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Design of Experiments in Production Engineering

Business innovation and industrial intelligence are paving the way for a future in which smart factories, intelligent machines, networked processes and Big Data are combined to foster industrial growth. The maturity and growth of instrumentation, monitoring and automation as key technology drivers support Industry 4.0 as a viable, competent and actionable business model. This book offers a primer, helping readers understand this paradigm shift from industry 1.0 to industry 4.0. The focus is on grasping the necessary pre-conditions, development & technological aspects that conceptually describe this transformation, along with the practices, models and real-time experience needed to achieve sustainable smart manufacturing technologies. The primary goal is to address significant questions of what, how and why in this context, such as:What is Industry 4.0?What is the current status of its implementation?What are the pillars of Industry 4.0?How can Industry 4.0 be effectively implemented?How are firms exploiting the Internet

of Things (IoT), Big Data and other emerging technologies to improve their production and services? How can the implementation of Industry 4.0 be accelerated? How is Industry 4.0 changing the workplace landscape? Why is this melding of the virtual and physical world needed for smart production engineering environments? Why is smart production a game-changing new form of product design and manufacturing?

Advances on Broad-Band Wireless Computing, Communication and Applications

This book covers various aspects of characterization of materials in the areas of metals, alloys, steels, welding, nanomaterials, intermetallic, and surface coatings. These materials are obtained by different methods and techniques like spray, mechanical milling, sol-gel, casting, biosynthesis, and chemical reduction among others. Some of these materials are classified according to application such as materials for medical application, materials for industrial applications, materials used in the oil industry and materials used like coatings. The authors provide a comprehensive overview of structural characterization techniques including scanning electron microscopy (SEM), X-ray diffraction (XRD), transmission electron microscopy (TEM), Raman spectroscopy, image analysis, finite element method (FEM), optical microscopy (OM), energy dispersive spectroscopy (EDS), Fourier

transform infrared spectroscopy (FTIR), differential thermal analysis (DTA), differential scanning calorimetry (DSC), ultraviolet-visible spectroscopy (UV-Vis), infrared photo-thermal radiometry (IPTR), electrochemical impedance spectroscopy (EIS), thermogravimetry analysis (TGA), thermo luminescence (TL), photoluminescence (PL), high resolution transmission electron microscopy (HRTEM), and radio frequency (RF). The book includes theoretical models and illustrations of characterization properties—both structural and chemical.

31. Forum Bauinformatik

This book reports the state of the art of energy-efficient electrical motor driven system technologies, which can be used now and in the near future to achieve significant and cost-effective energy savings. It includes the recent developments in advanced electrical motor end-use devices (pumps, fans and compressors) by some of the largest manufacturers. Policies and programs to promote the large scale penetration of energy-efficient technologies and the market transformation are featured in the book, describing the experiences carried out in different parts of the world. This extensive coverage includes contributions from relevant institutions in the Europe, North America, Latin America, Africa, Asia, Australia and New Zealand.

Disassembly Automation

Omics Technologies and Bio-Engineering: Towards Improving Quality of Life, Volume 1 is a unique reference that brings together multiple perspectives on omics research, providing in-depth analysis and insights from an international team of authors. The book delivers pivotal information that will inform and improve medical and biological research by helping readers gain more direct access to analytic data, an increased understanding on data evaluation, and a comprehensive picture on how to use omics data in molecular biology, biotechnology and human health care. Covers various aspects of biotechnology and bio-engineering using omics technologies Focuses on the latest developments in the field, including biofuel technologies Provides key insights into omics approaches in personalized and precision medicine Provides a complete picture on how one can utilize omics data in molecular biology, biotechnology and human health care

Industrial Sensors and Controls in Communication Networks

This book describes the basic botanical features of kiwifruit and its wild relatives, reports on the steps that led to its genome sequencing, and discusses the results obtained with the assembly and annotation. The core chapters provide essential insights into the main gene families that characterize this species as a crop,

including the genes controlling sugar and starch metabolism, pigment biosynthesis and degradation, the ascorbic-acid pathway, fruit softening and postharvest metabolism, allergens, and resistance to pests and diseases. The book offers a valuable reference guide for taxonomists, geneticists and horticulturists. Further, since information gained from the genome sequence is extraordinarily useful in assessing the breeding value of individuals based on whole-genome scans, it will especially benefit plant breeders. Accordingly, chapters are included that focus on gene introgression from wild relatives and genome-based breeding.

The Kiwifruit Genome

Industrial production in high-wage countries like Germany is still at risk. Yet, there are many counter-examples in which producing companies dominate their competitors by not only compensating for their specific disadvantages in terms of factor costs (e.g. wages, energy, duties and taxes) but rather by minimising waste using synchronising integrativity as well as by obtaining superior adaptivity on alternating conditions. In order to respond to the issue of economic sustainability of industrial production in high-wage countries, the leading production engineering and material research scientists of RWTH Aachen University together with renowned companies have established the Cluster of Excellence “Integrative Production Technology for High-Wage Countries”. This compendium comprises the cluster’s scientific results as well as a selection of business and technology cases,

in which these results have been successfully implemented into industrial practice in close cooperation with more than 30 companies of the industrial production sector.

Integrative Production Technology for High-Wage Countries

The generalized area of multiple criteria decision making (MCDM) can be defined as the body of methods and procedures by which the concern for multiple conflicting criteria can be formally incorporated into the analytical process. MCDM consists mostly of two branches, multiple criteria optimization and multi-criteria decision analysis (MCDA). While MCDA is typically concerned with multiple criteria problems that have a small number of alternatives often in an environment of uncertainty (location of an airport, type of drug rehabilitation program), multiple criteria optimization is typically directed at problems formulated within a mathematical programming framework, but with a stack of objectives instead of just one (river basin management, engineering component design, product distribution). It is about the most modern treatment of multiple criteria optimization that this book is concerned. I look at this book as a nicely organized and well-rounded presentation of what I view as "new wave" topics in multiple criteria optimization. Looking back to the origins of MCDM, most people agree that it was not until about the early 1970s that multiple criteria optimization coalesced as a field. At this time, and for about the following fifteen years, the focus was on

theories of multiple objective linear programming that subsume conventional (single criterion) linear programming, algorithms for characterizing the efficient set, theoretical vector-maximum developments, and interactive procedures.

Proceedings of the 13th International Scientific Conference

This book covers design of experiments (DoE) applied in production engineering as a combination of manufacturing technology with applied management science. It presents recent research advances and applications of design experiments in production engineering and the chapters cover metal cutting tools, soft computing for modelling and optimization of machining, waterjet machining of high performance ceramics, among others.

Robotic Fabrication in Architecture, Art and Design 2016

POGIL is a student-centered, group learning pedagogy based on current learning theory. This volume describes POGIL's theoretical basis, its implementations in diverse environments, and evaluation of student outcomes

Fabricate

This informative text/reference presents a detailed review of the state of the art in industrial sensor and control networks. The book examines a broad range of applications, along with their design objectives and technical challenges. The coverage includes fieldbus technologies, wireless communication technologies, network architectures, and resource management and optimization for industrial networks. Discussions are also provided on industrial communication standards for both wired and wireless technologies, as well as for the Industrial Internet of Things (IIoT). Topics and features: describes the FlexRay, CAN, and Modbus fieldbus protocols for industrial control networks, as well as the MIL-STD-1553 standard; proposes a dual fieldbus approach, incorporating both CAN and ModBus fieldbus technologies, for a ship engine distributed control system; reviews a range of industrial wireless sensor network (IWSN) applications, from environmental sensing and condition monitoring, to process automation; examines the wireless networking performance, design requirements, and technical limitations of IWSN applications; presents a survey of IWSN commercial solutions and service providers, and summarizes the emerging trends in this area; discusses the latest technologies and open challenges in realizing the vision of the IIoT, highlighting various applications of the IIoT in industrial domains; introduces a logistics paradigm for adopting IIoT technology on the Physical Internet. This unique work will be of great value to all researchers involved in industrial sensor and control networks, wireless networking, and the Internet of Things.

Recombinant Glycoprotein Production

This book serves as a reference text for regulatory, industry and academic statisticians and also a handy manual for entry level Statisticians. Additionally it aims to stimulate academic interest in the field of Nonclinical Statistics and promote this as an important discipline in its own right. This text brings together for the first time in a single volume a comprehensive survey of methods important to the nonclinical science areas within the pharmaceutical and biotechnology industries. Specifically the Discovery and Translational sciences, the Safety/Toxicology sciences, and the Chemistry, Manufacturing and Controls sciences. Drug discovery and development is a long and costly process. Most decisions in the drug development process are made with incomplete information. The data is rife with uncertainties and hence risky by nature. This is therefore the purview of Statistics. As such, this book aims to introduce readers to important statistical thinking and its application in these nonclinical areas. The chapters provide as appropriate, a scientific background to the topic, relevant regulatory guidance, current statistical practice, and further research directions.

Plant Biology and Biotechnology

Be prepared for the arrival of automated decision making Once thought of as

science fiction, major corporations are already beginning to use cognitive systems to assist in providing wealth advice and also in medication treatment. The use of Cognitive Analytics/Artificial Intelligence (AI) Systems is set to accelerate, with the expectation that it'll be considered 'mainstream' in the next 5 - 10 years. It'll change the way we as individuals interact with data and systems—and the way we run our businesses. Cognitive Analysis and AI prepares business users for the era of cognitive analytics / artificial intelligence. Building on established texts and commentary, it specifically prepares you in terms of expectation, impact on personal roles, and responsibilities. It focuses on the specific impact on key industries (retail, financial services, utilities and media) and also on key professions (such as accounting, operational management, supply chain and risk management). Shows you how users interact with the system in natural language Explains how cognitive analysis/AI can source 'big data' Provides a roadmap for implementation Gets you up to speed now before you get left behind If you're a decision maker or budget holder within the corporate context, this invaluable book helps you gain an advantage from the deployment of cognitive analytics tools.

Radiation Effects in Polymeric Materials

Bringing together pioneers in design and making within architecture, construction, engineering, manufacturing, materials technology and computation, Fabricate is a triennial international conference, now in its third year (ICD, University of Stuttgart,

April 2017). The 2017 edition features 32 illustrated articles on built projects and works in progress from academia and practice, including contributions from leading practices such as Foster + Partners, Zaha Hadid Architects, Arup, and Ron Arad, and from world-renowned institutions including ICD Stuttgart, Harvard, Yale, MIT, Princeton University, The Bartlett School of Architecture (UCL) and the Architectural Association. Each year it produces a supporting publication, to date the only one of its kind specialising in Digital Fabrication.

Submarine Geomorphology

RNA Spectroscopy

This book presents cutting-edge emerging technologies and approaches in the areas of service-oriented architectures, intelligent devices and cloud-based cyber-physical systems. It provides a clear view on their applicability to the management and automation of manufacturing and process industries. It offers a holistic view of future industrial cyber-physical systems and their industrial usage and also depicts technologies and architectures as well as a migration approach and engineering tools based on these. By providing a careful balance between the theory and the practical aspects, this book has been authored by several experts from academia

and industry, thereby offering a valuable understanding of the vision, the domain, the processes and the results of the research. It has several illustrations and tables to clearly exemplify the concepts and results examined in the text and these are supported by four real-life case-studies. We are witnessing rapid advances in the industrial automation, mainly driven by business needs towards agility and supported by new disruptive advances both on the software and hardware side, as well as the cross-fertilization of concepts and the amalgamation of information and communication technology-driven approaches in traditional industrial automation and control systems. This book is intended for technology managers, application designers, solution developers, engineers working in industry, as well as researchers, undergraduate and graduate students of industrial automation, industrial informatics and production engineering.

Stem Cell-Derived Models in Toxicology

This book presents a number of aspects to be considered in the development of disassembly automation, including the mechanical system, vision system and intelligent planner. The implementation of cognitive robotics increases the flexibility and degree of autonomy of the disassembly system. Disassembly, as a step in the treatment of end-of-life products, can allow the recovery of embodied value left within disposed products, as well as the appropriate separation of potentially-hazardous components. In the end-of-life treatment industry,

disassembly has largely been limited to manual labor, which is expensive in developed countries. Automation is one possible solution for economic feasibility. The target audience primarily comprises researchers and experts in the field, but the book may also be beneficial for graduate students.

Nonclinical Statistics for Pharmaceutical and Biotechnology Industries

This book develops the core system science needed to enable the development of a complex industrial internet of things/manufacturing cyber-physical systems (IIoT/M-CPS). Gathering contributions from leading experts in the field with years of experience in advancing manufacturing, it fosters a research community committed to advancing research and education in IIoT/M-CPS and to translating applicable science and technology into engineering practice. Presenting the current state of IIoT and the concept of cybermanufacturing, this book is at the nexus of research advances from the engineering and computer and information science domains. Readers will acquire the core system science needed to transform to cybermanufacturing that spans the full spectrum from ideation to physical realization.

Hansenula Polymorpha

This volume covers a wide spectrum of techniques and approaches that are used in the upstream and downstream processing for recombinant glycoprotein production. Chapters guide the reader through state-of-art of therapeutic recombinant glycoproteins, explores the patent literature, expression systems used for glycoproteins production, methods employed in the downstream processing of different glycoproteins, and information about analytical tools and formulation strategies. Written in the highly successful Methods in Molecular Biology series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Authoritative and cutting-edge, *Recombinant Glycoprotein Production: Methods and Protocols* aims to ensure successful results in the further study of this vital field

Global Innovation Index 2019: Creating Healthy Lives – The Future of Medical Innovation

These proceedings of the 13th International Conference on Computer Aided Engineering present selected papers from the event, which was held in Polanica Zdrój, Poland, from June 22 to 25, 2016. The contributions are organized according to thematic sections on the design and manufacture of machines and technical

systems; durability prediction; repairs and retrofitting of power equipment; strength and thermodynamic analyses for power equipment; design and calculation of various types of load-carrying structures; numerical methods for dimensioning materials handling; and long-distance transport equipment. The conference and its proceedings offer a major interdisciplinary forum for researchers and engineers to present the most innovative studies and advances in this dynamic field.

Industrial Internet of Things

This volume looks at the different spectroscopic and biophysical methods used by researchers to study the structure and folding of RNA, and to follow their interactions with proteins. The chapters in this book cover topics such as single-molecule spectroscopy of multiple RNA species; surface plasmon resonance, MS or microcalorimetry for investigating molecular interactions with RNA; FTIR, SAXS, SANS and SRCD spectroscopies to analyze RNA structure; use of fluorescent nucleotides to map RNA-binding sites on proteins surfaces or CryoEM; and much more. Written in the highly successful Methods in Molecular Biology series format, chapters include introductions to their respective topics, lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips on troubleshooting and avoiding known pitfalls. Cutting-edge and comprehensive, RNA Spectroscopy: Methods and Protocols is a valuable resource

for anyone interested in learning more about this developing field.

ShoCk! Sharing of Computable Knowledge! Proceedings of the 35th International Conference on Education and Research in Computer Aided Architectural Design in Europe (Rome, 20th-22nd September 2017)

This proceedings book presents the latest research findings, innovative research results, methods and development techniques related to the emerging areas of broadband and wireless computing, from both theoretical and practical perspectives. Today's information networks are going through a rapid evolution. Different kinds of networks with different characteristics are emerging, and are being integrated into heterogeneous networks. As a result, there are numerous interconnection problems that can occur at different levels of the hardware and software design of communicating entities and communication networks. Such networks need to manage an increasing usage demand, provide support for a significant number of services, guarantee their QoS, and optimize the network resources. The success of all-IP networking and wireless technology has changed the way of living for people around the globe. Advances in electronic integration and wireless communications will pave the way to offering access to wireless networks on the fly, which in turn will allow electronic devices to share information

with each other wherever and whenever necessary.

Process Oriented Guided Inquiry Learning (POGIL)

An updated and expanded new edition of this comprehensive guide to innovation in wind turbine design *Innovation in Wind Turbine Design, Second Edition* comprehensively covers the fundamentals of design, explains the reasons behind design choices, and describes the methodology for evaluating innovative systems and components. This second edition has been substantially expanded and generally updated. New content includes elementary actuator disc theory of the low induction rotor concept, much expanded discussion of offshore issues and of airborne wind energy systems, updated drive train information with basic theory of the epicyclic gears and differential drives, a clarified presentation of the basic theory of energy in the wind and fallacies about ducted rotor design related to theory, lab testing and field testing of the Katru and Wind Lens ducted rotor systems, a short review of LiDAR, latest developments of the multi-rotor concept including the Vestas 4 rotor system and a new chapter on the innovative DeepWind VAWT. The book is divided into four main sections covering design background, technology evaluation, design themes and innovative technology examples. Key features: Expanded substantially with new content. Comprehensively covers the fundamentals of design, explains the reasons behind design choices, and describes the methodology for evaluating innovative systems

and components. Includes innovative examples from working experiences for commercial clients. Updated to cover recent developments in the field. The book is a must-have reference for professional wind engineers, power engineers and turbine designers, as well as consultants, researchers and graduate students.

Lexical Analysis

Cyber-Physical Systems: Foundations, Principles and Applications explores the core system science perspective needed to design and build complex cyber-physical systems. Using Systems Science's underlying theories, such as probability theory, decision theory, game theory, organizational sociology, behavioral economics, and cognitive psychology, the book addresses foundational issues central across CPS applications, including System Design -- How to design CPS to be safe, secure, and resilient in rapidly evolving environments, System Verification -- How to develop effective metrics and methods to verify and certify large and complex CPS, Real-time Control and Adaptation -- How to achieve real-time dynamic control and behavior adaptation in a diverse environments, such as clouds and in network-challenged spaces, Manufacturing -- How to harness communication, computation, and control for developing new products, reducing product concepts to realizable designs, and producing integrated software-hardware systems at a pace far exceeding today's timeline. The book is part of the Intelligent Data-Centric Systems: Sensor-Collected Intelligence series edited by Fatos Xhafa, Technical

University of Catalonia. Indexing: The books of this series are submitted to EI-Compendex and SCOPUS Includes in-depth coverage of the latest models and theories that unify perspectives, expressing the interacting dynamics of the computational and physical components of a system in a dynamic environment Focuses on new design, analysis, and verification tools that embody the scientific principles of CPS and incorporate measurement, dynamics, and control Covers applications in numerous sectors, including agriculture, energy, transportation, building design and automation, healthcare, and manufacturing

A Roadmap to Industry 4.0: Smart Production, Sharp Business and Sustainable Development

This detailed book gathers a broad collection of experimental approaches to assist researchers in setting up different methods to investigate protein conformational disorders. Beginning with a section on assays focusing on biophysical approaches to study protein (mis)folding, the volume continues with sections on cellular and proteostasis assays as well as assays for protein folding correction and recovery, combining methods such as thermal shift assays, in silico improvement of protein solubility, and compound screening, an important area of research as it may open avenues for therapeutic strategies. Written for the highly successful Methods in Molecular Biology series, chapters include introductions to their respective topics,

lists of the necessary materials and reagents, step-by-step, readily reproducible laboratory protocols, and tips for troubleshooting and avoiding known pitfalls. Authoritative and practical, *Protein Misfolding Diseases: Methods and Protocols* serves as an ideal guide for researchers seeking to advance our knowledge of protein conformational disorders.

Characterization of Metals and Alloys

The Global Innovation Index 2019 provides detailed metrics about the innovation performance of 129 countries and economies around the world. Its 80 indicators explore a broad vision of innovation, including political environment, education, infrastructure and business sophistication. The GII 2019 analyzes the medical innovation landscape of the next decade, looking at how technological and non-technological medical innovation will transform the delivery of healthcare worldwide. It also explores the role and dynamics of medical innovation as it shapes the future of healthcare, and the potential influence this may have on economic growth. Chapters of the report provide more details on this year's theme from academic, business, and particular country perspectives from leading experts and decision makers.

Energy Efficiency in Motor Driven Systems

Der MHI e.V. ist ein Netzwerk leitender Universitätsprofessoren aus dem deutschsprachigen Raum, die sowohl grundlagenorientiert als auch anwendungsnahe in der Montage, Handhabung und Industrierobotik erfolgreich forschend tätig sind. Die Gründung der Gesellschaft erfolgte im Frühjahr 2012. Der MHI e.V. hat derzeit 20 Mitglieder, die über ihre Institute und Lehrstühle zurzeit ca. 1.000 Wissenschaftler repräsentieren. Die übergeordnete Zielsetzung des MHI e.V. ist die Förderung der Zusammenarbeit von deutschsprachigen Wissenschaftlerinnen und Wissenschaftlern untereinander, sowie mit der Industrie im Bereich Montage, Handhabung und Industrierobotik zur Beschleunigung der Forschung, Optimierung der Lehre und zur Verbesserung der internationalen Wettbewerbsfähigkeit der deutschen Industrie in diesem Bereich. Das Kolloquium fokussiert auf einen akademischen Austausch auf hohem Niveau, um die gewonnenen Forschungsergebnisse zu verteilen, synergetische Effekte und Trends zu bestimmen, die Akteure persönlich zu verbinden und das Forschungsfeld sowie die MHI-Gemeinschaft zu stärken.

From Protein Structure to Function with Bioinformatics

This book on the current state of knowledge of submarine geomorphology aims to achieve the goals of the Submarine Geomorphology working group, set up in 2013, by establishing submarine geomorphology as a field of research, disseminating its concepts and techniques among earth scientists and professionals, and

encouraging students to develop their skills and knowledge in this field. Editors have invited 30 experts from around the world to contribute chapters to this book, which is divided into 4 sections – (i) Introduction & history, (ii) Data & methods, (iii) Submarine landforms & processes and (iv) Conclusions & future directions. Each chapter provides a review of a topic, establishes the state-of-the-art, identifies the key research questions that need to be addressed, and delineates a strategy on how to achieve this. Submarine geomorphology is a priority for many research institutions, government authorities and industries globally. The book is useful for undergraduate and graduate students, and professionals with limited training in this field.

Advanced Analytics and AI

Plant genomics and biotechnology have recently made enormous strides, and hold the potential to benefit agriculture, the environment and various other dimensions of the human endeavor. It is no exaggeration to claim that the twenty-first century belongs to biotechnology. Knowledge generation in this field is growing at a frenetic pace, and keeping abreast of the latest advances and calls on us to double our efforts. Volume II of this two-part series addresses cutting-edge aspects of plant genomics and biotechnology. It includes 37 chapters contributed by over 70 researchers, each of which is an expert in his/her own field of research.

Biotechnology has helped to solve many conundrums of plant life that had long

remained a mystery to mankind. This volume opens with an exhaustive chapter on the role played by thale cress, *Arabidopsis thaliana*, which is believed to be the *Drosophila* of the plant kingdom and an invaluable model plant for understanding basic concepts in plant biology. This is followed by chapters on bioremediation, biofuels and biofertilizers through microalgal manipulation, making it a commercializable prospect; discerning finer details of biotic stress with plant-fungal interactions; and the dynamics of abiotic and biotic stresses, which also figure elsewhere in the book. Breeding crop plants for desirable traits has long been an endeavor of biotechnologists. The significance of molecular markers, marker assisted selection and techniques are covered in a dedicated chapter, as are comprehensive reviews on plant molecular biology, DNA fingerprinting techniques, genomic structure and functional genomics. A chapter dedicated to organellar genomes provides extensive information on this important aspect. Elsewhere in the book, the newly emerging area of epigenetics is presented as seen through the lens of biotechnology, showcasing the pivotal role of DNA methylation in effecting permanent and transient changes to the genome. Exclusive chapters deal with bioinformatics and systems biology. Handy tools for practical applications such as somatic embryogenesis and micropropagation are included to provide frontline information to entrepreneurs, as is a chapter on somaclonal variation. Overcoming barriers to sexual incompatibility has also long been a focus of biotechnology, and is addressed in chapters on wide hybridization and hybrid embryo rescue. Another area of accomplishing triploids through

endosperm culture is included as a non-conventional breeding strategy. Secondary metabolite production through tissue cultures, which is of importance to industrial scientists, is also covered. Worldwide exchange of plant genetic material is currently an essential topic, as is conserving natural resources in situ. Chapters on in vitro conservation of extant, threatened and other valuable germplasms, gene banking and related issues are included, along with an extensive account of the biotechnology of spices – the low-volume, high-value crops. Metabolic engineering is another emerging field that provides commercial opportunities. As is well known, there is widespread concern over genetically modified crops among the public. GM crops are covered, as are genetic engineering strategies for combating biotic and abiotic stresses where no other solutions are in sight. RNAi- and micro RNA- based strategies for crop improvement have proved to offer novel alternatives to the existing non-conventional techniques, and detailed information on these aspects is also included. The book's last five chapters are devoted to presenting the various aspects of environmental, marine, desert and rural biotechnology. The state-of-the-art coverage on a wide range of plant genomics and biotechnology topics will be of great interest to post-graduate students and researchers, including the employees of seed and biotechnology companies, and to instructors in the fields of plant genetics, breeding and biotechnology.

Advances in Technical Diagnostics

This book proposes essential methods, models, and case studies for Sustainable Logistics and Production in Industry 4.0. In addition to identifying and discussing various challenges and future prospects, it also features numerous case studies and quantitative research from different sectors. The authors (which include academics and managers) present insightful tips on the technical, organizational and social aspects of implementing Sustainable Logistics and Production in Industry 4.0. In today's world, changes are coming faster and more unpredictably. Production is becoming more automated, computerized and complex. In short, Industry 4.0 is creating many new opportunities, but at the same time several new challenges. This book offers a valuable resource for all academics and practitioners who want to deepen their knowledge of Sustainable Logistics and Production in Industry 4.0.

Innovation in Wind Turbine Design

This book provides readers with an overview of recent theories and methods for machinery diagnostics applied to machinery maintenance. Each chapter, accepted after a rigorous peer-review process, reports on a selected, original piece of work discussed at the International Congress on Technical Diagnostic, ICDT2016, held on September 12 – 16, 2016, in Gliwice, Poland. The book covers a broad range of topics, including machines operating in non-stationary conditions, and examples from different industrial fields of mechanical, civil, computer and electronic

engineering as well as the medical, food, automotive, and mining industries. By presenting state-of-the-art diagnostic solutions and discussing important industrial issues the book offers a valuable resource to both academics and professionals as well as a bridge to facilitate communication and collaboration between the two groups.

Multiple Criteria Optimization

This book provides an introduction of how radiation is processed in polymeric materials, how materials properties are affected and how the resulting materials are analyzed. It covers synthesis, characterization, or modification of important materials, e.g. polycarbonates, polyamides and polysaccharides, using radiation. For example, a complete chapter is dedicated to the characterization of biodegradable polymers irradiated with low and heavy ions. This book will be beneficial to all polymer scientists in the development of new macromolecules and to all engineers using these materials in applications. It summarizes the fundamental knowledge and latest innovations in research fields from medicine to space.

Protein Misfolding Diseases

Proteins lie at the heart of almost all biological processes and have an incredibly wide range of activities. Central to the function of all proteins is their ability to adopt, stably or sometimes transiently, structures that allow for interaction with other molecules. An understanding of the structure of a protein can therefore lead us to a much improved picture of its molecular function. This realisation has been a prime motivation of recent Structural Genomics projects, involving large-scale experimental determination of protein structures, often those of proteins about which little is known of function. These initiatives have, in turn, stimulated the massive development of novel methods for prediction of protein function from structure. Since model structures may also take advantage of new function prediction algorithms, the first part of the book deals with the various ways in which protein structures may be predicted or inferred, including specific treatment of membrane and intrinsically disordered proteins. A detailed consideration of current structure-based function prediction methodologies forms the second part of this book, which concludes with two chapters, focusing specifically on case studies, designed to illustrate the real-world application of these methods. With bang up-to-date texts from world experts, and abundant links to publicly available resources, this book will be invaluable to anyone who studies proteins and the endlessly fascinating relationship between their structure and function.

Tagungsband des 2. Kongresses Montage Handhabung

Industrieroboter

A lexically based, corpus-driven theoretical approach to meaning in language that distinguishes between patterns of normal use and creative exploitations of norms. In *Lexical Analysis*, Patrick Hanks offers a wide-ranging empirical investigation of word use and meaning in language. The book fills the need for a lexically based, corpus-driven theoretical approach that will help people understand how words go together in collocational patterns and constructions to make meanings. Such an approach is now possible, Hanks writes, because of the availability of new forms of evidence (corpora, the Internet) and the development of new methods of statistical analysis and inferencing. Hanks offers a new theory of language, the Theory of Norms and Exploitations (TNE), which makes a systematic distinction between normal and abnormal usage—between rules for using words normally and rules for exploiting such norms in metaphor and other creative use of language. Using hundreds of carefully chosen citations from corpora and other texts, he shows how matching each use of a word against established contextual patterns plays a large part in determining the meaning of an utterance. His goal is to develop a coherent and practical lexically driven theory of language that takes into account the immense variability of everyday usage and that shows that this variability is rule governed rather than random. Such a theory will complement other theoretical approaches to language, including cognitive linguistics, construction grammar, generative lexicon theory, priming theory, and pattern grammar.

Cyber-Physical Systems

This detailed volume brings together a diverse collection of stem cell-derived model-based toxicity assays, from those routinely used to those deemed to have considerable potential. With a focus on differentiated tissues, the chapters explore numerous cardiotoxicity applications as well as coverage of neurotoxicity, hepatotoxicity, and more. Written for the Methods in Pharmacology and Toxicology series, the contents of this book aim to enable adoption of these protocols in laboratories that are interested in entering the field as well as to facilitate the transfer of best practices between laboratories that are already actively pursuing these technologies. /divAuthoritative and cutting-edge, Stem Cell-Derived Models in Toxicology serves as a vital resource for researchers aiming to improve risk assessment in drug discovery and design.

Ethnopharmacology in Central and Eastern Europe in the Context of Global Research Developments

Das Forum Bauinformatik steht unter dem Motto „von jungen Forschenden für junge Forschende“. Es bietet jungen Wissenschaftlerinnen und Wissenschaftlern sowie interessierten Studierenden die Möglichkeit, ihre Forschungsarbeiten zu präsentieren, Problemstellungen fachspezifisch zu diskutieren und sich ganz

allgemein über den neusten Stand der Forschung zu informieren. Zudem ergibt sich dadurch eine ausgezeichnete Gelegenheit, in die wissenschaftliche Gemeinschaft im Bereich der Bauinformatik einzusteigen und Kontakte zu anderen Forschenden zu knüpfen. According to the motto “from young researchers for young researchers” the Forum Bauinformatik offers researchers as well as interested undergraduates the opportunity to present their research work, to discuss discipline-specific problems and to catch up to the current state in research. Furthermore, it gives an excellent chance to get in touch with the scientific community in the field of Computing in Civil Engineering and socialize with other researchers

Sustainable Logistics and Production in Industry 4.0

Industrial Cloud-Based Cyber-Physical Systems

This book covers the scope of supply chain and logistics, which has continued to grow with a rapid speed. The book includes core aspects of supply chain and logistics philosophy and practice. The authors then cover the general principles of supply chain and logistics that can be applied in countries throughout the world. Where concepts cannot be generalized, they are based primarily on a European

model. The authors have also added some international material and examples from China, Pakistan, India, and the USA. The book is intended to help in the quest of supply chain and logistics to reduce cost and improve service, as well as to keep up-to-date the different facets of supply chain and logistics in a global market. In addition, this book helps candidates to who are undertaking examinations for universities and professional institutes, and bachelor and master students who are studying for degrees in supply chain management. In addition, the book covers technical terminologies, definitions, and a supply chain dictionary.

Strategic Supply Chain Management

The book presents the proceedings of Rob/Arch 2016, the third international conference on robotic fabrication in architecture, art, and design. The work contains a wide range of contemporary topics, from methodologies for incorporating dynamic material feedback into existing fabrication processes, to novel interfaces for robotic programming, to new processes for large-scale automated construction. The latent argument behind this research is that the term 'file-to-factory' must not be a reductive celebration of expediency but instead a perpetual challenge to increase the quality of feedback between design, matter, and making.

Omic Technologies and Bio-engineering

Methylotrophic yeasts have attracted increasing interest as useful systems for fundamental research and applied purposes. *Hansenula polymorpha* in particular has become a preferred organism for the production of recombinant proteins on an industrial scale. Product examples range from therapeutics such as hepatitis B vaccines to industrial enzymes like the feed additive phytase. This book is addressed to researchers and scientists working in the field and provides a comprehensive, up-to-date overview of the present status of *Hansenula polymorpha* research, applications and methods. Aspects of the organism ranging from systematics, genetics, methanol metabolism and peroxisomal function to its use as a technology platform for the production of recombinant proteins are covered. A detailed chapter on laboratory methods is also included.

Jack Ma: In His Own Words

Hundreds of candid quotes from Chinese tech giant Jack Ma that reveal his thoughts on business values, innovation, competition, teamwork, philanthropy, and more. Ever since the Alibaba Group went public on September 19, 2014—with an initial public offering of a record-breaking \$25 billion—Jack Ma, the founder and charismatic “spiritual leader” of the e-commerce behemoth, has been making

headlines around the world. Alibaba is now the largest retailer in the world, and since 2015, the company's online sales and profits have outstripped those of Amazon, eBay, and Walmart combined. Recently, Alibaba's cloud computing arm has been outperforming major players such as Google and Amazon, and Jack Ma has been widening its investments into new sectors, such as entertainment and electric cars. Ma—the first Chinese entrepreneur to appear on the cover of Forbes and the third-richest man in China—has a net worth that is estimated to be more than \$39 billion. But despite Ma's massive influence in China and in the global tech world, his inspirational rags-to-riches story is relatively unknown to the general American public. *Jack Ma: In His Own Words* is a detailed look at the thoughts and words of arguably the most prominent figure in internet entrepreneurship in the past 20 years—made up entirely of Ma's own thought-provoking and candid quotes. Many of these quotes are translated directly from the Chinese press and interviews. For readers who do not read Chinese and have no other access to these materials, this book provides invaluable insight into the mind of one of the world's most successful business magnates.

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