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System Health Management: with Aerospace Applications provides the first complete reference text for System Health Management (SHM), the set of technologies and processes used to improve system dependability. Edited by a team of engineers and consultants with SHM design, development, and research experience from NASA, industry, and academia, each heading up sections in their own areas of expertise and co-coordinating contributions from leading experts, the book collates together in one text the state-of-the-art in SHM research, technology, and applications. It has been written primarily as a reference text for practitioners, for those in related disciplines, and for graduate students in aerospace or systems engineering. There are many technologies involved in SHM and no single person can be an expert in all aspects of the discipline. System Health Management: with Aerospace Applications provides an introduction to the major technologies, issues, and references in these disparate but related SHM areas. Since SHM has evolved most rapidly in aerospace, the various applications described in this book are taken primarily from the aerospace industry. However, the theories, techniques, and technologies discussed are applicable to many engineering disciplines and application areas. Readers will find sections on the basic theories and concepts of SHM, how it is applied in the system life cycle (architecture, design, verification and validation, etc.), the most important methods used (reliability, quality assurance, diagnostics, prognostics, etc.), and how SHM is applied in operations (commercial aircraft, launch operations, logistics, etc.), to subsystems (electrical power, structures, flight controls, etc.) and to system applications (robotic spacecraft, tactical missiles, rotorcraft, etc.).

"Organic Trace Analysis" presents the basics of trace analysis, from sample preparation to the measurement: Students are introduced to statistical evaluation, quality control technologies, sampling and preparation of organic traces, as well as to enrichment and separation of samples. Spectroscopic techniques as chromatography, capillary electrophoresis, mass spectrometry, and receptor-based bioanalysis are presented in detail.

Robust Model-Based Fault Diagnosis for Dynamic Systems Springer Science & Business Media

Emerging contaminants are chemical and biological agents for which there is growing concern about their potential health and environmental effects. The threat lies in the fact that the sources, fate and toxicology of most of these compounds have not yet been studied. Emerging contaminants, therefore, include a large number of both recently discovered and well-known compounds such as rare earth elements, viruses, bacteria, nanomaterials, microplastics, pharmaceuticals, endocrine disruptors, hormones, personal care products, cosmetics, pesticides, surfactants and industrial chemicals. Emerging contaminants have been found in many daily products, and some of them accumulate in the food chain. Correlations have been observed between aquatic pollution by emerging contaminants and discharges from wastewater treatment plants. Most actual remediation methods are not effective at removing emerging contaminants. This first volume presents comprehensive knowledge on emerging contaminants with a focus on analysis, toxicity, antibiotic resistance and human health.

This volume describes the latest developments in the design, construction and operation of cyclotrons, from compact machines producing intense beams for isotope production, cancer therapy and industrial use, to the larger versions giving higher energy beams of ions of various elements for nuclear and particle physics. Important topics include ECR ion sources, superconducting magnets and radiofrequency cavities, beam dynamics and diagnostics, beam cooling rings, control systems and various medical and industrial applications.

This first book of a 3-volume set on Fracture Mechanics is mainly centered on the vast range of the laws of statistical distributions encountered in various scientific and technical fields. These laws are indispensable in understanding the probability behavior of components and mechanical structures that are exploited in the other volumes of this series, which are dedicated to reliability and quality control. The author presents not only the laws of distribution of various models but also the tests of adequacy suited to confirm or counter the hypothesis of the law in question, namely the Pearson ( $\chi^2$ ) test, the Kolmogorov-Smirnov (KS) test, along with many other relevant tests. This book distinguishes itself from other works in the field through its originality in presenting an educational approach which aims at helping practitioners both in academia and industry. It is intended for technicians, engineers, designers, students, and teachers working in the fields of engineering and vocational education. The main objective of the author is to provide an assessment of indicators of quality and reliability to aid in decision-making. To this end, an intuitive and practical approach, based on mathematical rigor, is recommended.

Flow cytometry has rapidly evolved into a technique for rapid analysis of DNA content, cellular marker expression and electronic sorting of cells of interest for further investigations. Flow cytometers are being extensively used for monitoring of cellular DNA content, phenotype expression, drug transport, calcium flux, proliferation and apoptosis. Phenotypic analysis of marker expression in leukemic cells has become an important tool for diagnostic and therapeutic monitoring of patients. Recent studies have explored the use of flow cytometry for monitoring hormone receptor expression in human solid tumors and for studies in human genomics. Contributions in the current volume are based on presentations made at the First Indo-US workshop on Flow Cytometry in which experts from USA, UK and India discussed applications of flow cytometry in biological and medical research. This book will be of interest to post graduates and researchers in the fields of pathology, cytology, cell biology and molecular biology.

An accessible introduction to the phonetic analysis of speech corpora, this workbook-style text provides an extensive set of exercises to help readers develop the necessary skills to design and carry out experiments in speech research. Offers the first step-by-step treatment of advanced techniques in experimental phonetics using speech corpora and

downloadable software, including the R programming language Introduces methods of analyzing phonetically-labelled speech corpora, with the goal of testing hypotheses that often arise in experimental phonetics and laboratory phonology Incorporates an extensive set of exercises and answers to reinforce the techniques introduced Accessibly written with easy-to-follow computer commands and spectrograms of speech Companion website at [www.wiley.com/go/harrington](http://www.wiley.com/go/harrington), which includes illustrations, video tutorials, appendices, and downloadable speech corpora for testing purposes. Discusses techniques in digital speech processing and in structuring and querying annotations from speech corpora Includes substantial coverage of analysis, including measuring gestural synchronization using EMA, the acoustics of vowels, consonant overlap using EPG, spectral analysis of fricatives and obstruents, and the probabilistic classification of acoustic speech data

Forensic Chemistry is a comprehensive overview of the subject aimed at those students who have a basic understanding of the underlying principles and are looking for a more detailed reference text. This book is aimed at advanced students who are studying forensic science or analytical chemistry, faculty and researchers, and practitioners such as crime laboratory bench scientists. The authors will assume that the reader will have an introductory knowledge of forensic science and forensic chemistry and will have had analytical, organic and instrumental chemistry. None of the major analytical chemical techniques will have separate treatments in the book, with the exception of forensic microscopy, which will have a chapter because many students in chemistry and forensic science do not get dedicated classes in this area. The book will have separate chapters on all of the major areas of forensic chemistry and, in addition, will have a chapter devoted to chemometrics, which is the statistical treatment of large amounts of data to discover groupings, similarities and differences among the data. Each chapter will be written by an acknowledged international expert in that area. Each author will be given detailed instructions as to the intended audience, as well as expected breadth and depth of coverage of the material in the hopes that this will minimize the problem of uneven coverage of topics and chapters that often occurs in edited books. Although each of the types of evidence covered in the book use methods of analysis that lie outside chemistry, these will be mentioned only for completeness in passing. The emphasis will be on the use of chemical tools in evidence analysis. This book is designed to be either a text book for an advanced forensic chemistry course, or a treatise in forensic chemistry for the scientist who wants to learn the subject in some depth. It is not designed to be a survey of the current literature in the field or a reference manual.

Haynes disassembles every subject vehicle and documents every step with thorough instructions and clear photos. Haynes repair manuals are used by the pros, but written for the do-it-yourselfer.

This title is part of UC Press's Voices Revived program, which commemorates University of California Press's mission to seek out and cultivate the brightest minds and give them voice, reach, and impact. Drawing on a backlist dating to 1893, Voices Revived makes high-quality, peer-reviewed scholarship accessible once again using print-on-demand technology. This title was originally published in 1965.

Proceedings of the First International Conference on Strategies and Techniques for the Investigation and Monitoring of Contaminated Sites

This book discusses various components of the innate and adaptive immune response in combating viral infections, presenting the recent advances in our understanding of innate immunity recognition of viruses and highlighting the important role of inflammation, cytokines such as interferon, toll-like receptors and leukocytes in the initial detection of invading viruses and subsequent activation of adaptive immunity. It also summarizes the role of the adaptive immunity against viral infections through clearance of virus and establishment of memory response that protects against the recurrent infections. In addition, the book examines the role of DNA and RNA sensors in viral recognition and in controlling viral infection. Lastly, it reviews the latest developments in the development of the rational viral vaccines. As such it is a useful resource book for postgraduate and early researchers wanting to gain insights into the immune response to viral infections.

Since the time our first book Fault Diagnosis in Dynamic Systems: Theory and Applications was published in 1989 by Prentice Hall, there has been a surge in interest in research and applications into reliable methods for diagnosing faults in complex systems. The first book sold more than 1,200 copies and has become the main text in fault diagnosis for dynamic systems. This book will follow on this excellent record by focusing on some of the advances in this subject, by introducing new concepts in research and new application topics. The work cannot provide an exhaustive discussion of all the recent research in fault diagnosis for dynamic systems, but nevertheless serves to sample some of the major issues. It has been valuable once again to have the co-operation of experts throughout the world working in industry, government establishments and academic institutions in writing the individual chapters. Sometimes dynamical systems have associated numerical models available in state space or in frequency domain format. When model information is available, the quantitative model-based approach to fault diagnosis can be taken, using the mathematical model to generate analytically redundant alternatives to the measured signals. When this approach is used, it becomes important to try to understand the limitations of the mathematical models i. e. , the extent to which model parameter variations occur and the effect of changing the systems point of operation.

This handbook provides a straightforward introduction to spectroscopy, showing what it can do and how it does it, together with a clear, integrated and objective account of the wealth of information that can be derived from spectra. The sequence of chapters covers a wide range of the electromagnetic spectrum, and the physical processes involved, from nuclear phenomena to molecular rotation processes. - A day-by-day laboratory guide: its design based on practical knowledge of spectroscopists at universities, industries and research institutes - A well-structured information source containing methods and applications sections framed by sections on general topics - Guides users to a decision about which spectroscopic method and which instrumentation will be the most appropriate to solve their own practical problem - Rapid access to essential information - Correct analysis of a huge number of measured spectra data and smart use of such information sources as databases and spectra libraries

Discover the potential applications, challenges, and opportunities of deep learning from a business perspective with technical examples. These applications include image recognition, segmentation and annotation, video processing and annotation, voice recognition, intelligent personal assistants, automated translation, and autonomous vehicles. An Introduction to Deep Learning Business Applications for Developers covers some common DL algorithms such as content-based recommendation algorithms and natural language processing. You'll explore examples, such as video prediction with fully convolutional neural networks (FCNN) and residual neural networks (ResNets). You will also see applications of DL for controlling robotics, exploring the DeepQ learning algorithm with Monte Carlo Tree search (used to beat humans in the game of Go), and modeling for financial risk assessment. There will also be mention of the powerful set of algorithms called Generative Adversarial Neural networks (GANs) that can be applied for image colorization, image completion, and style transfer. After reading this book you will have an overview of the exciting field of deep neural networks and an understanding of most of the major applications of deep learning. The book contains some coding examples, tricks, and insights on how to train deep learning models using the Keras framework. What You Will Learn Find out about deep learning and why it is so powerful Work with the major algorithms available to train deep learning models See the major breakthroughs in terms of applications of deep learning Run simple examples with a selection of deep learning libraries Discover the areas of impact of deep learning in business Who This Book Is For Data scientists, entrepreneurs, and business developers.

Make power deregulation work for you With deregulation, the vast pool of power customers is up for grabs. As a utility, are you ready to compete? As a customer, are you ready to choose? In Power Quality Primer, Barry Kennedy gives you specifically designed, ahead-of-the-curve methods. Utilities will learn how to: Plan successful competitive strategies for every aspect of the business Market proactive solutions to customers before needs arise Improve transmission and distribution system quality, efficiency, and power factor performance Eliminate technical problems such as over-voltages and poor grounding Design and deliver effective simulations Build customer-winning, customer-keeping quality, quality control, and service into all facets of your enterprise As a customer, you'll learn how to pick the utility that meets your power quality needs...solve your own power quality problems and find cost-effective solutions...and perform your own power quality survey

Cisco IOS XR Fundamentals is a systematic, authoritative guide to configuring routers with Cisco IOS® XR, the next-generation flagship Cisco® Internet operating system. In this book, a team of Cisco experts brings together quick, authoritative, and example-rich reference information for all the commands most frequently used to configure and troubleshoot Cisco IOS XR-based routers in both service provider and enterprise environments. The authors walk you through the details of the Cisco IOS XR architecture and explain commands in the new Cisco IOS XR CLI wherever required. They present concise explanations of service provider requirements and internetwork theory, backed by proven sample configurations for IOS XR services, MPLS, multicast, system management, system security, routing, and interfaces. Cisco IOS XR Fundamentals is an indispensable resource for designing, implementing, troubleshooting, administering, or selling networks containing Cisco IOS XR-supported routers. This is the only Cisco IOS XR book that: Clearly explains how Cisco IOS XR meets the emerging requirements of both current and future networks Gives network professionals extensive information for simplifying migration and taking full advantage of Cisco IOS XR's new power Presents detailed, tested configuration examples that network professionals can apply in their own networks Walks through using new Cisco IOS XR features and the In-Service Software Upgrade (ISSU) process to minimize downtime and cost Use Cisco IOS XR to deliver superior scalability, availability, security, and service flexibility Understand the Cisco IOS XR distributed, modular architecture Design, implement, and troubleshoot networks containing Cisco IOS XR-supported routers Configure Cisco IOS XR routing, including RIP, IS-IS, OSPF, and EIGRP Learn BGP implementation details specific to Cisco IOS XR and using RPL to influence policies Manage IP addresses and Cisco IOS XR services Secure Cisco IOS XR using standard and extended ACLs, prefix lists, and uRPF Master all facets of MPLS configuration, including LDP, L3VPN, and TE Configure PIM, IGMP, and static RP multicast Optimize networks using advanced Cisco IOS XR features, including secure domain routers Learn building blocks of Multishelf, and understand configurations and migration techniques This book is part of the Cisco Press® Fundamentals Series. Books in this series introduce networking professionals to new networking technologies, covering network topologies, sample deployment concepts, protocols, and management techniques.

Maximize efficiency and minimize pollution: the breakthrough technology of high temperature air combustion (HiTAC) holds the potential to overcome the limitations of conventional combustion and allow engineers to finally meet this long-standing imperative. Research has shown that HiTAC technology can provide simultaneous reduction of CO2 and nitric oxide emissions and reduce energy consumption for a specific process or requirement. High Temperature Air Combustion: From Energy Conservation to Pollution Reduction provides the first comprehensive exposition of the principles and practice of HiTAC. With a careful balance of theory and practice, it reviews the historical background, clearly describes HiTAC combustion phenomena, and shows how to simulate and apply the technology for significant energy savings, reduced equipment size, and lower emissions. It offers design guidelines for high performance industrial furnaces, presents field trials of practical furnaces, and explores potential applications of HiTAC in other fields, including the conversion of solid waste fuels to cleaner fuels, stationary gas turbine engines, internal combustion engines, and other advanced energy-to-power conversion systems. Developed through an intensive research project sponsored by the Japanese government, HiTAC now promises to revolutionize our paradigm for using all kinds of fossil, alternative, waste, and derived fuels for energy conversion and utilization in industry. This book is your opportunity to understand its principles, learn about the technology, and begin to use it to the benefit of your application, your company, and the environment.

The CEFR Companion volume broadens the scope of language education. It reflects academic and societal developments since the publication of the Common European Framework of Reference for Languages (CEFR) and updates the 2001 version. It owes much to the contributions of members of the language teaching profession across Europe and beyond. This volume contains: ? an explanation of the key aspects of the CEFR for teaching and learning; ? a complete set of updated CEFR descriptors that replaces the 2001 set with: - modality-inclusive and gender-neutral descriptors; - added detail on listening and reading; - a new Pre-A1 level, plus enriched description at A1 and C levels; - a replacement scale for phonological competence; - new scales for mediation, online interaction and plurilingual/pluricultural competence; - new scales for sign language competence; ? a short report on the four-year development, validation and consultation processes. The CEFR Companion volume represents another step in a process of engagement with language education that has been pursued by the Council of Europe since 1971 and which seeks to: ? promote and support the learning and teaching of modern languages; ? enhance intercultural dialogue, and thus mutual understanding, social cohesion and democracy; ? protect linguistic and cultural diversity in Europe; and ? promote the right to

quality education for all.

Power electronics and variable frequency drives are continuously developing multidisciplinary fields in electrical engineering and it is practically not possible to write a book covering the entire area by one individual specialist. Especially by taking account the recent fast development in the neighboring fields like control theory, computational intelligence and signal processing, which all strongly influence new solutions in control of power electronics and drives. Therefore, this book is written by individual key specialist working on the area of modern advanced control methods which penetrates current implementation of power converters and drives. Although some of the presented methods are still not adopted by industry, they create new solutions with high further research and application potential. The material of the book is presented in the following three parts: Part I: Advanced Power Electronic Control in Renewable Energy Sources (Chapters 1-4), Part II: Predictive Control of Power Converters and Drives (5-7), Part III: Neurocontrol and Nonlinear Control of Power Converters and Drives (8-11). The book is intended for engineers, researchers and students in the field of power electronics and drives who are interested in the use of advanced control methods and also for specialists from the control theory area who like to explore new area of applications.

This book offers a comprehensive overview of failure in business, management and consulting. It features contributions by experts from diverse fields, who share unique insights from their real-life experiences. Readers will find perspectives from leadership, project management, change management, innovation management, human resource management, counseling, restructuring, entrepreneurship and sports. Each chapter combines the latest empirical findings with relevant case studies, making for a unique book that offers a fascinating exploration of the largely unexplored area of setbacks, pitfalls, flops and disappointments in the business world.

Orchids account for a large share of global floriculture trade both as cut flowers and as potted plants, and are estimated to comprise around 10% of international fresh cut flower trade. The average value of fresh cut orchids and buds trade during 2007-2012 was US\$ 483 million. In 2012, there are more than 40 countries exporting orchids and 60 countries importing orchids around the world, with the total size of the global trade equaling US\$ 504 million. In India, about 1350 species belonging to 186 genera represent approximately 5.98% of the world orchid flora and 6.83% of the flowering plants in India. The publication on "Commercial Orchids" is presented in 15 interesting chapters vividly highlighting the global orchid industry, bio-diversity, conservation and bio-piracy of genetic resources, morphological and molecular characterization of valuable species, breeding approaches for improved genotypes, production of quality planting materials, physiology of tropical and temperate orchids, climate change and its impact on orchid productivity, production technology of commercial epiphytic orchids for cut flower, production technology of commercial terrestrial orchids for cut flower, orchids for pot culture, hanging baskets and tree mounting, medicinal and aromatic orchids, post-harvest management of cut flowers of commercial orchids, value addition and marketing.

There is an increasing demand for dynamic systems to become more safe and reliable. This requirement extends beyond the normally accepted safety-critical systems of nuclear reactors and aircraft where safety is paramount important, to systems such as autonomous vehicles and fast railways where the system availability is vital. It is clear that fault diagnosis (including fault detection and isolation, FDI) has been becoming an important subject in modern control theory and practice. For example, the number of papers on FDI presented in many control-related conferences has been increasing steadily. The subject of fault detection and isolation continues to mature to an established field of research in control engineering. A large amount of knowledge on model-based fault diagnosis has been accumulated through the literature since the beginning of the 1970s. However, publications are scattered over many papers and a few edited books. Up to the end of 1997, there is no any book which presents the subject in an unified framework. The consequence of this is the lack of "common language", different researchers use different terminology. This problem has obstructed the progress of model-based FDI techniques and has been causing great concern in research community. Many survey papers have been published to tackle this problem. However, a book which presents the materials in a unified format and provides a comprehensive foundation of model-based FDI is urgently needed.

This book discusses novel concepts and discoveries concerning the regulation of innate immunity by autophagy and autophagy-related proteins. In the past decade, there have been major advances in our understanding of the molecular mechanisms of autophagy and its physiological functions. This book highlights emerging studies on the underlying mechanisms of autophagy regulation of innate immunity, including inflammation, antiviral immunity and anti-bacterial responses and the signaling pathways that prompt or inhibit the initiation and progression of related diseases. It also offers new ideas and strategies for future drugs based on manipulating autophagy, especially selective autophagy mediated by cargo receptors. Providing a comprehensive overview of the autophagy regulation of innate immunity, it is a valuable resource for graduate students and researchers in the fields of immunology, cell biology and translational medicine.

Resilience is one of the most important concepts in contemporary sociology. This volume offers a broad overview over the different theories and concepts of this category focusing on the cultural and political aspects of resilience.

Highly accurate chemical speciation is of great importance in environmental, clinical, and food sciences, as well as in archaeometry. Trace analysis via atomic spectrometry, mass spectroscopy, gas chromatography, electron microprobing, or X-ray absorption spectroscopy provides detailed information on surface and sub-surface domain of samples. The book comprehensively presents modern techniques, timely application, and data modeling.

This completely revised second edition of the standard work has been expanded by some twenty percent to include more information on the latest developments and new apparatus. In particular, sections have been added on microplasmas and new types of spectrometers, while that on the rapidly expanding field of speciations with practical examples from life and environmental sciences have been included. Still in one handy volume, the book covers all the important modern aspects of atomic fluorescence, emission and absorption spectroscopy as well as plasma mass spectroscopy in a readily comprehensible and practice-oriented manner. A thorough explanation of the physical, theoretical and technical basics, example applications including the concrete execution of analysis and comprehensive cross-references to the latest literature allow even newcomers easy access to the methodologies described.

Featuring a model-based approach to fault detection and diagnosis in engineering systems, this book contains up-to-date, practical information on preventing product deterioration, performance degradation and major machinery damage.;College or university bookstores may order five or more copies at a special student price. Price is available upon request.

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