Chapter One Kfupm

In the recent decade a quantum leap has been made in production of aluminum alloys and new techniques of casting, forming, welding and surface modification have been evolved to improve the structural integrity of aluminum alloys. This book covers the essential need for the industrial and academic communities for update information. It would also be useful for entrepreneurs technocrats and all those interested in the production and the application of aluminum alloys and strategic structures. It would also help the instructors at senior and graduate level to support their text.

VLSI is an important area of electronic and computer engineering. However, there are few textbooks available for undergraduate/postgraduate study of VLSI design automation and chip layout. VLSI Physical Design Automation: Theory and Practice fills the void and is an essential introduction for senior undergraduates, postgraduates and anyone starting work in the field of CAD for VLSI. It covers all aspects of physical design, together with such related areas as automatic cell generation, silicon compilation, layout editors and compaction. A problem-solving approach is adopted and each solution is illustrated with examples. Each topic is treated in a standard format: Problem Definition, Cost Functions and Constraints, Possible Approaches and Latest Developments. Special features: The book deals with all aspects of VLSI physical design, from partitioning and floorplanning to layout generation and silicon compilation; provides a comprehensive treatment of most of the popular algorithms; covers the latest developments and gives a bibliography for further research; offers numerous fully described examples, problems and programming exercises.

"This book presents in-depth insight through a case study approach into the current state of research in ICT as well as identified successful approaches, tools and methodologies in ICT research"--Provided by publisher.

Just before the end of the 1990-1991 Gulf War, more than 700 wells in Kuwaiti oil fields were set on fire. Several international companies and scientific organisations were involved in extinguishing the fires and in assessing the impact of this major environmental incursion. Kuwaiti Oil Fires: Regional Environmental Perspectives summarises these effects. The topics covered include the application of remote sensing techniques to determine the location of wells on fire and plume movement; air quality and particulate monitoring by ground stations and aircraft measurements; organic and inorganic constituents in the air; use of modeling techniques to study dispersion characteristics of pollutants and deposition of soot; and the efforts by the fire fighters in extinguishing fires and capping the wells. A brief overview of the causes of the crisis and the role of regional and international groups in resolving the dispute is presented as well as some basic and useful statistics of the region covering general information on economic aspects and exploitation of oil resources in both Iraq and Kuwait. Problems faced by the fire fighting teams, the preparations made to overcome the problems, and technology used in extinguishing the well fires are also discussed. Numerous colour photographs are used to illustrate the problems encountered and the techniques involved in their solution.

The book examines in depth, the centrality of the Saudi fixed currency regime to the US dollar, SAMA's monetary tools, macro prudential policies and its supervision of the Saudi commercial banking sector and new sectors such as insurance, the emerging Fin Tech industry as well as a closer examination of SAMA's investment policies as custodian of the local currency. Saudi Arabia has long been associated with its central role in the global energy market, with its decisions on production volumes affecting the global financial markets. However, the Kingdom has also emerged as a significant global financial player due to its large holdings of international currency, its dominance of the regional Gulf and Arab world capital markets, and the aspirations of its Sovereign Wealth Fund, the Public Investment Fund. The G20 Presidency in 2020 has also placed Saudi Arabia on the global stage for the country to showcase progress in many and opening up its financial market to foreign investors. But the path to financial regulation and liberation to unleash Saudi Arabia's potential has not come overnight, but through incremental steps and learning by doing. The results speak for themselves as this book examines: • The Saudi Capital Market and the evolution of its main Tadawul and parallel NOMU stock markets following the inclusion of Tadawul in the FTSE Russell, MSCI and S&P EM Indexes • The centrality of the Saudi fixed peg exchange regime as well as a closer examination of SAMA's investment policies as custodian of the local currency • SAMA's rebranding in 2020 as a Central Bank, its monetary and macro prudential policies and the re entry of foreign banks to the Saudi market, reversing previous Saudization of foreign bank branches in Saudi Arabia. The Author offers an analysis of the key challenges facing Saudi Arabia in an age of financial globalization, FinTech and digitization. The challenges faced by the Saudi regulators in the COVID 19 era are examined, along with the country's financial sector objectives as part of the Vision 2030 program, SME financing now a central plank in the country's Vision 2030 program, the role of FDI in economic growth, the reasons behind Saudi Arabia languishing behind other countries in attracting FDI given the size of its economy and rising domestic and foreign debt levels. It has been an incredible journey for a young country, and by all indications, the journey for expanded global partnership continues as Saudi Arabia also puts into practice its version of the circular carbon economy, its commitment to climate change, and being at the forefront of a new global digital economy.

"Control System Analysis & Design in MATLAB and SIMULINK" is blueprinted to solve undergraduate control system engineering problems in MATLAB platform. Unified view of control system fundamentals is taken into account in the text. One key aspect of the text is the presentation of computing and graphing materials in a simple intuitive way. Many advances in virtual implementation on control systems have been seen in the past decade. The text elucidates the web of concepts underpinning these advances. Self-working out illustrations and end-of-chapter exercises enthuse the reader a checkup on thorough understanding. The comprehensive introduction will benefit both undergraduates and

graduates studying control system and engineering. Also researchers in the field can have the text as reference.

The serious challenge facing the world today, in obtaining enough energy for growing population and in controlling the carbon emission caused by fossil fuel use, calls for nuclear energy as an alternative power source. This book presents research work and technical experience from several power plants and research institutions around the world from practical prospective. This book intends to provide useful information for scientists and those in technical fields in several areas in nuclear power plants including: nuclear systems protection, design and modelling of critical parameters in nuclear power plants, thermalhydraulic analysis, nuclear waste management and safety and reliability assessment.

Within higher education, world-class universities are commonly regarded as elite research universities and play a critical role in developing a nation's competitiveness in the global knowledge economy. An increasing number of countries, regions and higher education institutions in different parts of the world have joined the same battle for academic excellence. While emerging countries and their universities make every effort to enhance their capacity and boost their research performance, the academic superpowers endeavour to maintain - if not further improve- their global positions. "Building World-Class Universities: Different Approaches to a Shared Goal" intends to provide an in-depth picture of different approaches in pursuit of the shared goal of developing academic excellence, and to reflect the current trends in this field. Divided into three parts, the book covers: • building world-class universities from a national/regional perspective, • managing world-class universities from an institutional perspective, and • measuring world-class universities from a ranking/indicator perspective. This book not only represents a contribution to the ongoing discussion on the topic of building world-class universities, but can be seen as a continuation of the previous three volumes on this topic - "World-Class Universities and Ranking: Aiming beyond Status", "The World-Class University as Part of a New Higher Education Paradigm: From Institutional Qualities to Systemic Excellence", and "Paths to a World-Class University: Lessons from Practices and Experiences". All four books will be useful readings for students and academics in higher education generally, in addition to policy makers and informed practioners.d practitioners

This book provides a rigorous framework in which to study problems in the analysis, stability and design of networked control systems. Four dominant sources of difficulty are considered: packet dropouts, communication bandwidth constraints, parametric uncertainty, and time delays. Past methods and results are reviewed from a contemporary perspective, present trends are examined, and future possibilities proposed. Emphasis is placed on robust and reliable design methods. New control strategies for improving the efficiency of sensor data processing and reducing associated time delay are presented. The coverage provided features: · an overall assessment of recent and current fault-tolerant control algorithms; · treatment of several issues arising at the junction of control and communications; · key concepts followed by their proofs and efficient computational methods for their implementation; and · simulation examples (including TrueTime simulations) to provide hands-on experience. In addition to the theoretical coverage, the author describes a number of applications that demonstrate the real-world relevance of this material, and these include: · a servo system; · a triple inverted pendulum; · power system control; · wireless control of a cart with inverted pendulum and wireless servo application with emphasis on controller area networks; and · switched ethernet and wireless area networks. Researchers and graduate students working in networked and distributed control will find this text a useful guide in avoiding and ameliorating common and serious problems with these systems. The increasing prevalence of networks in many fields of engineering will make Control and Estimation Methods over Communication Networks of interest to practitioners with backgrounds in communications, process engineering, robotics, power, automotive and other areas.

Nontraditional machining employs processes that remove material by various methods involving thermal, electrical, chemical and mechanical energy or even combinations of these. Nontraditional Machining Processes covers recent research and development in techniques and processes which focus on achieving high accuracies and good surface finishes, parts machined without burrs or residual stresses especially with materials that cannot be machined by conventional methods. With applications to the automotive, aircraft and mould and die industries, Nontraditional Machining Processes explores different aspects and processes through dedicated chapters. The seven chapters explore recent research into a range of topics including laser assisted manufacturing, abrasive water jet milling and hybrid processes. Students and researchers will find the practical examples and new processes useful for both reference and for developing further processes. Industry professionals and materials engineers will also find Nontraditional Machining Processes to be a source of ideas and processes for development and industrial application.

This Guide to OCR for Arabic Scripts is the first book of its kind, specifically devoted to this emerging field. Topics and features: contains contributions from the leading researchers in the field; with a Foreword by Professor Bente Maegaard of the University of Copenhagen; presents a detailed overview of Arabic character recognition technology, covering a range of different aspects of pre-processing and feature extraction; reviews a broad selection of varying approaches, including HMM-based methods and a recognition system based on multidimensional recurrent neural networks; examines the evaluation of Arabic script recognition systems, discussing data collection and annotation, benchmarking strategies, and handwriting recognition competitions; describes numerous applications of Arabic script recognition technology, from historical Arabic manuscripts to online Arabic recognition.

Issues in Systems Engineering / 2013 Edition is a ScholarlyEditions™ book that delivers timely, authoritative, and comprehensive information about Systems and Control Engineering. The editors have built Issues in Systems Engineering: 2013 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Systems and Control Engineering in this book to be deeper than what you can access anywhere else, as well as consistently reliable, authoritative, informed, and relevant. The content of Issues in Systems Engineering: 2013 Edition has been produced by the world's leading scientists, engineers, analysts, research institutions, and companies. All of the content is from peer-reviewed sources, and all of it is written, assembled, and edited by the editors at ScholarlyEditions™ and available exclusively from us. You now have a source you can cite with authority, confidence, and credibility. More information is available at http://www.ScholarlyEditions.com/.

This book presents the latest tools, techniques, and solutions that decision makers use to overcome the challenges faced by their sustainable supply chains. Given the ever increasing significance of socio-economic and environmental factors, the management of sustainable supply chains has become a complex and dynamic task. Multiple and conflicting objectives of stakeholders including suppliers, manufacturers, service providers, and retailers add to the complexity of decisions that modern day managers of supply chains face. With the unprecedented technological developments and innovations at hand, sustainability can be maximized for all the activities of a supply chain including: service concept and product design, material sourcing and procurement, manufacturing processes, delivery of the final product, and end-of-life management of the product. Consequently, the sustainable supply chains' problems require a systematic and integrated approach. Modeling and simulation, in general, as well as

system dynamics and agent-based modeling, in particular, have the capabilities to deal with the complexity of sustainable supply chain related problems. This book will appeal to professionals and researchers in the field.

Optimization in Quality Control presents a broad survey of the state of the art in optimization in quality, and focuses on industrial and national competitiveness. Each chapter has been carefully developed and refereed anonymously by experts in the area of optimization in quality control. Some of the topics covered in this volume include: fundamentals of optimization techniques contemporary approaches to optimization models in process control economic design of control charts determining optimal target values in multiple criteria economic selection models examining quality improvement schemes by trading off between expected warranty servicing costs and increasing manufacturing costs designing optimal inspection plans. This book will serve as an important reference source for academics, professionals and researchers.

This revised, updated and expanded new edition presents an overview of biomimetics and biologically inspired structured surfaces. It deals with various examples of biomimetics which include surfaces with roughness-induced superomniphobicity, self-cleaning, antifouling, and controlled adhesion. The focus in the book is on the Lotus Effect, Salvinia Effect, Rose Petal Effect, Oleophobic/philic Surfaces, Shark Skin Effect, and Gecko Adhesion. This new edition also contains new chapters on the butterfly wing effect, bio- and inorganic fouling and structure and Properties of Nacre and structural coloration.

The Global Innovation Index ranks the innovation performance of 141 countries and economies around the world, based on 84 indicators. This edition explores the impact of innovation-oriented policies on economic growth and development. High-income and developing countries alike are seeking innovation-driven growth through different strategies. Some countries are successfully improving their innovation capacity, while others still struggle.

This volume brings about the contemporary results in the field of discrete-time systems. It covers papers written on the topics of robust control, nonlinear systems and recent applications. Although the technical views are different, they all geared towards focusing on the up-to-date knowledge gain by the researchers and providing effective developments along the systems and control arena. Each topic has a detailed discussions and suggestions for future perusal by interested investigators.

This book is a collection of 954 multiple-choice questions in waves, thermodynamics, electricity, and magnetism. These questions have been given, over couple of years, to the students of General Physics II course (Phys102) at King Fahd University of Petroleum and Minerals. They are organized according to the sections of Phys102 textbook: Fundamental of Physics by Halliday, Resnick and Walker, 6th edition. This collection might be very helpful for students preparing for exams in Phys102 or similar courses. We advise students strongly to study and understand the course material very well before attempting practicing some of these questions. Instructors might also find this book a valuable source for questions that can be used in examples or tests. The statistics provided with some of the questions might be very valuable in comparing performances. ???????? ?????

Based on the many approaches available for dealing with large-scale systems (LSS), Decentralized Control and Filtering in Interconnected Dynamical Systems supplies a rigorous framework for studying the analysis, stability, and control problems of LSS. Providing an overall assessment of LSS theories, it addresses model order reduction, parametric uncertainties, time delays, and control estimator gain perturbations. Taking readers on a guided tour through LSS, the book examines recent trends and approaches and reviews past methods and results from a contemporary perspective. It traces the progress of research along three eras: Fundamental era in which the basic conceptual frameworks, major ideas, and operational methodologies are laid down Contemporary era in which several of the workable methods and techniques are established and applied to many application areas Advanced era in which different high-level schemes and configurations are being developed to meet accelerated technological advancements Focusing on robust, reliable, and/or resilient decentralized design methods based on linear matrix inequalities framework, the author offers suggestions for improvements to current approaches. He addresses the dominating sources of difficulties due to dimensionality, information structure constraints, uncertainties, and time delays. Drawing attention to key issues, the text is supported by proofs, efficient computational methods, end-of-chapter problems, and approximately 1,300 equations.

Iterative Computer Algorithms with Applications in EngineeringSolving Combinatorial Optimization ProblemsWiley-IEEE Computer Society Press

The book includes an introduction to fuzzy logic and its application in the formulation of multi-objective optimization problems, a discussion on hybrid techniques that combine features of heuristics, a survey of recent research work, and examples that illustrate required mathematical concepts."--BOOK JACKET.

Since 1987, the Petroleum Division of the American Chemical Society (ACS) has sponsored at 3 year intervals an international symposium on fluid cracking catalysts (FCC) technology. This volume collects the recent progress of this technology as reported in the papers presented during the 232th National Meeting of the ACS in San Francisco, September 10-14, 2006. Sixty-six years after the introduction of the fluid cracking catalyst process, it remains the main process of gasoline generation for the estimated 237 millions cars on US roads. Catalysts testing and evaluation still remains a subject of interest, debate and controversy. Lambda sweep testing, testing of SOx, NOx and combustion promoters have been discussed in details together with catalyst evaluation for atmospheric residues and metal contaminated oils cracking. Of particular interest has been the introduction of novel concept in process design aimed at improving cracked product selectivity such as two-stage risers for better gasoline and olefins production and downer technology for high severity processes . The importance of solid state nuclear magnetic resonance (NMR) in the study of crude oils, catalysts and reaction products are illustrated by several examples. Two contributions describe the use of predictive methods to understand FCC aging and deactivation and personal overviews of the development of SOx and combustion promoters technology are presented. * Presents findings from the tri-annual international symposium on fluid cracking catalysts (FCC) technology, sponsored by the Petroleum Division of the American Chemical Society (ACS) * Two contributions describe the use of predictive methods to understand FCC aging and deactivation * Personal overviews by the authors of the development of SOx and combustion promoters technology

This book provides a comprehensive overview of a series of bismuth oxyhalide compounds of BiOX (X=F, Cl, Br, I), in terms of their microstructure, electronic/band structure, preparation techniques, optical properties and their applications. The book brings together, for the first time, a compilation of advances in this area, including results achieved at the authors' lab (such as ultra-microscopy characterization by means of aberration-corrected STEM), offering a valuable guide for researchers and students alike.

Based on remarkable primary research, this unique contemporary account of the lives of young Saudi men reveals a distinct group of voices.

This short book is for students, professors and professionals interested in signal processing of seismic data using MATLAB . The step-by-step demo of the full reflection seismic data processing workflow using a complete real seismic data set places itself as a very useful feature of the book. This is especially true when students are performing their projects, and when professors and researchers are testing their new developed algorithms in MATLAB for processing seismic data. The book provides the basic seismic and signal processing theory required for each chapter and shows how to process the data from raw field records to a final image of the subsurface all using MATLAB . Table of Contents: Seismic Data Processing: A Quick Overview / Examination of A Real Seismic Data Set / Quality Control of Real Seismic Data / Seismic Noise Attenuation / Seismic Deconvolution / Carrying the Processing Forward / Static Corrections / Seismic Migration / Concluding Remarks"

Aluminium alloys have undergone a dramatic transformation in areas of extrusion, machining, welding, heat treatment, structural changes, created by ultra fine particles and enhanced corrosion resistance. Hence, these alloys have made rapid gains in European automotive and space industry. These developments have been described by experts in the book with new data and attractive graphics. The effect of processing parameters, including welding and deep rolling on their performance have been highlighted to alleviate the concerns of manufacturers and designers for new applications. The novel role of aluminum alloys in photovoltaic cells and concentrated solar power has been comprehensively described in the context of corrosion and the aggressive environment to which they may be exposed. The book is designed to serve as a guide for future innovations and new developments in aluminium alloys.

Progress in Partial Differential Equations is devoted to modern topics in the theory of partial differential equations. It consists of both original articles and survey papers covering a wide scope of research topics in partial differential equations and their applications. The contributors were participants of the 8th ISAAC congress in Moscow in 2011 or are members of the PDE interest group of the ISAAC society. This volume is addressed to graduate students at various levels as well as researchers in partial differential equations and related fields. The readers will find this an excellent resource of both introductory and advanced material. The key topics are: • Linear hyperbolic equations and systems (scattering, symmetrisers) • Non-linear wave models (global existence, decay estimates, blow-up) • Evolution equations (control theory, well-posedness, smoothing) • Elliptic equations (uniqueness, non-uniqueness, positive solutions) • Special models from applications (Kirchhoff equation, Zakharov-Kuznetsov equation, thermoelasticity)

This edited volume presents chapters on the dynamics of global climate change and global warming in the Middle East. In this region, it should be noted that even slightly warmer weather can result in an increased demand of energy along with its lower supply, as well as lower labor productivity. This text focuses on modeling, simulation, system dynamics, and agent-based modeling in dealing with these issues. The latest decision making tools, techniques, and innovative solutions used to overcome these challenges are presented. Many distinguished researchers contribute their work herein. The audience for this volume includes policy makers, researchers, and students unified by the common goal of making better decisions in the sustainable production and consumption of energy. The practical orientation of the chapters within each part is intended to suit the practitioners: managers and decision makers in the energy sector of the Middle East region.

"This volume is a collection of the papers presented at the three nanotechnology related symposia held during the Materials Science and Technology 2011 conference (MS&T'11), October 16-20, 2011 in Columbus, Ohio"--P. vii.

Web Text Introduction There is a general perception about the authors of autobiographies that they tell truth about other people while they need to tell truth about themselves. I have tried to be objective throughout my book and highlighted my failures and mistakes too. The present book is an account of my life that began on February 8, 1947, when I was born in the Sarpanch Mohammad Khurshid Haq family in a small town on the banks of the river Kanhan known as Kamptee in India. Sarpanch is a title used for the head of Panchayat. The title remained in our family for three generations. After my father died, Anis bhaijan (elder brother) would have become the next sarpanch, but he had already migrated to Pakistan in 1947 and later we all left. I take great pride to be part of the Khurshid family, which has its roots in Kamptee but now known internationally through the contributions of several family members not only in library and information science but also in physics, business administration, computer engineering, medicine, and biology. During my sixty-six years of life, I migrated or relocated to four different countries and benefitted from their rich cultures. When I look back into the history, I find the following four distinct periods, each representing the years that I spent in one country before migration or relocation to another: 19471964, India 19641974, Pakistan 19742011, Saudi Arabia 2011present, United States The culture, social system, history, tradition, arts, language, literature, education system, and others will definitely influence anybody who has spent ten years or more in a country. Some may adopt a particular part of the local culture quickly, such as clothing, language, food, and so on. It is very common to see nurses from the Philippines learn Arabic in a few months and start talking to Saudi patients or visitors in Arabic with fluency because of the demand of their jobs. I feel sorry that I cannot speak Arabic as good as those Asian workers speak. However, their languages and scripts are completely different from Arabic. Now, one can understand that having lived in three countries for ten years or more, I have enriched my knowledge and skills, and enhanced other capabilities as information professional. I believe in the principle of give and take. I have benefitted from world knowledge all my life, now it is my turn to give something to the seekers of knowledge in return. Life is not about just take, take, and take; it is about both give and take. I find writing about myself as the most difficult job. During my professional career, I have worked with so many bosses, including deans, directors, and heads of departments. Before they left KFUPM or went back to their departments on the completion of their term, I requested recommendation letters from each one of them. Except my American bosses, all Saudi bosses asked me to first prepare a draft and show it to them so that they could make any changes, if needed. I had to be a little modest in

preparing those drafts. I always felt that if the bosses had written those letters themselves, they would have used more superlatives for me. Therefore, I am already feeling a little uncomfortable writing my own biography. I will try to make this volume an objective and fair account of my personal and professional life. Family Roots in India Following the uprising of 1857, which the freedom fighters lost, the British forces started taking revenge against them and the local population civilians fearing for their lives started to move out. Among those who migrated in 1859 from Azam Garth and decided to settle down at Kamptee was the family of my pardada (great-grandfather) Mohammad Abdullah. He built ten mud houses and gave them free to the settlers until they found their own accommodation. Munshi Mohammed Saeed, my dada jan (grandfather), was born on April 30, 1875, in Kamptee. He is known more as a poet than for any other things. He used to publ

"This book highlights the efforts and developments in the fields of Asian studies as well as its intentional role in IT and management within the constant growing business market"--Provided by publisher.

This book provides a powerful source to develop new, rapid and highly efficient materials for the application in various fields of oil and gas. It focuses on the synthesis, characterization and applications of various Nanomaterials, presenting the state-of-the-art in developments and innovations in nanocomposites. This book provides the complete practical and theoretical information about the synthesis of nanoparticles with potential use in the field of oil and gas.

This book provides a comprehensive overview of the structural, nanotribological and nanomechanical properties of skin with and without cream treatment as a function of operating environment. The biophysics of skin as the outer layer covering human or animal body is discussed as a complex biological structure. Skin cream is used to improve skin health and create a smooth, soft, and flexible surface with moist perception by altering the surface roughness, friction, adhesion, elastic modulus, and surface charge of the skin surface.

Collecting and processing data is a necessary aspect of living in a technologically advanced society. Whether it?s monitoring events, controlling different variables, or using decision-making applications, it is important to have a system that is both inexpensive and capable of coping with high amounts of data. As the application of these networks becomes more common, it becomes imperative to evaluate their effectiveness as well as other opportunities for possible implementation in the future. Sensor Technology: Concepts, Methodologies, Tools, and Applications is a vital reference source that brings together new ways to process and monitor data and to put it to work in everything from intelligent transportation systems to healthcare to multimedia applications. It also provides inclusive coverage on the processing and applications of wireless communication, sensor networks, and mobile computing. Highlighting a range of topics such as internet of things, signal processing hardware, and wireless sensor technologies, this multi-volume book is ideally designed for research and development engineers, IT specialists, developers, graduate students, academics, and researchers.

In 1962 Rachel Carson warned of the consequences of man's pollution in her book Silent Spring, a book that some feel marks the real beginning of our environmental awareness. Silent Spring told of the consequences of our increasing pesticide use to birds. Almost 30 years after her warning, the western Arabian Gulf experienced its "silent spring" when approximately 100,000 to 250,000 waterbirds died, along with millions of other organisms, due to the massive oil spill that resulted due to Gulf war. The magnitude of our environmental problems has continued to grow during the last thirty years to a point where even the "doomsday" environmentalists could hardly have envisioned back in 1962. It seems the death of yet uncounted thousands of humans was not sufficient for Saddam Husain. His desire for power and infamy led him to unleash environmental war on mankind. At the end of the Gulf war he set ablaze the oil fields of Kuwait and released more oil into the sea than had been spilled at any time throughout history. These actions were despicable and an affront to civilized man. A quality environment should be a right of all mankind, and to wage war by deliberately polluting the earth cannot be tolerated.

Microgrids: Advanced Control Methods and Renewable Energy System Integration demonstrates the state-of-art of methods and applications of microgrid control, with eleven concise and comprehensive chapters. The first three chapters provide an overview of the control methods of microgrid systems that is followed by a review of distributed control and management strategies for the next generation microgrids. Next, the book identifies future research directions and discusses the hierarchical power sharing control in DC Microgrids. Chapter 4 investigates the demand side management in microgrid control systems from various perspectives, followed by an outline of the operation and controls of the smart microgrids in Chapter 5. Chapter 6 deals with control of low-voltage microgrids with master/slave architecture. The final chapters explain the load-Frequency Controllers for Distributed Power System Generation Units and the issue of robust control design for VSIs, followed by a communication solution denoted as power talk. Finally, in Chapter 11, real-time implementation of distributed control for an autonomous microgrid system is performed. Addresses issues of contemporary interest to practitioners in the power engineering and management fields Focuses on the role of microgrids within the overall power system structure and attempts to clarify the main findings relating to primary and secondary control and management at the microgrid level Provides results from a quantified assessment of benefits from economic, environmental, operational, and social point-of-views Presents the hierarchical control levels manifested in microgrid operations and evaluates the principles and main functions of centralized and decentralized control

Polymeric Materials in Corrosion Inhibition: Fundamentals and Applications brings together the very latest information and techniques in the preparation and application of a broad range of polymeric materials as corrosion inhibitors in diverse corrosive environments. Technology has shifted recently from conventional inorganic and organic corrosion inhibitors to polymeric corrosion inhibitors. Polymeric materials are cost-effective, readily available, more environmentally compatible, and offer attractive properties for this demanding application area. The book begins by introducing the fundamentals of polymeric materials, corrosion, and corrosion inhibitors. This is followed by detailed, methodical

coverage of polymers as corrosion inhibitors, with separate sections for natural and synthetic polymers. Each chapter guides the reader through the synthesis, properties, and application of a specific polymer for corrosion inhibition, and includes analysis of advantages and disadvantages, and guidance on methods for improved performance. The final chapter covers other important aspects and developments, including adsorption mechanisms, quantum chemical calculations, molecular dynamics, and simulations. This is a valuable reference for researchers and advanced students, across a range of disciplines, including polymer science, corrosion, electrochemistry, materials science, chemical engineering, and petroleum engineering. This book also supports scientists, R&D professionals, and engineers looking to utilize polymeric materials for corrosion inhibition in a range of industrial settings. Introduces the fundamentals of polymeric materials, applications of polymers, corrosion, and corrosion inhibition Provides thorough, systematic coverage of synthesis, characterization, and application, organized by polymer category Explores advantages and disadvantages of polymers in corrosion inhibition, and methods to improve performance

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