers, and professionals interested in innovative product/process design and development.

[Advances in Mechanical and Materials Technology](#) Springer Nature

This volume is based on the proceedings of the 28th International Conference on CAD/CAM, Robotics and Factories of the Future. This book specially focuses on the positive changes made in the field of robotics, CAD/CAM and future outlook for emerging manufacturing units. Some of the important topics discussed in the conference are product development and sustainability, modeling and simulation, automation, robotics and handling systems, supply chain management and logistics, advanced manufacturing processes, human aspects in engineering activities, emerging scenarios in engineering education and training. The contents of this set of proceedings will prove useful to both researchers and practitioners.

[Computational Intelligence in Manufacturing](#) Springer

This book covers the state-of-the-art technologies in dynamic balancing of mechanisms with minimum increase of mass and inertia. The synthesis of parallel robots based on the Decomposition and Integration concept is also covered in detail. The latest advances are described, including different balancing principles, design of reactionless mechanisms with minimum increase of mass and inertia, and synthesizing parallel robots. This is an ideal book for mechanical engineering students and researchers who are interested in the dynamic balancing of mechanisms and synthesizing of parallel robots. This book also: · Broadens reader understanding of the synthesis of parallel robots based on the Decomposition and Integration concept · Reinforces basic principles with detailed coverage of different balancing principles, including input torque balancing mechanisms · Reviews exhaustively the key recent research into the design of reactionless mechanisms with minimum increase of mass and inertia, such as the design of reactionless mechanisms with auxiliary parallelograms, the design of reactionless mechanisms with flywheels, and the design of reactionless mechanisms by symmetrical structure design.

[Nanocomposite and Nanohybrid Materials](#) Springer Nature

This book focuses on the simulation and modeling of internal combustion engines. The contents include various aspects of diesel and gasoline engine modeling and simulation such as spray, combustion, ignition, in-cylinder phenomena, emissions, exhaust heat recovery. It also explored engine models and analysis of cylinder bore piston stresses and temperature effects. This book includes recent literature and focuses on current modeling and simulation trends for internal combustion engines. Readers will gain knowledge about engine process simulation and modeling, helpful for the development of efficient and emission-free engines. A few chapters highlight the review of state-of-the-art models for spray, combustion, and emissions, focusing on the theory, models, and their applications from an engine point of view. This volume would be of interest to professionals, post-graduate students involved in alternative fuels, IC engines, engine modeling and simulation, and environmental research.

[Machines, Mechanism and Robotics](#) Springer Nature

Operations Management and Data Analytics Modelling: Economic Crises Perspective addresses real operation management problems in thrust areas like the healthcare and energy management sectors and Industry 4.0. It discusses recent advances and trends in developing data-driven operation management-based methodologies, big data analysis, application of computers in industrial engineering, optimization techniques, development of decision support systems for industrial operation, the role of a multiple-criteria decision-making (MCDM) approach in operation management, fuzzy set theory-based operation management modelling and Lean Six Sigma. Features Discusses the importance of data analytics in industrial operations to improve economy Provides step-by-step implementation of operation management models to identify best practices Covers in-depth analysis using data-based operation management tools and techniques Discusses mathematical modelling for novel operation management models to solve industrial problems This book is aimed at graduate students and professionals in the field of industrial and production engineering, mechanical engineering and materials science.

[Application of Clean Fuels in Combustion Engines](#) Springer Nature

The text discusses the latest data-driven, physics-based, and hybrid approaches employed in each stage of industrial prognostics and reliability estimation. It will be a useful text for senior undergraduate, graduate students, and academic researchers in areas such as industrial and production

engineering, electrical engineering, and computer science. The book Discusses basic as well as advance research in the field of prognostics. Explores integration of data collection, fault detection, degradation modeling and reliability prediction in one volume. Covers prognostics and health management (PHM) of engineering systems. Discusses latest approaches in the field of prognostics based on machine learning. The text deals with tools and techniques used to predict/ extrapolate/ forecast the process behavior, based on current health state assessment and future operating conditions with the help of Machine learning. It will serve as a useful reference text for senior undergraduate, graduate students, and academic researchers in areas such as industrial and production engineering, manufacturing science, electrical engineering, and computer science.

Innovations in Mechanical Engineering II Springer Nature

This new volume discusses how integrating IoT devices and cyber-physical systems can help society by providing multiple efficient and affordable services to users. It covers the various applications of IoT-based cyber-physical systems, such as satellite imaging in relation to climate change, industrial control systems, e-healthcare applications, security uses, automotive and traffic monitoring and control, urban smart city planning, and more. The authors also outline the methods, tools, and algorithms for IoT-based cyber-physical systems and explore the integration of machine learning, blockchain, and Internet of Things-based cloud applications. With the continuous emerging new technologies and trends in IoT technology and CPS, this volume will be a helpful resource for scientists, researchers, industry professionals, faculty and students, and others who wish to keep abreast of new developments and new challenges for sustainable development in Industry 4.0.

Advances in Materials Processing and Manufacturing Applications CRC Press

The volume "Nanocomposite and Nanohybrid Materials: Processing and Applications" is an outstanding resource for exploring the findings and recent trends of nanocomposites and nanohybrid materials. Herein, a full grasp of cutting-edge research, new technologies, and exciting opportunities linked with nanocomposites and nanohybrids. Nanomaterials, including their synthesis, development, and advanced properties, are thoroughly investigated. Several processes for preparing nanomaterials are presented to the reader, along with their characteristics and development phase. It offers the latest applications of nanoparticles for diagnosing and treating neurological disorders and their use in biological imaging and targeted cancer treatments. This provides a strong basis for future study and innovation in this intriguing issue that is very important to methodology, qualitative approaches, and applications.

Smart Manufacturing Technologies for Industry 4.0

Springer Nature

This book offers an analysis of the state-of-the-art in high entropy alloys (HEA). In order to increase the qualities of an alloy, one major element is typically chosen and other elements are added to it in small amounts. In order to create multi-component alloys without a single major element, Professor J.W. Yeh described a novel method of alloy design in 2004. This method involved mixing elements in equiatomic or nearly equiatomic proportions. HEAs have a wide range of structural and physical properties and may find use in various applications. HEAs are intended to have high configurational entropy. The fundamental information now known in the subject, the range of different alloy systems and the

features that have been investigated so far, the current major study fields, and the technological applications are presented in this book. Includes high entropy alloy fabrication and phase development. Discusses thermodynamic design criteria to develop HEAs. Covers the HEAs functioning characteristics. Compares the different processing routes used for the synthesis of HEAs

Sustainable Manufacturing CRC Press

Computational Intelligence in Manufacturing addresses applications of AI, machine learning and other innovative computational techniques across the manufacturing supply chain. The rapid development of smart or digital manufacturing known as Industry 4.0 has swiftly provided a large number of opportunities for product and manufacturing process improvement. Selecting the appropriate technologies and combining them successfully is a challenge this book helps readers overcome . It explains how to prepare different manufacturing cells for flexibility and enhanced productivity with better supply chain management, e.g., calibrating design machine tools for automation and agility. Computational intelligence applications for non-conventional manufacturing processes such as ECM and EDM are covered alongside recent advances in traditional processes like casting, welding and metal forming. As well as describing specific applications, this practical guide also explains the computational intelligence paradigm for enhanced supply chain management. Includes hot topics such as augmented and virtual reality applications in manufacturing Provides details of computational techniques, such as nature inspired algorithms for manufacturing process modeling Gives practical technical advice on how to calibrate processes and tools to work efficiently in an industry 4.0 system