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KEY=SCIENCE - SHERLYN MOHAMMAD

ENGINEERING SCIENCE N2

Pearson South Africa **Engineering Science N2** serves as a user-friendly handbook both for the student and the lecturer in that it not only contains the complete theoretical component for every module, but it also has a short revision section dealing with necessary material from the previous grade.

ENGINEERING SCIENCE N4

Pearson South Africa

ENGINEERING SCIENCE

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ENGINEERING DYNAMICS

A PRIMER

Springer Science & Business Media **A well written and thoughtful refresher for introductory classical dynamics, this primer offsets deficiencies in standard undergraduate engineering dynamics classes. Includes summaries and short exercises of for each chapter.**

CRC HANDBOOK OF TABLES FOR APPLIED ENGINEERING SCIENCE

CRC Press **New tables in this edition cover lasers, radiation, cryogenics, ultra-sonics, semi-conductors, high-vacuum techniques, eutectic alloys, and organic and inorganic surface coating. Another major addition is expansion of the sections on engineering materials and compos-ites, with detailed indexing by name, class and usage. The special Index of Properties allows ready comparisons with respect to single property, whether physical, chemical, electrical, radiant, mechani-cal, or thermal. The user of this book is assisted by a comprehensive index, by cross references and by numerically keyed subject headings at the top of each page. Each table is self-explanatory, with units, abbreviations, and symbols clearly defined and tabular material subdivided for easy reading.**

MULTIPHASE FLOW DYNAMICS 3

TURBULENCE, GAS ABSORPTION AND RELEASE, DIESEL FUEL PROPERTIES

Springer Science & Business Media **In order to allow the application of the theory from all the three volumes also to processes in combustion engines a systematic set of internally consistent state equations for diesel fuel gas and liquid valid in broad range of changing pressure and temperature are provided also in Volume 3. Erlangen, October 2006 Nikolay Ivanov Kolev**

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ENGINEERING SCIENCE

FOR FOUNDATION DEGREE AND HIGHER NATIONAL

Routledge **Focusing primarily on core topics in mechanical and electrical science, students enrolled on a wide range of higher education engineering courses at undergraduate level will find Engineering Science, second edition, an invaluable aid to their learning. With updated and expanded content, this new edition covers sections on the mechanics of materials, dynamics, thermodynamics, electrostatics and electromagnetic principles, and a.c./d.c. circuit theory. Entirely new sections are devoted to the study of gyroscopes and the effect of applied torques on their behaviour, and the use of Laplace transformation as a tool for modelling complex networks of inductance, capacitance and resistance. In addition, a new overview of the decibel (dB) introduces a handy technique for expressing logarithmic ratios. Knowledge-check and review questions, along with activities, are included throughout the book, and the necessary background mathematics is integrated alongside the appropriate areas of engineering. The result is a clear and easily accessible textbook that encourages independent study and covers the essential scientific principles that students will meet at this level. The book is supported with a companion website for students and lecturers at www.key2engineeringscience.com, and it includes:**

- Solutions to the Test Your Knowledge and Review Questions in the book
- Further guidance on Essential Mathematics with introductions to vectors, vector operations, the calculus and differential equations, etc.
- An extra chapter on steam properties, cycles and plant
- Downloadable SCILAB scripts that help simplify some of the advanced mathematical content
- Selected illustrations from the book

PROCEEDINGS OF THE ASME DESIGN ENGINEERING DIVISION ...

PRESENTED AT THE ... ASME INTERNATIONAL MECHANICAL ENGINEERING CONGRESS AND EXPOSITION

ECONOMIC DYNAMICS WITH MEMORY

FRACTIONAL CALCULUS APPROACH

Walter de Gruyter GmbH & Co KG This book presents the applications of fractional calculus, fractional operators of non-integer orders and fractional differential equations in describing economic dynamics with long memory. Generalizations of basic economic concepts, notions and methods for the economic processes with memory are suggested. New micro and macroeconomic models with continuous time are proposed to describe the fractional economic dynamics with long memory as well.

SYSTEM DYNAMICS FOR ENGINEERING STUDENTS

CONCEPTS AND APPLICATIONS

Academic Press Engineering system dynamics focuses on deriving mathematical models based on simplified physical representations of actual systems, such as mechanical, electrical, fluid, or thermal, and on solving these models for analysis or design purposes. **System Dynamics for Engineering Students: Concepts and Applications** features a classical approach to system dynamics and is designed to be utilized as a one-semester system dynamics text for upper-level undergraduate students with emphasis on mechanical, aerospace, or electrical engineering. It is the first system dynamics textbook to include examples from compliant (flexible) mechanisms and micro/nano electromechanical systems (MEMS/NEMS). This new second edition has been updated to provide more balance between analytical and computational approaches; introduces additional in-text coverage of Controls; and includes numerous fully solved examples and exercises. Features a more balanced treatment of mechanical, electrical, fluid, and thermal systems than other texts Introduces examples from compliant (flexible) mechanisms and MEMS/NEMS Includes a chapter on coupled-field systems Incorporates MATLAB® and Simulink® computational software tools throughout the book Supplements the text with extensive instructor support available online: instructor's solution manual, image bank, and PowerPoint lecture slides NEW FOR THE SECOND EDITION Provides more balance between analytical and computational approaches, including integration of Lagrangian equations as another modelling technique of dynamic systems Includes additional in-text coverage of Controls, to meet the needs of schools that cover both controls and system dynamics in the course Features a broader range of applications, including additional applications in pneumatic and hydraulic systems, and new applications in aerospace, automotive, and bioengineering systems, making the book even more appealing to mechanical engineers Updates include new and revised examples and end-of-chapter exercises with a wider variety of engineering applications

DYNAMICS AND CONTROL OF DISTRIBUTED SYSTEMS

Cambridge University Press Describes progress in an active area of research across a broad range of engineering disciplines.

EXTREME MAN-MADE AND NATURAL HAZARDS IN DYNAMICS OF STRUCTURES

Springer Science & Business Media This book provides a critical assessment of current knowledge and indicates new challenges which are brought about at present times by fighting man-made and natural hazards in transient analysis of structures. The latter concerns both permanently fixed structures, such as those built to protect people and/or sensitive storage material; or special structures, like bridges and tunnels; and moving structures such as trains, planes, ships or cars.

NONLINEAR DYNAMICS, VOLUME 1

PROCEEDINGS OF THE 34TH IMAC, A CONFERENCE AND EXPOSITION ON STRUCTURAL DYNAMICS 2016

Springer Nonlinear Dynamics, Volume 1. Proceedings of the 34th IMAC, A Conference and Exposition on Dynamics of Multiphysical Systems: From Active Materials to Vibroacoustics, 2016, the first volume of ten from the Conference, brings together contributions to this important area of research and engineering. The collection presents early findings and case studies on fundamental and applied aspects of Structural Dynamics, including papers on: • Nonlinear Oscillations • Nonlinear Modal Analysis • Nonlinear System Identification • Nonlinear Modeling & Simulation • Nonlinearity in Practice • Nonlinearity in Multi-Physics Systems • Nonlinear Modes and Modal Interactions

FLUID-SOLID INTERACTION DYNAMICS

THEORY, VARIATIONAL PRINCIPLES, NUMERICAL METHODS, AND APPLICATIONS

Academic Press Fluid-Solid Interaction Dynamics: Theory, Variational Principles, Numerical Methods and Applications gives a comprehensive accounting of fluid-solid interaction dynamics, including theory, numerical methods and their solutions for various FSI problems in engineering. The title provides the fundamental theories, methodologies and results developed in the application of FSI dynamics. Four numerical approaches that can be used with almost all integrated FSI systems in engineering are presented. Methods are linked with examples to illustrate results. In addition, numerical results are compared with available experiments or numerical data in order to demonstrate the accuracy of the approaches and their value to engineering applications. The title gives readers the state-of-the-art in theory, variational principles, numerical modeling and applications for fluid-solid interaction dynamics. Readers will be able to independently formulate models to solve their engineering FSI problems using information from this book. Presents the state-of-the-art in fluid-solid interaction dynamics, providing theory, method and results Takes an integrated approach to formulate, model and simulate FSI problems in engineering Illustrates results with concrete examples Gives four numerical approaches and related theories that are suitable for almost all integrated FSI systems Provides the necessary information for bench scientists to independently formulate, model, and solve physical FSI problems in engineering

NON-LINEAR DYNAMIC PROBLEMS FOR COMPOSITE CYLINDRICAL SHELLS

CRC Press This monograph will be valuable for English-speaking scientists wanting to know more about the state-of-the-art in Russian research on non-linear shell theory. It will also be of value to all materials scientists concerned with the use and behaviour of composite materials in structural applications.

INVESTIGATION OF PRESSURE DROP AND DYNAMIC INSTABILITIES IN TWO-PHASE FLOW

Cuvillier Verlag Zweiphasenströmungen, insbesondere Wasser/Dampf-Strömungen, sind für die Auslegung und den Betrieb thermohydraulischer Systeme nach wie vor von großem Interesse. Diese Arbeit befasst sich mit der Untersuchung des Druckverlustes und dynamischer Instabilitäten (hier Dichtewellenoszillationen) in Wasser/Dampf-Strömungen mittels zweier unterschiedlicher Ansätze unter praxisnahen Bedingungen. Zum einen wird ein Versuchsstand entwickelt, aufgebaut und in Betrieb genommen, um mit diesem entsprechende Versuche an einem Verdampferrohr durchzuführen. Zum anderen werden dynamische Simulationen mit einem homogenen („mixture flow“) und einem heterogenen („two-fluid“) Strömungsmodell durchgeführt und miteinander und mit den Messdaten verglichen. Die experimentellen und numerischen Ergebnisse lassen sich schließlich in dimensionslosen Stabilitätskarten zusammenfassen, welche die Betriebsgrenzen beschreiben, bei denen Dichtewellenoszillationen in thermohydraulisch ähnlichen Systemen auftreten können.

PREDICTION OF THE COLLAPSE LOAD FOR MOMENT-RESISTING STEEL FRAME STRUCTURE UNDER EARTHQUAKE FORCES (PENERBIT USM)

Penerbit USM This research book presents the fundamental work related to the prediction of collapse load for a moment-resisting steel frame (MRSF) subjected to earthquake forces. It demonstrates the extensive work in nonlinear analysis with particular reference to pushover analysis (POA) and incremental dynamic analysis (IDA), and deliberates at length the historical background for each method. More importantly, the book simplifies the collapse prediction process of a structure based on analytical expression. In addition, this book describes the MRSF which was designed according to Eurocode(s). This book serves as a guide and reference for practitioners and students. Universiti Sains Malaysia, Penerbit Universiti Sains Malaysia

SOUTH AFRICAN NATIONAL BIBLIOGRAPHY

Classified list with author and title index.

HARNESSING BISTABLE STRUCTURAL DYNAMICS

FOR VIBRATION CONTROL, ENERGY HARVESTING AND SENSING

John Wiley & Sons This book formulates and consolidates a coherent understanding of how harnessing the dynamics of bistable structures may enhance the technical fields of vibration control, energy harvesting, and sensing. Theoretical rigor and practical experimental insights are provided in numerous case studies. The three fields have received significant research interest in recent years, particularly in regards to the advantageous exploitation of nonlinearities. Harnessing the dynamics of bistable structures--that is, systems with two configurations of static equilibria--is a popular subset of the recent efforts. This book provides a timely consolidation of the advancements that are relevant to a large body of active researchers and engineers in these areas of understanding and leveraging nonlinearities for engineering applications. Coverage includes: Provides a one-source reference on how bistable system dynamics may enhance the aims of vibration control, energy harvesting, and sensing with a breadth of case studies Includes details for comprehensive methods of analysis, numerical simulation, and experimentation that are widely useful in the assessment of the dynamics of bistable structures Details approaches to evaluate, by analytical and numerical analysis and experiment, the influences of harmonic and random excitations, multiple degrees-of-freedom, and electromechanical coupling towards tailoring the underlying bistable system dynamics Establishes how intelligently utilizing bistability could enable technology advances that would be useful in various industries, such as automotive engineering, aerospace systems, microsystems and microelectronics, and manufacturing

HIGH-PRESSURE CRYSTALLOGRAPHY

Springer Science & Business Media Despite the tremendous advances in the techniques and equipment for carrying out high-pressure crystallography, the application or exploration of the high-pressure variable in detailed structural studies remains rare. The chapters in this book provide a set of lecture notes and supplementary material for a course on high pressure crystallography. The material comprises state-of-the-art reviews of high-pressure experiments using X-ray and neutron diffraction techniques at synchrotron and neutron facilities and in the laboratory, as well as complementary experimental high-pressure techniques and theoretical methods for investigating matter at elevated pressures. The materials studies range from elemental solids and liquids to inorganic compounds, minerals, organic compounds, clathrates and pharmaceutical compounds, to large biological molecules such as proteins and viruses. The book provides a reference for workers in high-pressure science wishing to learn more about crystallography and for established crystallographers potentially interested in high pressure as a variable, as well as an introductory guide to new researchers in the field.

NEWNES ENGINEERING SCIENCE POCKET BOOK

Elsevier Newnes Engineering Science Pocket Book provides a readily available reference to the essential engineering science formulae, definitions, and general information needed during studies and/or work situation. This book consists of three main topics-- general engineering science, electrical engineering science, and mechanical engineering science. In these topics, this text specifically discusses the atomic structure of matter, standard quality symbols and units, chemical effects of electricity, and capacitors and capacitance. The alternating currents and voltages, three phase systems, D.C. machines, and A.C. motors are also elaborated. This compilation likewise covers the linear momentum and impulse, effects of forces on materials, and pressure in fluids. This publication is useful for technicians and engineers, as well as students studying for technician certificates and diplomas, GCSE, and A levels.

RECENT ADVANCES IN ENGINEERING SCIENCE

ISSUES IN CHEMICAL ENGINEERING AND OTHER CHEMISTRY SPECIALTIES: 2013 EDITION

ScholarlyEditions Issues in Chemical Engineering and other Chemistry Specialties: 2013 Edition is a ScholarlyEditions™ book that delivers timely, authoritative, and comprehensive information about Chemical Modeling. The editors have built Issues in Chemical Engineering and other Chemistry Specialties: 2013 Edition on the vast information databases of ScholarlyNews.™ You can expect the information about Chemical Modeling 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 Chemical Engineering and other Chemistry Specialties: 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/>.

VEHICLE DYNAMICS

THEORY AND APPLICATION

Springer Science & Business Media This textbook is appropriate for senior undergraduate and first year graduate students in mechanical and automotive engineering. The contents in this book are presented at a theoretical-practical level. It explains vehicle dynamics concepts in detail, concentrating on their practical use. Related theorems and formal proofs are provided, as are real-life applications. Students, researchers and practicing engineers alike will appreciate the user-friendly presentation of a wealth of topics, most notably steering, handling, ride, and related components. This book also: Illustrates all key concepts with examples Includes exercises for each chapter Covers front, rear, and four wheel steering systems, as well as the advantages and disadvantages of different steering schemes Includes an emphasis on design throughout the text, which provides a practical, hands-on approach

OPTIC DIAGNOSTICS ON PULVERIZED COAL PARTICLES COMBUSTION DYNAMICS AND ALKALI METAL RELEASE BEHAVIOR

Springer This book focuses on pulverized coal particle devolatilization, ignition, alkali metal release behavior, and burnout temperature using several novel optic diagnostic methods on a Hencken multi-flat flame burner. Firstly, it presents a novel multi-filter technique to detect the CH* signal during coal ignition, which can be used to characterize the volatile release and reaction process. It then offers observations on the prevalent transition from heterogeneous ignition to hetero-homogeneous ignition due to ambient temperature based on visible light signal diagnostics. By utilizing the gap between the excitation energies of the gas and particle phases, a new low-intensity laser-induced breakdown spectroscopy (PS-LIBS) is developed to identify the presence of sodium in the particle or gas phase along the combustion process. For the first time, the in-situ verification of the gas phase Na release accompanying coal devolatilization is fulfilled when the ambient temperature is high enough. In fact, particle temperature plays a vital role in the coal burnout process and ash particle formation. The last part of the book uses RGB color pyrometry and the CBK model to study the char particle temperature on a Hencken burner. It offers readers valuable information on the technique of coal ignition and combustion diagnostics as well as coal combustion characteristics.

HYDRODYNAMICS

OPTIMIZING METHODS AND TOOLS

BoD – Books on Demand The constant evolution of the calculation capacity of the modern computers implies in a permanent effort to adjust the existing numerical codes, or to create new codes following new points of view, aiming to adequately simulate fluid flows and the related transport of physical properties. Additionally, the continuous improving of laboratory devices and equipment, which allow to record and measure fluid flows with a higher degree of details, induces to elaborate specific experiments, in order to shed light in unsolved aspects of the phenomena related to these flows. This volume presents conclusions about different aspects of calculated and observed flows, discussing the tools used in the analyses. It contains eighteen chapters, organized in four sections: 1) Smoothed Spheres, 2) Models and Codes in Fluid Dynamics, 3) Complex Hydraulic Engineering Applications, 4) Hydrodynamics and Heat/Mass Transfer. The chapters present results directed to the optimization of the methods and tools of Hydrodynamics.

RESEARCH IN PROGRESS

PHYSICS, CHEMISTRY, BIOLOGICAL SCIENCES, MATHEMATICS, ENGINEERING SCIENCES, METALLURGY AND MATERIALS SCIENCE, GEOSCIENCES, ELECTRONICS, EUROPEAN RESEARCH PROGRAM

PROCEEDINGS OF THE ... ANNIVERSARY MEETING OF THE SOCIETY OF ENGINEERING SCIENCE

ADVANCES IN COMPUTATIONAL METHODS IN SCIENCES AND ENGINEERING 2005 (2 VOLS)

SELECTED PAPERS FROM THE INTERNATIONAL CONFERENCE OF COMPUTATIONAL METHODS IN SCIENCES AND ENGINEERING (ICCMSE 2005)

CRC Press This volume brings together selected contributed papers presented at the International Conference of Computational Methods in Science and Engineering (ICCMSE 2005), held in Greece, 21 aEURO" 26 October 2005. The conference aims to bring together computational scientists from several disciplines in order to share methods and ideas. The ICCMSE is unique in its kind. It regroups original contributions from all fields of the traditional Sciences, Mathematics, Physics, Chemistry, Biology, Medicine and all branches of Engineering. It would be perhaps more appropriate to define the ICCMSE as a conference on computational science and its applications to science and engineering. Topics of general interest are: Computational Mathematics, Theoretical Physics and Theoretical Chemistry. Computational Engineering and Mechanics, Computational Biology and Medicine, Computational Geosciences and Meteorology, Computational Economics and Finance, Scientific Computation. High Performance Computing, Parallel and Distributed Computing, Visualization, Problem Solving Environments, Numerical Algorithms, Modelling and Simulation of Complex System, Web-based Simulation and Computing, Grid-based Simulation and Computing, Fuzzy Logic, Hybrid Computational Methods, Data Mining, Information Retrieval and Virtual Reality, Reliable Computing, Image Processing, Computational Science and Education etc. More than 800 extended abstracts have been submitted for consideration for presentation in ICCMSE 2005. From these 500 have been selected after international peer review by at least two independent reviewers.

THE 48 LAWS OF POWER IN PRACTICE

THE 3 MOST POWERFUL LAWS & THE 4 INDISPENSABLE POWER PRINCIPLES

tradition Robert Greene's *The 48 Laws of Power* has shaken up the lives of millions. It's wielded by successful business executives, leading actors and musicians, and even by criminal kingpins. But how can you apply its lessons to your life? Perhaps you want to become a modern Machiavelli. Perhaps you want to escape the daily grind and realise your true potential and your dreams. Or maybe you're just tired of finding yourself the victim of other people's games. But with 48 Laws to choose from and a strong possibility that any one of them might seem like a radical overhaul of your habits and thought processes, it can seem overwhelming or impossible to put the Laws into practice. Help is at hand. Drawing on our major podcast series, *Exploring The 48 Laws of Power*, this book provides all you need to put the Laws into practice and make lasting changes to your life. We reveal the 3 Most Powerful Laws (the ones you should start with, and on which all the others build) and the 4 Indispensable Power Principles (the specific rules of thumb and social 'hacks' which explain how the Laws really work in the world today). Armed with this knowledge, *The 48 Laws of Power* won't be a cool book you glanced through and then shelved. It will change your life.

ADSORPTION SCIENCE AND TECHNOLOGY

World Scientific This book presents the latest research on adsorption science and technology. It covers various aspects of materials, solid characterization, equilibria, kinetics determination and new processes. Contents: Cluster Mediated Filling of Water and Alcohol on Microporous Carbon Alloys (K Kaneko et al.) Direct Measurement of Transient Concentration Profiles in Molecular Sieve Particles and Columns by MRI (N Karsten-Bär et al.) Computer Simulation Studies of Wetting on Heterogeneous Surfaces (S Curtarolo et al.) New Adsorbents for Gas Separation by Weak Chemical Bonds (R T Yang) Measurement of Adsorbate Density Profiles in Activated Carbon with the Aid of 1H-MRI (F B Aarden et al.) Interaction Between Adsorption and Condensation Processes in a Pore-Relation Between Condensation Pressure and Pore Width (C Aharoni) Isotheric Heat: A Criterion for Equilibrium Model Selection (A Ahmadpour & D D Do) Adsorption Characteristics and Isotherm Relationships of Activated Carbons Developed from Lignite and Peat (S J Allen et al.) and other papers Readership: Engineers and scientists working in adsorption and separation science and engineering, as well as research students in chemical engineering and physical chemistry. Keywords:

ENGINEERING SCIENCE AND MECHANICS

PROCEEDINGS OF AN INTERNATIONAL SYMPOSIUM HELD DECEMBER 29-31, 1981 IN TAINAN, TAIWAN, UNDER JOINT SPONSORSHIP OF THE NATIONAL CHENG KUNG UNIVERSITY AND THE AMERICAN ASTRONAUTICAL SOCIETY

NONLINEAR DYNAMICS AND CHAOS

WITH APPLICATIONS TO PHYSICS, BIOLOGY, CHEMISTRY, AND ENGINEERING

CRC Press This textbook is aimed at newcomers to nonlinear dynamics and chaos, especially students taking a first course in the subject. The presentation stresses analytical methods, concrete examples, and geometric intuition. The theory is developed systematically, starting with first-order differential equations and their bifurcations, followed by phase plane analysis, limit cycles and their bifurcations, and culminating with the Lorenz equations, chaos, iterated maps, period doubling, renormalization, fractals, and strange attractors.

PROCEEDINGS ... ANNUAL MEETING OF THE SOCIETY OF ENGINEERING SCIENCE, INC

ORBITAL MECHANICS FOR ENGINEERING STUDENTS

Elsevier *Orbital Mechanics for Engineering Students, Second Edition*, provides an introduction to the basic concepts of space mechanics. These include vector kinematics in three dimensions; Newton's laws of motion and gravitation; relative motion; the vector-based solution of the classical two-body problem; derivation of Kepler's equations; orbits in three dimensions; preliminary orbit determination; and orbital maneuvers. The book also covers relative motion and the two-impulse rendezvous problem; interplanetary mission design using patched conics; rigid-body dynamics used to characterize the attitude of a space vehicle; satellite attitude dynamics; and the characteristics and design of multi-stage launch vehicles. Each chapter begins with an outline of key concepts and concludes with problems that are based on the material covered. This text is written for undergraduates who are studying orbital mechanics for the first time and have completed courses in physics, dynamics, and mathematics, including differential equations and applied linear

algebra. Graduate students, researchers, and experienced practitioners will also find useful review materials in the book. **NEW:** Reorganized and improved discussions of coordinate systems, new discussion on perturbations and quaternions **NEW:** Increased coverage of attitude dynamics, including new Matlab algorithms and examples in chapter 10 New examples and homework problems

NONEQUILIBRIUM GAS DYNAMICS AND MOLECULAR SIMULATION

Cambridge University Press 7.1 Introduction -- 7.2 Rotational Energy Exchange Models -- 7.2.1 Constant Collision Number -- 7.2.2 The Parker Model -- 7.2.3 Variable Probability Exchange Model of Boyd -- 7.2.4 Nonequilibrium Direction Dependent Model -- 7.2.5 Model Results -- 7.3 Vibrational Energy Exchange Models -- 7.3.1 Constant Collision Number -- 7.3.2 The Millikan-White Model -- 7.3.3 Quantized Treatment for Vibration -- 7.3.4 Model Results -- 7.4 Dissociation Chemical Reactions -- 7.4.1 Total Collision Energy Model -- 7.4.2 Redistribution of Energy Following a Dissociation Reaction -- 7.4.3 Vibrationally Favored Dissociation Model -- 7.5 General Chemical Reactions -- 7.5.1 Reaction Rates and Equilibrium Constant -- 7.5.2 Backward Reaction Rates in DSMC -- 7.5.3 Three-Body Recombination Reactions -- 7.5.4 Post-Reaction Energy Redistribution and General Implementation -- 7.5.5 DSMC Solutions for Reacting Flows -- 7.6 Summary -- Appendix A: Generating Particle Properties -- Appendix B: Collisional Quantities -- Appendix C: Determining Post-Collision Velocities -- Appendix D: Macroscopic Properties -- Appendix E: Common Integrals -- References -- Index

FUNDAMENTALS OF APPLIED DYNAMICS

Springer Science & Business Media A translation of the highly acclaimed text by Roberto Tenenbaum (originally published in Portuguese). Tenenbaum's book covers the full range of topics included in a complete basic course designed for undergraduate students in engineering. Requiring no more than a basic course in calculus, the text employs an intuitive approach, from the point of view of Newtonian mechanics, that avoids the complications of Hamiltonian and Lagrangian formalism. The balance between analysis and practical examples also avoids the tendency of other engineering-oriented texts to assume an antipathy towards abstract thinking among engineers. The analytical approach, presented in a simple but rigorous way, gives the required tools for modeling novel practical situations.

NANOSPONGES

SYNTHESIS AND APPLICATIONS

John Wiley & Sons An excellent overview of the field, covering in detail a wide range of different types of constituent materials, such as polymers, metals and metal oxides. It discusses their production and synthetic routes, as well as applications in several areas, including catalysis, drug delivery and environmental science. A must-have for scientists in academia and industry, as well as a valuable resource for both newcomers and more established researchers working in the field.

ROBOMATIX REPORTER

FEEDBACK SYSTEMS

Princeton University Press The essential introduction to the principles and applications of feedback systems—now fully revised and expanded This textbook covers the mathematics needed to model, analyze, and design feedback systems. Now more user-friendly than ever, this revised and expanded edition of Feedback Systems is a one-volume resource for students and researchers in mathematics and engineering. It has applications across a range of disciplines that utilize feedback in physical, biological, information, and economic systems. Karl Åström and Richard Murray use techniques from physics, computer science, and operations research to introduce control-oriented modeling. They begin with state space tools for analysis and design, including stability of solutions, Lyapunov functions, reachability, state feedback observability, and estimators. The matrix exponential plays a central role in the analysis of linear control systems, allowing a concise development of many of the key concepts for this class of models. Åström and Murray then develop and explain tools in the frequency domain, including transfer functions, Nyquist analysis, PID control, frequency domain design, and robustness. Features a new chapter on design principles and tools, illustrating the types of problems that can be solved using feedback Includes a new chapter on fundamental limits and new material on the Routh-Hurwitz criterion and root locus plots Provides exercises at the end of every chapter Comes with an electronic solutions manual An ideal textbook for undergraduate and graduate students Indispensable for researchers seeking a self-contained resource on control theory