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**KEY=FLUENT - ELLIS MAURICIO**

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**PROCEEDINGS OF THE ASME HEAT TRANSFER DIVISION**

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**PROCEEDINGS OF THE ASME HEAT TRANSFER DIVISION--2005**

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**PRESENTED AT 2005 ASME INTERNATIONAL MECHANICAL ENGINEERING CONGRESS AND EXPOSITION :  
NOVEMBER 5-11, 2005, ORLANDO, FLORIDA, USA**

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**BIOREACTORS**

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**DESIGN, OPERATION AND NOVEL APPLICATIONS**

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*John Wiley & Sons In this expert handbook both the topics and contributors are selected so as to provide an authoritative view of possible applications for this new technology. The result is an up-to-date survey of current challenges and opportunities in the design and operation of bioreactors for high-value products in the biomedical and chemical industries. Combining theory and practice, the authors explain such leading-edge technologies as single-use bioreactors, bioreactor simulators, and soft sensor monitoring, and discuss novel applications, such as stem cell production, process development, and multi-product reactors, using case studies from academia as well as from industry. A final section addresses the latest trends, including culture media design and systems biotechnology, which are expected to have an increasing impact on bioreactor design. With its focus on cutting-edge technologies and*

*discussions of future developments, this handbook will remain an invaluable reference for many years to come.*

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## **FUEL CELL HANDBOOK (SEVENTH EDITION)**

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*Lulu.com Fuel cells are one of the cleanest and most efficient technologies for generating electricity. Since there is no combustion, there are none of the pollutants commonly produced by boilers and furnaces. For systems designed to consume hydrogen directly, the only products are electricity, water and heat. Fuel cells are an important technology for a potentially wide variety of applications including on-site electric power for households and commercial buildings; supplemental or auxiliary power to support car, truck and aircraft systems; power for personal, mass and commercial transportation; and the modular addition by utilities of new power generation closely tailored to meet growth in power consumption. These applications will be in a large number of industries worldwide. In this Seventh Edition of the Fuel Cell Handbook, we have discussed the Solid State Energy Conversion Alliance Program (SECA) activities. In addition, individual fuel cell technologies and other supporting materials have been updated.*

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## **BIM HANDBOOK**

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### **A GUIDE TO BUILDING INFORMATION MODELING FOR OWNERS, DESIGNERS, ENGINEERS, CONTRACTORS, AND FACILITY MANAGERS**

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*John Wiley & Sons Discover BIM: A better way to build better buildings Building Information Modeling (BIM) offers a novel approach to design, construction, and facility management in which a digital representation of the building product and process is used to facilitate the exchange and interoperability of information in digital format. BIM is beginning to change the way buildings look, the way they function, and the ways in which they are designed and built. The BIM Handbook, Third Edition provides an in-depth understanding of BIM technologies, the business and organizational issues associated with its implementation, and the profound advantages that effective use of BIM can provide to all members of a project team. Updates to this edition include: Information on the ways in which professionals should use BIM to gain maximum value New topics such as collaborative working, national and major construction clients, BIM standards and guides A discussion on how various professional roles have expanded through the widespread use and the new avenues of BIM practices and services A wealth of new case studies that clearly illustrate exactly how BIM is applied in a wide variety of conditions Painting a colorful and thorough picture of the state of the art in building information modeling, the BIM Handbook, Third Edition guides readers to successful implementations, helping them to avoid needless frustration and costs and take full advantage of this paradigm-shifting approach to construct better buildings that consume fewer materials and require less time, labor, and capital resources.*

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**FUEL CELL HANDBOOK**

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Krieger Publishing Company

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**JOURNAL OF HYDRODYNAMICS**

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**PROCEEDINGS OF THE ASME TURBO EXPO 2002**

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**REWIRE YOUR BRAIN**

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**THINK YOUR WAY TO A BETTER LIFE**

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*John Wiley & Sons How to rewire your brain to improve virtually every aspect of your life-based on the latest research in neuroscience and psychology on neuroplasticity and evidence-based practices Not long ago, it was thought that the brain you were born with was the brain you would die with, and that the brain cells you had at birth were the most you would ever possess. Your brain was thought to be "hardwired" to function in predetermined ways. It turns out that's not true. Your brain is not hardwired, it's "softwired" by experience. This book shows you how you can rewire parts of the brain to feel more positive about your life, remain calm during stressful times, and improve your social relationships. Written by a leader in the field of Brain-Based Therapy, it teaches you how to activate the parts of your brain that have been underactivated and calm down those areas that have been hyperactivated so that you feel positive about your life and remain calm during stressful times. You will also learn to improve your memory, boost your mood, have better relationships, and get a good night sleep. Reveals how cutting-edge developments in neuroscience, and evidence-based practices can be used to improve your everyday life Other titles by Dr. Arden include: Brain-Based Therapy-Adult, Brain-Based Therapy-Child, Improving Your Memory For Dummies and Heal Your Anxiety Workbook Dr. Arden is a leader in integrating the new developments in neuroscience with psychotherapy and Director of Training in Mental Health for Kaiser Permanente for the Northern California Region Explaining exciting new developments in neuroscience and their applications to daily living, Rewire Your Brain will guide you through the process of changing your brain so you can change your life and be free of self-imposed limitations.*

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**SCIENTIFIC AND TECHNICAL AEROSPACE REPORTS**

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**THE ALGORITHM DESIGN MANUAL**

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*Springer Science & Business Media This newly expanded and updated second edition of the best-selling classic continues to take the*

"mystery" out of designing algorithms, and analyzing their efficacy and efficiency. Expanding on the first edition, the book now serves as the primary textbook of choice for algorithm design courses while maintaining its status as the premier practical reference guide to algorithms for programmers, researchers, and students. The reader-friendly *Algorithm Design Manual* provides straightforward access to combinatorial algorithms technology, stressing design over analysis. The first part, *Techniques*, provides accessible instruction on methods for designing and analyzing computer algorithms. The second part, *Resources*, is intended for browsing and reference, and comprises the catalog of algorithmic resources, implementations and an extensive bibliography. NEW to the second edition: • Doubles the tutorial material and exercises over the first edition • Provides full online support for lecturers, and a completely updated and improved website component with lecture slides, audio and video • Contains a unique catalog identifying the 75 algorithmic problems that arise most often in practice, leading the reader down the right path to solve them • Includes several NEW "war stories" relating experiences from real-world applications • Provides up-to-date links leading to the very best algorithm implementations available in C, C++, and Java

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## **THE INTERNET LITERACY HANDBOOK**

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Council of Europe Over the past decade, Internet technology, now merging into that of mobile technology, has transformed the multiple facets of life in society across the world, changing work and leisure patterns, and placing greater demands on us as active, democratic citizens. The *Internet literacy handbook*, intended for parents, teachers and young people throughout Europe, is a guide to exploiting to the fullest this complex network of information and communication. The handbook is comprised of 21 fact sheets, each covering a particular topic on Internet use, from searching for information to setting up blogs through to e-shopping and e-citizenship. These fact sheets offer teachers and parents sufficient technical know-how to allow them to share young people's and children's voyages through communication technology. They highlight ethical and safety considerations, give insight into added value in education, provide ideas for constructive activities in class or at home, share best practice in Internet use, and provide a wealth of definitions and links to sites that give practical examples and further in-depth information.

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## **ELOQUENT JAVASCRIPT**

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### **A MODERN INTRODUCTION TO PROGRAMMING**

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No Starch Press *JavaScript* is at the heart of almost every modern Web application, whether it's Google Apps, Twitter, or the newest browser-based game. Though it's simple for beginners to pick up and play with, JavaScript is not a toy—it's a flexible and complex language that can be used to build full-scale applications. *Eloquent JavaScript* dives into this flourishing language and teaches you to

*write code that's beautiful and effective. By immersing you in example code and encouraging experimentation right from the start, the author quickly gives you the tools you need to build your own programs. As you follow along with examples like an artificial life simulation and a version of the classic game Sokoban, you'll learn to: -Understand the essential elements of programming: syntax, control, and data -Use object-oriented and functional programming techniques to organize and clarify your programs -Script the browser and make basic Web applications -Work with tools like regular expressions and XMLHttpRequest objects And since programming is an art that's best learned by doing, all example code is available online in an interactive sandbox for you to experiment with. With Eloquent JavaScript as your guide, you can tweak, expand, and modify the author's code, or throw it away and build your own creations from scratch. Before you know it, you'll be fluent in the language of the Web.*

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## **ANALYTICAL MODELLING OF FUEL CELLS**

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*Elsevier In fuel cell research, the gap between fundamental electrochemical processes and the engineering of fuel cell systems is bridged by the physical modelling of fuel cells. This relatively new discipline aims to understand the basic transport and kinetic phenomena in a real cell and stack environment, paving the way for improved design and performance. The author brings his unique approach to the analytical modeling of fuel cells to this essential reference for energy technologists. Covers recent advances and analytical solutions to a range of problems faced by energy technologists, from catalyst layer performance to thermal stability Provides detailed graphs, charts and other tools (glossary, index) to maximize R&D output while minimizing costs and time spent on dead-end research Presents Kulikovsky's signature approach (and the data to support it)—which uses "simplified" models based on idealized systems, basic geometries, and minimal assumptions—enabling qualitative understanding of the causes and effects of phenomena*

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## **BUOYANCY-DRIVEN FLOWS**

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*Cambridge University Press Buoyancy is one of the main forces driving flows on our planet, especially in the oceans and atmosphere. These flows range from buoyant coastal currents to dense overflows in the ocean, and from avalanches to volcanic pyroclastic flows on the Earth's surface. This book brings together contributions by leading world scientists to summarize our present theoretical, observational, experimental and modeling understanding of buoyancy-driven flows. Buoyancy-driven currents play a key role in the global ocean circulation and in climate variability through their impact on deep-water formation. Buoyancy-driven currents are also primarily responsible for the redistribution of fresh water throughout the world's oceans. This book is an invaluable resource for advanced students and researchers in oceanography, geophysical fluid dynamics, atmospheric science and the wider Earth sciences*

who need a state-of-the-art reference on buoyancy-driven flows.

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## **FUEL CELL SCIENCE AND ENGINEERING, 2 VOLUME SET**

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### **MATERIALS, PROCESSES, SYSTEMS AND TECHNOLOGY**

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*John Wiley & Sons Fuel cells are expected to play a major role in the future power supply that will transform to renewable, decentralized and fluctuating primary energies. At the same time the share of electric power will continually increase at the expense of thermal and mechanical energy not just in transportation, but also in households. Hydrogen as a perfect fuel for fuel cells and an outstanding and efficient means of bulk storage for renewable energy will spearhead this development together with fuel cells. Moreover, small fuel cells hold great potential for portable devices such as gadgets and medical applications such as pacemakers. This handbook will explore specific fuel cells within and beyond the mainstream development and focuses on materials and production processes for both SOFC and lowtemperature fuel cells, analytics and diagnostics for fuel cells, modeling and simulation as well as balance of plant design and components. As fuel cells are getting increasingly sophisticated and industrially developed the issues of quality assurance and methodology of development are included in this handbook. The contributions to this book come from an international panel of experts from academia, industry, institutions and government. This handbook is oriented toward people looking for detailed information on specific fuel cell types, their materials, production processes, modeling and analytics. Overview information on the contrary on mainstream fuel cells and applications are provided in the book 'Hydrogen and Fuel Cells', published in 2010.*

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## **THE MULTI-AGENT TRANSPORT SIMULATION MATSIM**

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*Ubiquity Press The MATSim (Multi-Agent Transport Simulation) software project was started around 2006 with the goal of generating traffic and congestion patterns by following individual synthetic travelers through their daily or weekly activity programme. It has since then evolved from a collection of stand-alone C++ programs to an integrated Java-based framework which is publicly hosted, open-source available, automatically regression tested. It is currently used by about 40 groups throughout the world. This book takes stock of the current status. The first part of the book gives an introduction to the most important concepts, with the intention of enabling a potential user to set up and run basic simulations. The second part of the book describes how the basic functionality can be extended, for example by adding schedule-based public transit, electric or autonomous cars, paratransit, or within-day replanning. For each extension, the text provides pointers to the additional documentation and to the code base. It is also discussed how people with appropriate Java programming skills can write their own extensions, and plug them into the MATSim core. The project has started from*

*the basic idea that traffic is a consequence of human behavior, and thus humans and their behavior should be the starting point of all modelling, and with the intuition that when simulations with 100 million particles are possible in computational physics, then behavior-oriented simulations with 10 million travelers should be possible in travel behavior research. The initial implementations thus combined concepts from computational physics and complex adaptive systems with concepts from travel behavior research. The third part of the book looks at theoretical concepts that are able to describe important aspects of the simulation system; for example, under certain conditions the code becomes a Monte Carlo engine sampling from a discrete choice model. Another important aspect is the interpretation of the MATSim score as utility in the microeconomic sense, opening up a connection to benefit cost analysis. Finally, the book collects use cases as they have been undertaken with MATSim. All current users of MATSim were invited to submit their work, and many followed with sometimes crisp and short and sometimes longer contributions, always with pointers to additional references. We hope that the book will become an invitation to explore, to build and to extend agent-based modeling of travel behavior from the stable and well tested core of MATSim documented here.*

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## **37TH AIAA AEROSPACE SCIENCES MEETING AND EXHIBIT**

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**JANUARY 11-14, 1999, RENO, NV.**

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## **HYDROGEN AND FUEL CELL**

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## **TECHNOLOGIES AND MARKET PERSPECTIVES**

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*Springer This book introduces readers to hydrogen as an essential energy carrier for use with renewable sources of primary energy. It provides an overview of the state of the art, while also highlighting the developmental and market potential of hydrogen in the context of energy technologies; mobile, stationary and portable applications; uninterruptible power supplies and in the chemical industry. Written by experienced practitioners, the book addresses the needs of engineers, chemists and business managers, as well as graduate students and researchers.*

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## **FUEL CELL HANDBOOK (SIXTH EDITION)**

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*DIANE Publishing*

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**THE HANDBOOK OF LITHIUM-ION BATTERY PACK DESIGN**

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**CHEMISTRY, COMPONENTS, TYPES AND TERMINOLOGY**

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*Elsevier The Handbook of Lithium-Ion Battery Pack Design: Chemistry, Components, Types and Terminology offers to the reader a clear and concise explanation of how Li-ion batteries are designed from the perspective of a manager, sales person, product manager or entry level engineer who is not already an expert in Li-ion battery design. It will offer a layman's explanation of the history of vehicle electrification, what the various terminology means, and how to do some simple calculations that can be used in determining basic battery sizing, capacity, voltage and energy. By the end of this book the reader has a solid understanding of all of the terminology around Li-ion batteries and is able to do some simple battery calculations. The book is immensely useful to beginning and experienced engineer alike who are moving into the battery field. Li-ion batteries are one of the most unique systems in automobiles today in that they combine multiple engineering disciplines, yet most engineering programs focus on only a single engineering field. This book provides you with a reference to the history, terminology and design criteria needed to understand the Li-ion battery and to successfully lay out a new battery concept. Whether you are an electrical engineer, a mechanical engineer or a chemist this book helps you better appreciate the inter-relationships between the various battery engineering fields that are required to understand the battery as an Energy Storage System. Offers an easy explanation of battery terminology and enables better understanding of batteries, their components and the market place. Demonstrates simple battery scaling calculations in an easy to understand description of the formulas Describes clearly the various components of a Li-ion battery and their importance Explains the differences between various Li-ion cell types and chemistries and enables the determination which chemistry and cell type is appropriate for which application Outlines the differences between battery types, e.g., power vs energy battery Presents graphically different vehicle configurations: BEV, PHEV, HEV Includes brief history of vehicle electrification and its future*

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**FUEL CELLS**

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**FROM FUNDAMENTALS TO APPLICATIONS**

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*Springer Science & Business Media This concise sourcebook of the electrochemical, engineering and economic principles involved in the development and commercialization of fuel cells offers a thorough review of applications and techno-economic assessment of fuel cell technologies, plus in-depth discussion of conventional and novel approaches for generating energy. Parts I and II explain basic and applied electrochemistry relevant to an understanding of fuel cells. Part III covers engineering and technology aspects. The book is*

useful for undergraduate and graduate students and scientists interested in fuel cells. Unlike any other current book on fuel cells, each chapter includes problems based on the discussions in the text.

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## **AN INTRODUCTION TO COMPUTATIONAL FLUID DYNAMICS**

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### **THE FINITE VOLUME METHOD**

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Pearson Education This book presents the fundamentals of computational fluid dynamics for the novice. It provides a thorough yet user-friendly introduction to the governing equations and boundary conditions of viscous fluid flows and its modelling.

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## **JOURNALISM, FAKE NEWS & DISINFORMATION**

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### **HANDBOOK FOR JOURNALISM EDUCATION AND TRAINING**

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UNESCO Publishing

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## **MODELING, SIMULATION AND OPTIMIZATION OF WIND FARMS AND HYBRID SYSTEMS**

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BoD – Books on Demand The reduction of greenhouse gas emissions is a major governmental goal worldwide. The main target, hopefully by 2050, is to move away from fossil fuels in the electricity sector and then switch to clean power to fuel transportation, buildings and industry. This book discusses important issues in the expanding field of wind farm modeling and simulation as well as the optimization of hybrid and micro-grid systems. Section I deals with modeling and simulation of wind farms for efficient, reliable and cost-effective optimal solutions. Section II tackles the optimization of hybrid wind/PV and renewable energy-based smart micro-grid systems.

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## **RECENT ADVANCES IN MECHANICAL ENGINEERING**

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### **SELECT PROCEEDINGS OF RAME 2020**

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Springer Nature This book presents the select proceedings of the second International Conference on Recent Advances in Mechanical Engineering (RAME 2020). The topics covered include aerodynamics and fluid mechanics, automation, automotive engineering, composites, ceramics and polymers processing, computational mechanics, failure and fracture mechanics, friction, tribology and surface engineering, heating and ventilation, air conditioning system, industrial engineering, IC engines, turbomachinery and

*alternative fuels, machinability and formability of materials, mechanisms and machines, metrology and computer-aided inspection, micro- and nano-mechanics, modelling, simulation and optimization, product design and development, rapid manufacturing technologies and prototyping, solid mechanics and structural mechanics, thermodynamics and heat transfer, traditional and non-traditional machining processes, vibration and acoustics. The book also discusses various energy-efficient renewable and non-renewable resources and technologies, strategies and technologies for sustainable development and energy & environmental interaction. The book is a valuable reference for beginners, researchers, and professionals interested in sustainable construction and allied fields.*

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## **MONTHLY CATALOGUE, UNITED STATES PUBLIC DOCUMENTS**

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## **WORLD SOCIAL REPORT 2020**

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## **INEQUALITY IN A RAPIDLY CHANGING WORLD**

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*United Nations This report examines the links between inequality and other major global trends (or megatrends), with a focus on technological change, climate change, urbanization and international migration. The analysis pays particular attention to poverty and labour market trends, as they mediate the distributional impacts of the major trends selected. It also provides policy recommendations to manage these megatrends in an equitable manner and considers the policy implications, so as to reduce inequalities and support their implementation.*

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## **AIMMS - USER'S GUIDE**

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*Lulu.com The AIMMS 3.7 User's Guide provides a global overview of how to use the AIMMS system. It is aimed at application builders, and explores AIMMS' capabilities in helping you create a model-based application in an easy and maintainable manner. The guide describes the various graphical tools that the AIMMS system offers for this task.*

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## **ELEMENTS OF CHEMICAL REACTION ENGINEERING**

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*Pearson Educación "The fourth edition of Elements of Chemical Reaction Engineering is a completely revised version of the book. It combines authoritative coverage of the principles of chemical reaction engineering with an unsurpassed focus on critical thinking and creative problem solving, employing open-ended questions and stressing the Socratic method. Clear and organized, it integrates text, visuals, and computer simulations to help readers solve even the most challenging problems through reasoning, rather than by*

memorizing equations."--BOOK JACKET.

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## **HELIDECK DESIGN CONSIDERATIONS**

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## **ENVIRONMENTAL EFFECTS**

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## **COMBUSTION THEORY**

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*CRC Press Combustion Theory delves deeper into the science of combustion than most other texts and gives insight into combustions from a molecular and a continuum point of view. The book presents derivations of the basic equations of combustion theory and contains appendices on the background of subjects of thermodynamics, chemical kinetics, fluid dynamics, and transport processes. Diffusion flames, reactions in flows with negligible transport and the theory of pre-mixed flames are treated, as are detonation phenomena, the combustion of solid propellents, and ignition, extinction, and flammability phenomena.*

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## **NON-NEWTONIAN FLOW**

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## **FUNDAMENTALS AND ENGINEERING APPLICATIONS**

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*Elsevier Non-Newtonian materials are encountered in virtually all of the chemical and process industries and a full understanding of their nature and flow characteristics is an essential requirement for engineers and scientists involved in their formulation and handling. This book will bridge the gap between much of the highly theoretical and mathematically complex work of the rheologist and the practical needs of those who have to design and operate plants in which these materials are handled and processed. At the same time, numerous references are included for the benefit of those who need to delve more deeply into the subject. The starting point for any work on non-newtonian fluids is their characterisation over the range of conditions to which they are likely to be subjected during manufacture or utilisation, and this topic is treated early on in the book in a chapter commissioned from an expert in the field of rheological measurements. Coverage of topics is extensive and this book offers a unique and rich selection of material including the flow of single phase and multiphase mixtures in pipes, in packed and fluidised bed systems, heat and mass transfer in boundary layers and in simple duct flows, and mixing etc. An important and novel feature of the book is the inclusion of a wide selection of worked examples to illustrate the methods of calculation. It also incorporates a large selection of problems for the reader to tackle himself.*

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## **NUCLEAR ENERGY FOR HYDROGEN PRODUCTION**

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Forschungszentrum Jülich

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## **MAKING HYPERMEDIA WORK**

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### **A USER'S GUIDE TO HYTIME**

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*Springer Making Hypermedia Work: A User's Guide to HyTime discusses how the HyTime standard can be applied to real world problems of navigating from here to there in collections of documents. The HyTime standard itself provides enabling method and templates for various information structures such as links and various kinds of location indicators. A HyTime application specifies how a group applies those templates to their particular requirements. This involves choosing which HyTime structures are needed, setting up conventions for how they are to be used and setting up management and processes for creation, conversion and update of hypermedia documents. A HyTime engine is the last ingredient: actually using an application typically involves choosing software to support one's use of HyTime and customizing it as needed. This may be as simple as setting up hypertextual style sheets that determine how links and other things look and act. More specialized applications may require full-scale design and programming. Making Hypermedia Work: A User's Guide to HyTime presents the first in-depth guide to the HyTime specifications, both describing its key features and providing guidelines on how it is used. The book begins with the more familiar structures of books, graphics and cross-references, detailing the HyTime constructs and models used to identify, locate, and link data. It goes on to introduce some of HyTime's mechanisms for linking multidimensional, multimedia data, and for scheduling it in space and time. The authors help the reader become fluent in HyTime as it applies to the simpler and most widely understood data types. After mastering this level of HyTime, readers will be ready and able to explore the exciting potential of HyTime for more sophisticated multimedia applications.*

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## **FUEL CELLS AND HYDROGEN PRODUCTION**

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### **A VOLUME IN THE ENCYCLOPEDIA OF SUSTAINABILITY SCIENCE AND TECHNOLOGY, SECOND EDITION**

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*Springer The expected end of the "oil age" will lead to increasing focus and reliance on alternative energy conversion devices, among which fuel cells have the potential to play an important role. Not only can phosphoric acid and solid oxide fuel cells already efficiently convert today's fossil fuels, including methane, into electricity, but other types of fuel cells, such as polymer electrolyte membrane fuel cells, have the potential to become the cornerstones of a possible future hydrogen economy. This handbook offers concise yet*

*comprehensive coverage of the current state of fuel cell research and identifies key areas for future investigation. Internationally renowned specialists provide authoritative introductions to a wide variety of fuel cell types and hydrogen production technologies, and discuss materials and components for these systems. Sustainability and marketing considerations are also covered, including comparisons of fuel cells with alternative technologies.*

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## **DESIGNING AND BUILDING FUEL CELLS**

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*McGraw Hill Professional Acquire an All-in-One Toolkit for Expertly Designing, Modeling, and Constructing High-Performance Fuel Cells* *Designing and Building Fuel Cells* equips you with a hands-on guide for the design, modeling, and construction of fuel cells that perform as well or better than some of the best fuel cells on the market today. Filled with over 120 illustrations and schematics of fuel cells and components, this “one-stop” guide covers fuel cell applications...fuels and the hydrogen economy...fuel cell chemistry, thermodynamics, and electrochemistry...fuel cell modeling, materials, and system design...fuel types, delivery, and processing...fuel cell operating conditions...fuel cell characterization...and much more. Authoritative and practical, *Designing and Building Fuel Cells* features: Complete information on stack design The latest fuel cell modeling techniques Guidance on cutting-edge materials and components Expert accounts of fuel cell types, processing, and optimization A step-by-step example for constructing a fuel cell Inside This State-of-the-Art Fuel Cell Sourcebook Introduction • Fuel Cell Applications • Fuel Cells and the Hydrogen Economy • Basic Fuel Cell Chemistry and Thermodynamics • Fuel Cell Electrochemistry • Fuel Cell Charge Transport • Fuel Cell Mass Transport • Fuel Cell Heat Transport • Fuel Cell Modeling • Fuel Cell Materials • Fuel Cell Stack Components and Materials • Fuel Cell Stack Design • Fuel Cell System Design • Fuel Types, Delivery, and Processing • Fuel Cell Operating Conditions • Fuel Cell Characterization

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## **18TH WORLD HYDROGEN ENERGY CONFERENCE 2010 - WHEC 2010 PROCEEDINGS SPEECHES AND PLENARY TALKS**

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*Forschungszentrum Jülich*

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## **DISTANCE EDUCATION FOR TEACHER TRAINING**

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*Routledge First published in 2002. Routledge is an imprint of Taylor & Francis, an informa company.*

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## **FUEL CELL TECHNOLOGY HANDBOOK**

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*CRC Press Fuel cell systems have now reached a degree of technological maturity and appear destined to form the cornerstone of*

*future energy technologies. But the rapid advances in fuel cell system development have left current information available only in scattered journals and Internet sites. The even faster race toward fuel cell commercialization further*