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Engineering for Sustainable Development Academic Press

MILLS KARSYN

Carbon Dioxide as Chemical Feedstock Royal Society of Chemistry

As the capability and utility of robots has increased dramatically with new technology, robotic systems can perform tasks that are physically dangerous for humans, repetitive in nature, or require increased accuracy, precision, and sterile conditions to radically minimize human error. The Robotics and Automation Handbook addresses the major aspects of designing, fabricating, and enabling robotic systems and their various applications. It presents kinetic and dynamic methods for analyzing robotic systems, considering factors such as force and torque. From these analyses, the book develops several controls approaches, including servo actuation, hybrid control, and trajectory planning. Design aspects include determining specifications for a robot, determining its configuration, and utilizing sensors and actuators. The featured applications focus on how the specific difficulties are overcome in the development of the robotic system. With the ability to increase human safety and precision in applications ranging from handling hazardous materials and exploring extreme environments to manufacturing and medicine, the uses for robots are growing steadily. The Robotics and Automation Handbook provides a solid foundation for engineers and scientists interested in designing, fabricating, or utilizing robotic systems.

Principles of Clinical Research Synapse Info Resources

Coatings are traditionally used to protect materials from corrosion and erosion and improve the equipment's performance. At present, there are coatings that provide materials with new properties, for example, biocidal, hydrophobic and self-cleaning properties. A promising area of materials science is the development of "smart" coatings that simultaneously give materials several new properties. The coating properties are determined by the coatings' material, the structure and the properties of the substrate surface, and the methods of forming the coatings. This book contains the results of the latest research on the formation of coatings that impart complexes of new properties to various materials.

Design and Development of Medical Electronic Instrumentation Synapse Info Resources

UV light is one of a number of emerging non-thermal food processing technologies that can be used in a broad range of applications producing food products with longer shelf-life, more safe, and with higher nutritional quality. The new edition of Ultraviolet Light in Food Technology: Principles and Applications will present recent understanding of the fundamentals of UV light along with new applied knowledge that has accumulated during the 7 years since the first edition published in 2009. The new edition of the book will have 11 chapters including 2 new chapters--on chemical destruction with UV light and food plant safety--along with 6 chapters greatly expanded and updated.

Cutaneous Aging Cambridge University Press

Design and Development of Medical Electronic Instrumentation fills a gap in the existing medical electronic devices literature by providing background and examples of how medical instrumentation is actually designed and tested. The book includes practical examples and projects, including working schematics, ranging in difficulty from simple biopotential amplifiers to computer-controlled defibrillators. Covering every stage of the development process, the book provides complete coverage of the practical aspects of amplifying, processing, simulating and evoking biopotentials. In addition, two chapters address the issue of safety in the development of electronic medical devices, and providing valuable insider advice.

Plastic Waste and Recycling Cambridge University Press

Here is a new edition of one of the first texts specifically designed to provide students of medicine and biology with a treatment of physics related to their fields of study. Assuming a basic understanding of physics, it carefully develops ideas from first principles, using calculus and statistics when necessary but avoiding complex mathematics.

Plastic Waste Markets Nordic Council of Ministers

More than 7000 trade name products and more than 2500 generic chemicals that can be used in formulations to meet environmental concerns and government regulations. This reference is designed to serve as an essential tool in the strategic decision-making process of chemical selection when focusing on human and environmental safety factors. Industries Covered: Adhesives ? Refrigerants ? Water Treatment ? Plastics ? Rubber ? Surfactants ? Paints & Coatings ? Food ? PharmaceuticalsCosmetics ? Petroleum Processing ? Metal Treatment ? TextilesThe chemicals and materials included are used in every aspect of the chemical industry. The reference is organized so that the reader can access the information based on the trade name, chemical components, functions and application areas, 'green' attributes, manufacturer, CAS number, and EINECS/ELINCS number.It contains a unique cross-reference that groups the trade name chemicals by one or more of these green chemical attributes: Biodegradable ? Environmentally Safe ? Environmentally Friendly ? Halogen-Free ? HAP's-Free ? Low Global WarmingLow Ozone-Depleting ? Nonozone-Depleting ? Low Vapor Pressure ? Noncarcinogenic ? Non-CFC ? Non-HCFCNonhazardous ? Nontoxic ? Recyclable ? SARA-Nonreportable ? SNAP (Significant New Alternative Policy) CompliantVOC-Compliant ? Low-VOC ? VOC-Free

Wearable Robotics CRC Press

This publication investigates key aspects surrounding the sustainability of bioeconomy development: the use of biomass as feedstock for future production; the design and building of biorefineries for the manufacture of a range of fuels, chemicals and materials, and also for electricity generation.

Fundamentals, Properties, and Applications of Polymer Nanocomposites Elsevier

Kidnapped and sold into slavery in the American South, freeman Solomon Northup spent twelve years in bondage before being freed. Twelve Years a Slave is Northup's moving memoir, revealing unimaginable details of the horrors he faced as a slave on Southern plantations, and his unshakable belief that he would return home to his family. Written in the year after Northup was freed and published in the wake of Harriet Beecher Stowe's Uncle Tom's Cabin, Northup's story was quickly taken up by abolitionist groups and news organizations as part of the fight against slavery, and continues to resonate more than a century after the end of the American Civil War.

Engineering Design, Planning, and Management iSmithers Rapra Publishing

Filling the need for an up-to-date handbook, this ready reference closely investigates the use of CO2 for ureas, enzymes, carbamates, and isocyanates, as well as its use as a solvent, in electrochemistry, biomass utilization and much more. Edited by an internationally renowned and experienced researcher, this is a comprehensive source for every synthetic chemist in academia and industry.

Decisive potential in business is a question of process capability, rather than production capability. Process capability in business requires real-time systems for optimization. Business-IT needs to be developed from telecommunications and ERP to real-time services, which are not offered by the prevailing ERP systems. This book shows how modern information technology Manufacturing Execution Systems (MES) becomes the prerequisite for process capability of the company on the basis of many practical examples. It describes the requirements for optimized MES. It gives an overview of the efficiency potentials and different applications of MES.

Intermediate Physics for Medicine and Biology Routledge

The first edition of this book, Chemical Warfare Agents: Toxicity at Low Levels, was published just prior to the terrorist attacks of September 11, 2001. The second edition titled, Chemical Warfare Agents: Pharmacology, Toxicology, and Therapeutics, included new epidemiological and clinical studies of exposed or potentially exposed populations; new treatment concepts and products; improved organization of the national response apparatus addressing the potential for CWA terrorism; and improved diagnostic tests that enable rapid diagnosis and treatment. Since the second edition, the chemical warfare agent community has worked hard to advance research for protection and treatment and develop/improve response approaches for individuals and definitive care. Consequently, in addition to updating previous chapters, Chemical Warfare Agents: Biomedical and Psychological Effects, Medical Countermeasures, and Emergency Response, Third Edition features several new chapters that address the Syrian War, chemical destruction, the Organisation for the Prohibition of Chemical Weapons, biomarkers for chemical warfare agent exposure, field sensors, aircraft decontamination, lung/human on a chip, chemical warfare response decision making, and other research advancements. Features: Describes the newest medical interventions, and the latest technologies deployed in the field, as well as developments in the international response to CW usage highlighting recent events in the Middle East Discusses the latest in organizational/interagency partitioning in terms of responsibilities for emergency response, not just in the United States but at the international level—whether prevention, mitigation, medical care, reclamation, or medico-legal aspects of such response Contains the most current research from bench-level experts The third edition contains the most up-to-date and comprehensive coverage of the question of chemical warfare agent employment on the battlefield or in terrorism. Edited by workers that have been in the field for 35+ years, it remains faithful to the scientific "constants," while evaluating and crediting the advances by the industry that have made us safer.

Surface Texture CRC Press

This handbook contains comprehensive information on more than 5000 trade names and generic chemicals and materials that are used in a broad range of formulations to prevent the contamination and decomposition of end products. Product degradation can be caused by exposure to oxygen, ozone, bacteria, molds, yeast, mildew, and fungi. The industries that depend on the proper selection of preserving chemicals and materials are diverse and include: plastics, elastomers, construction, paper/pulp, agriculture, textiles, paints and coatings, pharmaceutical, cosmetics, food, beverages.This handbook contains comprehensive information on a variety of preservatives available from major chemical manufacturers and can expedite the material selection process for chemists, formulators and purchasing agents by providing the answers to these questions: Is the agent capable of inhibiting the detrimental effects of oxygen, ozone, or microbes to the extent necessary?? Is the agent's overall physical and chemical attributes compatible with the product or system being protected?? Can the agent remain stable under storage conditions and for the application requirements?? Is its safety in production and handling acceptable?? Does its level of toxicity meet environmental regulations?? Does it meet cost requirements?

Cyber-Humans Harper Collins

Junior Theory Level 1 - a foundational music theory book specifically designed for children aged 4-7.

Involute Splines and Inspection Springer

In the 21st Century, processing food is no longer a simple or straightforward matter. Ongoing advances in manufacturing have placed new demands on the design and methodology of food processes. A highly interdisciplinary science, food process design draws upon the principles of chemical and mechanical engineering, microbiology, chemistry, nutrition and economics, and is of central importance to the food industry. Process design is the core of food engineering, and is concerned at its root with taking new concepts in food design and developing them through production and eventual consumption. Handbook of Food Process Design is a major new 2-volume work aimed at food engineers and the wider food industry. Comprising 46 original chapters written by a host of leading international food scientists, engineers, academics and systems specialists, the book has been developed to be the most comprehensive guide to food process design ever published. Starting from first principles, the book provides a complete account of food process designs, including heating and cooling, pasteurization, sterilization, refrigeration, drying, crystallization, extrusion, and separation. Mechanical operations including mixing, agitation, size reduction, extraction and leaching processes are fully documented. Novel process designs such as irradiation, high-pressure processing, ultrasound, ohmic heating and pulsed UV-light are also presented. Food packaging processes are considered, and chapters on food quality, safety and commercial imperatives portray the role process design in the broader context of food production and consumption.

Handbook of Green Chemicals John Wiley & Sons

The book reports on advanced topics in the areas of wearable robotics research and practice. It focuses on new technologies, including neural interfaces, soft wearable robots, sensors and actuators technologies, and discusses important regulatory challenges, as well as clinical and ethical issues. Based on the 4th International Symposium on Wearable Robotics, WeRob2018, held October 16-20, 2018, in Pisa, Italy, the book addresses a large audience of academics and professionals working in government, industry, and medical centers, and end-users alike. It provides them with specialized information and with a source of inspiration for new ideas and collaborations. It discusses exemplary case studies highlighting practical challenges related to the implementation of wearable robots in a number of fields. One of the focus is on clinical applications, which was encouraged by the colocation of WeRob2018 with the International Conference on Neurorehabilitation, INCR2018. Additional topics include space applications and assistive technologies in the industry. The book merges together the engineering, medical, ethical and political perspectives, thus offering a multidisciplinary, timely snapshot of the field of wearable technologies.

Biodesign Springer Science & Business Media

This book examines signal processing techniques for cognitive radios. The book is divided into three parts: Part I, is an introduction to cognitive radios and presents a history of the cognitive radio (CR), and introduce their architecture, functionalities, ideal aspects, hardware platforms, and state-of-the-art developments. Dr. Jayaweera also introduces the specific type of CR that has gained the most research attention in recent years: the CR for Dynamic Spectrum Access (DSA). Part II of the book, Theoretical Foundations, guides the reader from classical to modern theories on statistical signal processing and inference. The author addresses detection and estimation theory, power spectrum estimation, classification, adaptive algorithms (machine learning), and inference and decision processes. Applications to the signal processing, inference and learning problems encountered in cognitive radios are interspersed throughout with concrete and accessible examples. Part III of the book, Signal Processing in Radios, identifies the key signal processing, inference, and learning tasks to be performed by wideband autonomous cognitive radios. The author provides signal processing solutions to each task by relating the tasks to materials covered in Part II. Specialized chapters then discuss specific signal processing algorithms required for DSA and DSS cognitive radios.

Handbook of Food Process Design, 2 Volume Set John Wiley & Sons

Aflatoxins are a naturally occurring carcinogenic byproduct of common fungi on grains and other crops, particularly maize and groundnuts. They pose a significant public health risk in many tropical developing countries and are also a barrier to the growth of domestic and international commercial markets for food and feed. In recent years the aflatoxin problem has garnered greatly increased attention from both policy and donor communities around the globe. What can be done to reduce the detrimental impacts of aflatoxins? Because growth of the molds that produce aflatoxins is caused by multiple factors, and because they must be controlled along the entire value chain from production to consumption, only a robust multifaceted approach to controlling aflatoxins is likely to be effective. The nineteen briefs in this set thus provide different perspectives on aflatoxin risks and solutions. The analyses fall under four broad themes: (1) what is known about the health risks from aflatoxins; (2) how to overcome market constraints to improved aflatoxin control by building new market channels and incentives; (3) what is the international policy context for taking action in developing countries; and (4) what is the state of research on new aflatoxin control technologies, including new methods for aflatoxin detection, crop breeding, biological control, food storage and handling, and postharvest mitigation. These briefs collectively provide a much clearer picture of the state of current efforts at combatting aflatoxins. They also identify what gaps loom particularly large—including the need for contry-specific risk analysis and for testing integrated solutions for the entire supply chain—in our global efforts to effectively reduce human exposure to aflatoxins and increase the economic returns to smallholders in agriculture.

Manufacturing Execution System - MES Intl Food Policy Res Inst

Chromatography is a major analytical technique that is used throughout research, development and manufacturing in the pharmaceutical, medical device and associated industries. To demonstrate fitness for purpose with the applicable regulations, the systems must be validated. Validation of Chromatography Data Systems: Meeting Business and Regulatory Requirements introduces the

basics of computer validation. It looks in detail at the requirements throughout the life cycle of a CDS for any regulated laboratory, from its concept, through writing the user requirements specification to selecting the system, testing and operational release, including using electronic signatures. This logical and uniquely organised book provides the background to the regulatory requirements, interpretation of the regulations and documented evidence needed to support a claim that a system is validated. Development of the system, risk management, operation and finally system retirement and data migration are discussed. Case studies and practical examples are provided where appropriate. Validation of Chromatography Data Systems: Meeting Business and Regulatory Requirements is ideal for the chromatographer working in analytical laboratories in the regulated pharmaceutical, contract research, biotechnology and medical device industries seeking the practical guidance required for validating their chromatography data systems in order to meet regulatory requirements. It will also be welcomed by consultants or those in regulatory agencies.

ISPE Baseline® Guide OECD Publishing

Biodegradable polymers have experienced strong growth over the last three years and are set to make further inroads into markets traditionally dominated by conventional thermoplastics in future. Four main classes of biodegradable polymers are analysed in this report, polylactic acid (PLA), starch-based polymers, synthetic biodegradable polymers, such as aromatic aliphatic co-polyesters, and polyhydroxyalkanoates (PHA). The report analyses their key performance properties, applications development, market drivers and future prospects. Each product section also contains an estimate of market size by world region and end use market, plus forecasts to 2010. There is also an analysis of key suppliers and their products.

Validation of Chromatography Data Systems Columbia University Press

Engineering Design, Planning and Management, Second Edition represents a compilation of essential resources, methods, materials and knowledge developed by the author and used over two decades. The book covers engineering design methodology through an interdisciplinary approach, with concise discussions and a visual format. It explores project management and creative design in the context of both established companies and entrepreneurial start-ups. Readers will discover the usefulness of the design process model through practical examples and applications from across engineering disciplines. Sections explain useful design techniques, including concept mapping and weighted decision matrices that are supported with extensive graphics, flowcharts and accompanying interactive templates. Discussions are organized around 12 chapters dealing with topics such design concepts and embodiments, decision-making, finance, budgets, purchasing, bidding, communication, meetings and presentations, reliability and system design, manufacturing design and mechanical design. Covers all steps in the design process Includes several chapters on project management, budgeting and teamwork, providing sufficient background to help readers effectively work with time and budget constraints Provides flowcharts, checklists and other templates that are useful for implementing successful design methods Presents examples and applications from several different engineering fields to show the general usefulness of the design process model