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Sci-Tech Book News Reviews

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Sci-Tech Book News Reviews Susan Fingerman, Selector



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GEOGRAPHY

G70 9781439885017

Data analysis and statistics for geography, environmental science, and engineering.

Acevedo, Miguel F.

CRC Press, ©2012 535 p. \$99.95

In this interdisciplinary text, author Acevedo (University of North Texas) brings together methods applicable across a variety of science and engineering disciplines dealing with earth systems, the environment, ecology, and human-nature interactions. Of special note is the text's early coverage of time series and spatial analysis; this unconventional organization allows the text to be used in various countries, in various types of curricula, and with various levels of student preparation and progress in the curriculum. Part 1 offers an introduction to probability, statistics, time series, and spatial analysis. Part 2 uses matrix algebra to address multidimensional problems. Each chapter starts with conceptual and theoretical material, covered with enough mathematical detail to serve as a firm foundation to understand how the methods work, then presents a hands-on computer session using the open source R system. Data files and scripts are available on various web sites; the publisher's website offers a solutions manual and lecture slides. The text is for undergraduates and graduate students in geography and earth science, biology, environmental science, social sciences, and engineering.

G278 9781446201732

Spatial statistics & geostatistics; theory and applications for geographic, information science & technology.

Chun, Yongwan and Daniel A. Griffith.

(Geographic information science and technology)

Sage Publications, ©2013 181 p. \$120.00

In order to help researchers and practitioners use eigenvector spatial filtering (ESF), which

makes spatial statistics more accessible to very many users, Chun and Griffith (both geospatial information sciences, U. of Texas-Dallas) compare geostatistics, spatial autoregression, and ESF analyses. They also include code in the R open-source statistics software for implementing the analysis. The topics include spatial autocorrelation, spatial composition and configuration, spatially adjusted regression and related spatial econometrics, analyzing spatial variance and covariance with geostatistics and related techniques, and more advanced topics in spatial statistics.

GA102 9781439874585

Advances in mapping from remote sensor imagery; techniques and applications.

Title main entry. Ed. by Xiaojun Yang and Jonathan Li.

CRC Press, ©2013 427 p. \$149.95

Some of the latest developments in remote sensing and information extraction for topographic and thematic mapping are reviewed by geographers and other earth and environmental scientists, as well as people from the technological side. Students, researchers, and practitioners can read about such aspects as advanced algorithms for land use and cover classification, generating digital elevation models from satellite interferometric synthetic aperture radar, assessing urbanization patterns and trends in the Gulf of Mexico region of the southeast US with Landsat and night-time lights imagery, estimating and mapping forest leaf area index using satellite imagery, advanced geospatial techniques for mapping and monitoring invasive species, and mapping marine oil spills from space.

HA31 9780470740521

Multiple imputation and its application.

Carpenter, James R. and Michael G. Kenward. (Statistics in practice)

John Wiley & Sons, ©2013 345 p. \$75.00

After identifying issues raised by missing data in the study of complexity, Carpenter and Kenward (both medical statistics, London School of Hygiene and Tropical Medicine) outline the theoretical basis of Rubin's multiple imputation, then describe its application to a range of common analysis in the medical and social sciences. In particular, they examine its applications with nonlinear relationships and interaction, with survival data, and with multilevel data. The book's home page contains the code for the examples in various software packages.

PRODUCTION, INDUSTRY, LABOR

HD30 9781466629677

Decision control, management, and support in adaptive and complex systems; quantitative models.

Pavlov, Yuri P. and Rumén D. Andreev.
Information Science Reference, ©2013 268 p.
\$195.00

Andreev and Pavlov (both information and communication technologies, Bulgarian Academy of Sciences) describe and demonstrate a new mathematical technique to describe decision making in complex systems, which retains human speculative knowledge as decisive for the final solution. Their topics include decision support fundamentals, preferences-based performance measurement models, elements of stochastic programming, extrapolation methods in control and adaptive systems, personalized electronic-learning systems, and a preference utility-based approach to discovering qualitative knowledge. The case study is a chicken and egg farm.

HD30 9781466628182

Industrial production management in flexible manufacturing systems.

Dima, Ioan Constantin.
Engineering Science Reference, ©2013 494 p.
\$195.00

Dima (University Valahia of Targoviste, Romania) brings together international contributors in econometrics and manufacturing technologies in this book for researchers, managers, advanced students, technicians, and practitioners in the field of operative management of industrial production. Section 1 examines elements of industrial operational management, with material on structural organization of industrial companies, production capacity, and the use of budgets in forecasting. Section 2 deals with aspects of industrial production

programming systems, and section 3 addresses industrial production multiservice issues, such as multiservice workstations, operational production structures used in the multi-serving system, and using the multi-serving system in the textile industry.

HD30 9781844642397

Report on world innovation competitiveness development, 2001-2012.

Title main entry. Ed. by Li Jianping, Li Minrong and Zhao Xinli.

Paths International, ©2012 665 p. \$103.00
This report looks at the development of the capacity of countries to compete with other countries in technological innovation that can be translated into commercial profit. It begins with the theory and methodology of studying national innovation competitiveness, then moves on to consider world innovation competitiveness from such perspectives as regional evaluation, comparative analysis of the world competitiveness in innovation environment and the world competitiveness in innovation output, principal features and variations tendency, and a new pattern and new situation of world technological competition under a new background. Over half of the volume is devoted to reports on 100 individual countries, alphabetically from Albania to Vietnam.

HD47 9781439887257

Reducing process costs with lean, six sigma, and value engineering techniques.

Pries, Kim H. and Jon M. Quigley.
CRC Press, ©2013 328 p. \$79.95

Featuring step-by-step instructions, rubrics, exercises, and discussion questions, this work explains benefits and drawbacks of a range of Lean and Lean Six Sigma methods and tools for improving value proposition, such as the arbitrary cost down approach, the Isuzu approach to teardowns, classical value analysis, Lean manufacturing, optimization, and cost recovery. The last chapter shows what to do when cost improvement goes wrong. Cost improvement scenarios detail objectives, actions, and results. The book offers a visual orientation with many b&w photos and charts. Pries is a cost improvement consultant. Quigley is affiliated with Western Carolina University.

LAW

K1505 9781781000533

The future of the patent system.

Title main entry. Ed. by Ryo Shimanami.
Edward Elgar Publishing, ©2012 379 p.
\$160.00

With the patent system plagued by such troubles as the sharp increase in the number of patent applications, decrease in the quality of patent rights, and increase in the cost of patent infringement lawsuits, Shimanami (law, Kobe U., Japan) and his contributors provide a law and economics assessment of the patent systems of developed and emerging economies. Opening chapters present a jurisprudence perspective on how the uniformity and versatility of the norms that were originally part of the patent system have been lost; an economic perspective on how the reinforcement of patent rights have impacted innovation, particularly in high-tech industries; and an exploration of how patent rights are widely ignored in the practical activities of industry. The remaining chapters offer individual examinations of the current status and future directions of the patent systems of the European Union, the United States, Japan, India, Brazil, and China.

EDUCATION

LB1028 9780415899383

Best practices for teaching with emerging technologies.

Pacansky-Brock, Michelle. (Best practices in online teaching and learning)

Routledge, ©2013 161 p. \$135.00

A California-based online teacher and education researcher, Pacansky-Brock predicts the role that cloud-based, Web 2.0, social media, and mobile applications might play in education once they are widely adopted in mainstream teaching. She covers building a solid foundation, a new paradigm for a new century, essential toolkit, tools beyond text for communication and content creation, backchannels and tools for participatory learning, mobile and beyond, and online resources.

SCIENCE (GENERAL)

Q180 9781843345893

Prometheus assessed?; research measurement, peer review, and citation analysis.

Goldfinch, Shaun and Kiyoshi Yamamoto.

Chandos Publishing, ©2012 365 p. \$90.00 (pa)

Goldfinch (management, Nottingham U.) and Yamamoto (financial management, U. of Tokyo) explore efforts to evaluate scientific

achievements, typically now conducted by government agencies as part of the decision to disperse funding for research. They cover the publication, citation, and bibliometric assessment of research; whether peer review, refereeing, and their discontents are a failed model or simply the least worst option; changing assessment models in Britain from the Research Assessment Exercise to the Research Excellence Framework; perils of peer review in a small country as illustrated by the Performance Based Research Fund in New Zealand; and the National University Corporations as a case study of research evaluation in Japan. Chandos is an imprint of Woodhead Publishing, and is distributed in the US by IPS.

Q295 9783527411665

Synergetic agents; from multi-robot systems to molecular robotics.

Haken, Hermann and Paul Levi.

Wiley-VCH, ©2012 283 p. \$185.00

In a new approach to both multi-robot systems and molecular robots, Haken (theoretical physics) and Levi (parallel and distributed systems, both U. of Stuttgart, Germany) discuss active units, that is robots or molecules capable of forming spatio-temporal structures or collective action based on cooperation, thus becoming synergetic agents. Technical sections are flagged with warning signs, they say, but the rest of the treatment should be accessible to non-specialist physical scientists and engineers, graduate students, and researchers. Among the results are the Haken-Levi theorem in its classical and quantum mechanical formulation relating robot motion to probability distribution, their quantum theory of muscle contraction based on actin-myosin interaction, and a detailed quantum theoretical model of the motion of molecular robots.

Q325 9781119951520

Autonomous learning systems; from data streams to knowledge in real-time.

Angelov, Plamen P.

John Wiley & Sons, ©2013 273 p. \$145.00

Angelov (computational intelligence, Lancaster U., UK) explains the technologies, methodology, and the relevance of autonomous learning systems (ALS) and its applications as well as the challenges of the field. In what is a very systematic presentation, the author addresses fundamentals of probability theory, fundamentals of fuzzy systems theory, evolving system

structure from streaming data, autonomous learning classifiers, autonomous learning sensors for chemical and petrochemical industries and mobile robotics, modeling evolving user behavior with ALS, and more. The book is intended as an introduction to the key features of the field for academics, students, researchers, and engineers -- and also would be useful for government agencies and software developers. The book is amply illustrated and well written.

Q325 9789814324380

A gentle introduction to support vector machines in biomedicine; v.1: Theory and methods.

Title main entry. Ed. by Alexander Statnikov, Constantin F. Aliferis, Douglas P. Hardin and Isabelle Guyon.

World Scientific, ©2011 183 p. \$83.00

Statnikov, Aliferis (both health informatics and bioinformatics, New York U.), Hardin (mathematics and biomedical informatics, Vanderbilt U.), and researcher and consultant Guyon describe a learning method designed to connect the massive amounts of biomedical knowledge hidden inside raw data, with a next generation of diagnostics, personalized treatments, and new drugs. They introduce the family of support vector machines learning methods, a class of data analysis tools that can handle well datasets and modeling tasks that are very problematic for other analysis methods. The material is suitable for researchers, educators, and practitioners in the health sciences. The other volume presents case studies.

Q325 9781118104200

Reinforcement learning and approximate dynamic programming for feedback control.

Title main entry. Ed. by Frank L. Lewis and Derong Liu. (IEEE Press series on computational intelligence)

John Wiley & Sons, ©2013 613 p. \$145.00

Computer scientists and electrical engineers explore the two techniques for decision and control in engineered systems, including single-player decision and control and multiplayer games. The topics include the stable adaptive neural control of partially observable dynamic systems, approximating optimal control with value gradient learning, hybrid learning in stochastic games and its application in network security, online learning and approximate programming, and a learning strategy for source tracking in unstructured environments.

Q335 9789814360777

Intelligence science; brain science, cognitive science, artificial intelligence.

Shi, Zhongzhi. (Series on intelligence science; v.2)

World Scientific, ©2012 659 p. \$148.00

Shi (computing technology, Chinese Academy of Sciences) introduces the scientific concepts and methods of intelligence science -- the intersection of brain science, cognitive science, and artificial intelligence. The book can serve as a textbook for senior or graduate students and a reference for researchers in any of those disciplines or related ones such as neurology or psychology. His topics include foundations of neurophysiology, perceptual cognition, auditory information processing, memory, an artificial immune system, and symbolic logic.

MATH, COMPUTERS

QA76 9780769549514

International symposium on information science and engineering; proceedings.

International Symposium on Information Science and Engineering (4th: 2012: Shanghai, China) Ed. by Jianping Chen et al. *Computer Society Press*, ©2012 509 p. \$0.00 (pa)

Thirty-seven papers from the ISISE 2012 symposium present recent research on image sensing, information retrieval, intrusion detection, network routing, security risk assessment, and inflation forecasting. Three papers from the Beijing Language and Culture University propose a text extraction method for classifying microblog users, compare feature selection methods for unbalanced text classification, and analyze the web usage of a Chinese learning website. A workshop session focuses on information processing. Forty-two posters round out the volume. B&w images are provided but no subject index.

QA76.585 9781466628540

Principles, methodologies, and service-oriented approaches for cloud computing.

Title main entry. Ed. by Xiaoyu Yang and Lu Liu.

Information Science Reference, ©2013 430 p. \$185.00

Computer scientists, software and electronic engineers, and similar researchers offer insight into cloud computing principles, examining the associated methods, technologies, and service-oriented approaches that can be employed. Their topics include cloud computing for scientific

simulation and high-performance computing, information technology security and governance compliant service oriented computing in cloud computing environments, an approach to evolving legacy software systems into cloud computing environments, a cloud service ranking method based on both user feedback and service testing, and the survivable mapping of virtual networks onto a shared substrate network.

QA76.59 9781614991564

Multilaterally secure pervasive cooperation; privacy protection, accountability and secure communication for the age of pervasive computing.

Weber, Stefan G. (Cryptology and information security series; v.9)

IOS Press, ©2012 178 p. \$138.00

In his PhD dissertation for the Technical University of Darmstadt, Weber addresses the challenge of protecting privacy and security as computing closes on pervasion. He demonstrates that carefully devised protection mechanisms can become enablers for multilaterally acceptable and trustworthy digital interaction and cooperation. His topics are background and requirements, state of the art, novel security techniques, an integrated approach within reference scenarios, mechanisms, and evaluation.

QA76.9 9781118168813

Computer architecture and security; fundamentals of designing secure computer systems.

Title main entry. Ed. by Shuangbao Paul Wang and Robert S. Ledley. (Information security series)

John Wiley & Sons, ©2013 321 p. \$120.00

Wang (George Mason U.) and Ledley (Georgetown U.) introduce the fundamentals of computer architecture and security, covering a range of computer hardware, system software, and data concepts from a security perspective. They introduce a new model for securing computer systems that changes the traditional Neumann architecture and also cover the latest technologies, such as virtualization, cloud computing, Internet computing, and biocomputers. They make extensive use of diagrams to illustrate the material, illustrating the actual digital circuits for many key elements.

QA76.9 9781466501386

New directions of modern cryptography.

Cao, Zhenfu.

CRC Press, ©2013 384 p. \$99.95

Cao (Trusted Digital Technology Laboratory,

Shanghai Jiao Tong U., China) provides a reference on modern cryptographic techniques and how they are applied to solve security problems. The author focuses on four primary types of cryptography: proxy re-cryptography, attribute-based, batch, and noncommutative. Applications addressed include wired and wireless communications networks, satellite communication networks, broadcast and TV networks, and newly developing networks. The book is intended for students and professionals in the areas of cryptography and network security.

QA274 9783110296648

Random fields and stochastic Lagrangian models; analysis and applications in turbulence and porous media.

Sabelfeld, Karl K.

De Gruyter, ©2013 399 p. \$182.00

Writing for mathematicians, physicists, and engineers studying processes associated with probabilistic interpretation, Sabelfeld (computational mathematics and mathematical geophysics, Russian Academy of Sciences) presents advanced stochastic models and simulation methods for random flow and the transport of particles by turbulent velocity fields and flows in porous media. He constructs two main types of models. One models turbulent flows as synthetic random fields with certain statistics and features mimicking those of turbulent fluid in the regime of interest. The other models are constructed in the form of stochastic differential equations for stochastic Lagrangian trajectories of particles carried by turbulent flows.

QA274 9781848168480

Selected topics on continuous-time controlled Markov chains and Markov games.

Prieto-Pumeau, Tomás and Onésimo Hernández-Lerma. (ICP advanced texts in mathematics; v.5)

Imperial College Press, ©2012 279 p. \$98.00

Continuous-time controlled Markov chains, explain Prieto-Rumeau (National U. for Education at a Distance, Spain) and Hernández-Lerma (National Polytechnic Institute, Mexico), form a class of stochastic control problems in which a single decision-maker wishes to optimize a given objective function. By contrast, they say, in a Markov game, there are two or more decision makers (players or controllers) trying to optimize their own objective function. The models of the

two they consider here have a continuous time variable, a denumerable state space, and Borel spaces for control sets. Most of the material has been published over the last six years, and appears in book form for the first time here. Distributed in the US by World Scientific.

QA276 9789814343732

Functional estimation for density, regression models and processes.

Pons, Odile.

World Scientific, ©2011 199 p. \$75.00

Pons (Institute of Agronomic Research, France) presents new mathematical results about statistical methods for the density and regression functions, which appear widely in the mathematical literature. The methods are generalized to estimators with kernel sequences varying on the sample space and to adaptive procedures for estimating the optimal local bandwidth of each model. He defines more complex models by several nonparametric functions or by vector parameters and nonparametric functions, such as the models for the intensity of point processes and the single-index regression models.

QA402 9789814322928

Qualitative computing; a computational journey into nonlinearity.

Chatelin, Françoise.

World Scientific, ©2012 582 p. \$148.00

Using mathematical language, Chatelin (U. de Toulouse, France) explores the domain of mathematical computation that extends beyond modern calculus and classical analysis, where numbers are not required to belong to a commutative field. He writes primarily for graduate students, researchers, and engineers involved in intensive scientific computing at the edge of turbulence and chaos. Classical calculus, analysis, and numerical linear algebra are assumed. His topics include hypercomputation in Dickson algebras, singular values for the multiplication maps, computation beyond classical logic, homotopic deviation in linear algebra, the real and the complex, and the organic intelligence in numbers.

QA808 9783110273229

Numerical continuum mechanics.

Kukudzhanov, Vladimir N. (De Gruyter studies in mathematical physics; 15)

De Gruyter, ©2013 429 p. \$210.00

Based on a lecture course he taught for 15 years, Kukudzhanov (Ishlinsky Institute for Problems

in Mechanics, Russia) introduces computational methods in continuum thermomechanics. He covers basic equations of continuous media, the basics of the theory of finite-difference schemes, methods for solving systems of algebraic equations, methods for solving boundary value problems for systems of equations, wave propagation problems, finite-difference splitting methods for solving dynamic problems, solving elastoplastic dynamic and quasi-static problems with finite deformations, and modeling damage and fracture in inelastic materials and structures.

ASTRONOMY

QB334 9781560802983

Fundamentals of gravity exploration.

LaFehr, Thomas R. and Misac N. Nabighian.

(Geophysical monograph series; 17)

Soc./Exploration Geophysicists, ©2012 218 p. \$178.77 (pa)

For earth scientists engaged in mining, petroleum, or environmental exploration, LaFehr and Nabighian, senior geophysicists at the Colorado Schools of Mines, describe analytical techniques for investigating gravity, emphasizing both the limitations of the techniques and their potential for finding future riches. Their topics include principles of attraction and Earth's gravity field, field measurements, rock density and gravity anomalies, data reduction, inversion, and geologic applications.

QB528 9781583818084

Magnetic fields from the photosphere to the corona; proceedings.

ATST-East Meeting; Magnetic Fields from

the Photosphere to the Corona (2d: 2011:

Washington, DC) Ed. by T. R. Rimmele et al.

(Astronomical Society of the Pacific Conference series; v.463)

Astronomical Soc./Pacific, ©2012 460 p. \$77.00

The solar physics workshops are jointly organized by the Advanced Technology Solar Telescope (ATST) and the European Association for Solar Telescopes (EAST) to bring together scientists, engineers, and especially the next generation of solar astronomers and instrument builders. This second one focused on connectivity science, which looks at the solar atmosphere as a system connected by solar magnetic fields. Of particular interest were the new capabilities that large aperture solar telescopes will provide for observing and measuring magnetic fields and their dynamic behavior from the photosphere to the corona. The 50 papers

discuss such matters as understanding the role of small-scale flux in solar spectral irradiance variation, the distributions of ultraviolet solar explosive events, tools for measuring the solar magnetic field in three dimensions, the expected performance of adaptive optics in large aperture solar telescopes, India's national large solar telescope, and the simple hyperspectral imaging polarimeter concept. There is no subject index.

PHYSICS

QC168 9781466564206

Shock wave dynamics; derivatives and related topics.

Emanuel, George.

CRC Press, ©2013 223 p. \$179.95

This graduate textbook/reference explains methods for deriving structural properties of curved shock waves under different conditions. Readers should have background in basic shock wave concepts, including the equations for an oblique shock in a steady flow of a perfect gas. The book is unique for its presentation of a new theory for the tangential and normal derivatives of flow properties (such as pressure and velocity) just downstream of an infinitesimally thin, curved shock wave. While much of the analysis is for a two-dimensional or axisymmetric shock, the book also has material on analysis methods for a nonuniform upstream flow and for a three-dimensional shock. It includes eight pages of problems and about 50 pages of math appendices. In addition to students, the book will also be of interest to computational engineers and experts in high-speed gas dynamics.

QC176 9789814355421

Fractional kinetics in solids; anomalous charge transport in semiconductors, dielectrics, and nanosystems.

Uchaikin, Vladimir and Renat Sibatov.

World Scientific, ©2013 257 p. \$92.00

Fractional calculus is now being used in several branches of science, and Uchaikin and Sibatov (both Ulyanovsk State U., Russia) step up by using it to study electronic processes in solids. Fractional calculus allows them to describe anomalous relaxation in disordered solids and normal relaxation in simple systems in the framework of a unified approach, they say. They cover the statistical background, the fractional kinetics of dispersive transport, transient processes in disordered semiconductor structures, fractional kinetics in quantum dots and wires, fractional relaxation in dielectrics, and the scale correspondence principle.

QC176 9781845646820

Micromechanics in practice.

Sejnoha, Michal and Jan Zeman.

WIT Press, ©2013 271 p. \$252.00

Sejnoha and Zeman (both Czech Technical U. Prague) apply analytic and numerical methods to model natural or artificial composites that have random or disordered microstructures. Such disorder makes a clear link between microstructure and macroscopic response difficult, so statistical methods are necessary. Their topics include evaluating effective electric conductivities, the numerical evaluation of microstructural statistics, beyond periodicity, asphalt mixtures, natural wood, and transforming a compliance function to a relaxation function. There is no index. The US office of WIT Press is Computational Mechanics.

QC176 9783527327331

Organized organic ultrathin films.

Title main entry. Ed. by Katsuhiko Ariga.

Wiley-VCH, ©2013 214 p. \$125.00

The authors address the fundamentals and techniques of using wet processes for fabricating organized organic ultrathin films for advanced technologies applications and current research developments. General topics include self-assembled monolayer (SAM), Langmuir-Blodgett (LB) film, layer-by layer (LbL) assembly, and other thin films. While very technical, the book is clearly written and includes well-executed illustrations and images. It is intended as a reference for researchers in traditional surface science and applied nanotechnology. Editor is Ariga (director, Supermolecules Unit and principal investigator of the World Premier International Research Center for Materials Nanoarchitectonics at the National Institute for Materials Science, Japan).

QC320 9781439861929

Nanoparticle heat transfer and fluid flow.

Title main entry. Ed. by W.J. Minkowycz, E.M.

Sparrow and J.P. Abraham. (Computational and physical processes in mechanics;

advances in numerical heat transfer; v.4)

CRC Press, ©2013 328 p. \$139.95

Mechanical engineers look at the numerical quantification, modeling, simulation, and presentation of fluid flow and heat transfer in nanoparticles, and applications in a number of areas. The topics include the role of nanoparticle suspensions in thermo/fluid and biomedical applications, the multiscale simulation of nanoparticle transport in deformable tissue

during an infusion process in hyperthermia treatments of cancers, radiative properties of microscale and nanoscale particles in dispersions for photothermal energy conversion, thermophysical properties of suspensions of highly anisotropic nanoparticles with and without field induced microstructure, and natural convection in nanofluids.

QC611 9789814343916

Nanostructured superconductors.

Moshchalkov, Victor V. and Joachim Fritzsche. *World Scientific*, ©2011 299 p. \$98.00
Moshchalkov and Fritzsche (both Katholieke U. Leuven, Belgium) present a variety of novel vortex phases and dynamic vortex states studied recently in nanostructured superconductors. Among their discussion is the concept of controlling superconducting properties through nanostructuring, which is becoming the backbone for developing new elements and systems for various applications. Other topics include individual nanostructures, clusters of nanocells, laterally nanostructured superconductors, and superconductor-ferromagnet hybrid systems.

QC711 9783110270334

Computational physics of electric discharges in gas flows.

Surzhikov, Sergey T. (De Gruyter studies in mathematical physics; 7)
De Gruyter, ©2013 428 p. \$182.00
Surzhikov (mechanics, Russian Academy of Sciences, Moscow) examines the numerical modeling of gas-discharge phenomena in gas flows. Referring readers elsewhere for the physical and chemical kinetics of the gas-discharge plasma, he limits the discussion to the physical mechanics processes and so is able to treat problems of electrodynamics and physical mechanics of discharges together. Interest in studying electro-discharge effects in subsonic, supersonic, and particularly hypersonic gas flows has arisen over the past decade, he says, because of attempts to develop hypersonic flying vehicles. He covers elements of the theory of numerical modeling of gas-discharge phenomena, numerical simulation models of glow discharge, and ambipolar models of direct current discharges.

QC793 9781439835623

Techniques in high pressure neutron scattering.

Klotz, Stefan.
CRC Press, ©2013 258 p. \$149.95
This reference for high-pressure scientists and

engineers describes techniques for neutron scattering beyond 10 GPa, with an emphasis on methods which have become available since the early 1990s. After a review of basic concepts of material strength, chapters cover nonferrous alloys, steels and super-alloys, sinter materials, pressure transmitting media, and various types of cells, including liquid/gas and clamp pressure cells, McWhan-type cells, sapphire and diamond anvil cells, uniaxial pressure cells, and Paris-Edinburgh cells. Applications are described in areas such as diffraction, inelastic scattering, small angle neutron scattering, and quasi-elastic neutron scattering. The book includes about 40 pages of reference appendices.

CHEMISTRY

QD281 9789814401272

Topological polymer chemistry; progress of cyclic polymer in syntheses, properties, and functions.

Title main entry. Ed. by Yasuyuki Tezuka.
World Scientific, ©2013 352 p. \$138.00
Tezuka (Tokyo Institute of Technology, Japan) introduces the topic and emphasizes that recent breakthroughs have allowed production of polymers having a variety of cyclic and multicyclic topologies, offering opportunities for the design of polymer materials with particular properties based on the form of the polymer. Sixteen contributed chapters are arranged in two sections. The first section is on concepts and practices and comprises eight chapters written by Tezuka himself. The second section, on cyclic polymer developments in the new century, consists of eight contributed chapters beginning with an overview of physical properties and discussing synthesis and properties, effects on the statistical and dynamical properties of ring polymers in solution, dynamics revealed by single-molecule spectroscopy, crystallization, and self-assembly, among other topics.

QD431 9783527335466

Amino acids, peptides and proteins in organic chemistry; 5v.

Title main entry. Ed. by Andrew B. Hughes.
Wiley-VCH, ©2012 3600 p. \$910.00
Although the publisher's website makes no mention of it, the cover copy for this five-volume set makes mention of a sixth volume, which might be forthcoming. Each volume has its focus, as follows. Volume 1, *Origins and Synthesis of Amino Acids* comprises two parts, on the origins of extraterrestrial and "terrestrial" amino acids

and their evolution, and on production and synthesis. Volume 2, *Modified Amino Acids, Organocatalysis and Enzymes*, begins with synthesis and chemistry and then deals with the catalysis of reactions. Following is a section devoted to enzymes, including proteases as catalysts, peptide-based enzyme models, substrate and protein recognition and mammalian and insect peptide hormones. Volume 3, *Building Blocks, Catalysis and Coupling Chemistry*, deals with the generation of alpha-amino acids, beta-lactams, and heterocycles as well as the synthesis of peptides, especially solid phase synthesis but with coverage of solution phase peptide synthesis, coupling reagents, chemical ligation, peptide purification, and automation. Volume 4, *Production Reactions, Medicinal Chemistry, Combinatorial Synthesis*, covers protection reactions and amino acid-based peptidomimetics; the chemistry of alpha- and beta amino acids, peptide drugs, and advances in N- and O-glycopeptide synthesis, among others; and methods such as phage display, library peptide synthesis, and computational design. Volume 5, *Analysis and Function of Amino Acids and Peptides* presents classical as well as newer. As stated on the back cover of each volume, a sixth volume (not included) is subtitled, *Peptide Natural Products and Amino Acid Chemistry Development*. Hughes is affiliated with La Trobe U., Melbourne, Australia.

GEOLOGY

QE48 9782710810025

Shared earth modeling; knowledge driven solutions for building and managing subsurface 3D geological models.

Perrin, Michel and Jean-Francois Rainaud. *Editions Technip*, ©2013 400 p. \$90.00 (pa) Perrin (retired geology, École des Mines de Paris) and geophysicist Rainaud, with a French company, describe developments in various fields of computer sciences -- such as solid modeling and knowledge engineering -- that can provide useful techniques for solving several crucial issues around modeling geological reservoirs. They were part of a research project begun just after the turn of the century that took geological objects within earth models and the chronology of geological events associated with them, as the core of the earth modeling process. They also worked within the framework of shared earth modeling, in which modelers and end-users have access to the data and assumptions at any time. This approach requires that the modeling not be data-driven, but knowledge-

driven, dependent on the interpretation of data by geoscientists. The information could be used by geologists, engineers, and managers involved in studying and evaluating subsurface reservoirs and hydrocarbon exploration. Distributed in the US by Atlas Books.

BIOLOGY

QH445 9789814327725

Advances in genomic sequence analysis and pattern discovery.

Title main entry. Ed. by Laura Elnitski, Helen Piontkivska and Lonnie R. Welch. (Science, engineering, and biology informatics; v.7) *World Scientific*, ©2011 223 p. \$90.00 Researchers in the computer and biological sciences explore some of the computational biology approaches to analyzing genomic sequences, looking first at discovering patterns in DNA and RNA then at performance, usage, paradigms, and other aspects of the methods themselves. Among their topics are discovering large-scale gene regulatory motif with NestedMICA, an intricate mosaic of genomic patterns at mid-range scale, a new approach to discovering RNA structural elements in the human genome, encyclopedias of DNA elements for plant genomes, and natural selection and the genome.

QH450 9781908230140

Bacterial gene regulation and transcriptional networks.

Title main entry. Ed. by M. Madan Babu. *Caister Academic Press*, ©2013 293 p. \$319.00 Microbiologists, geneticists, and computer and information professionals organize the knowledge about bacterial gene regulation through currently prevailing concepts, theories, and methods. They emphasize *trans*-acting and *cis*-acting components required for gene regulation, experimental and computational methods, and insights from a wide range of model bacterial organisms into principles of transcriptional regulation on a genomic scale. Among the topics are DNA structure and bacterial nucleotide-associated proteins, transcriptional circuits and phenotypic variation, the operation of the gene regulator network in *Escherichia coli*, *Helicobacter pylori* transcriptional network, and a comparative genomic view of the transcriptional regulation network in cyanobacteria. Distributed in the US by ISBS.

BOTANY

QK882 9781119960539

The photosynthetic membrane; molecular mechanisms and biophysics of light harvesting.

Ruban, Alexander.

John Wiley & Sons, ©2013 267 p. \$65.00 (pa)

Ruban (biological and chemical sciences, U. of London, UK) introduces the design and function of the light harvesting photosynthetic membrane in plants, including its underlying structure and the variety and roles of the membrane proteins; the space of the cell; methods and approaches to study the composition, structure, and functions of the membrane; primary processes of light phase photosynthesis; the atomic structures of light harvesting complexes and their macromolecular assemblies; the structural integration of antennae within photosystems; the dynamics of light harvesting antenna and primary energy transformations; the range of adaptations to different light environments; and the educational and practical applications of knowledge from studies of the photosynthetic membrane organization and light harvesting processes, such as in crop science, solar energy utilization, and problems associated with global climate change. The book is meant for undergraduate and graduate students and researchers in biochemistry, molecular biology, biophysics, plant science, and bioengineering.

PHYSIOLOGY

QP86 9780470878286

Protein oxidation and aging.

Grune, Tilman and Betul Catalgol, Tobias Jung. (Wiley series on protein and peptide science)

John Wiley & Sons, ©2013 502 p. \$149.95

Grune (nutrition), Jung (both Friedrich Schiller U. Jena), and Catalgol (medicine and biochemistry, Marmara U.) compile the substantial research findings on oxidative stress and protein oxidation, the removal of oxidized proteins, different model systems and affecting factors of protein oxidation and aging, and protein oxidation in some age-related diseases. Specific topics include the role enzymatic systems play in protein oxidation, the mechanism and factors influencing the formation of protein oxidation products, the limited repair of some oxidized proteins, the role of heat shock proteins in protein degradation, non-mammalian model systems and the accumulation of oxidized proteins during aging, environmental factors affecting healthy aging, and protein oxidation

in cardiac disease.

QP99 9780470924310

Production of plasma proteins for therapeutic use.

Title main entry. Ed. by Joseph Bertolini, Neil Goss and John Curling.

John Wiley & Sons, ©2013 496 p. \$150.00

Contributors mostly from drug companies but also some university and government laboratories explore the biotechnology of proteins in human blood plasma. The material is for people with a scientific, technical, research, clinical, or commercial interest in therapeutic products derived from blood plasma. Most of the book is devoted to specific plasma proteins for specific therapeutic use, but other sections consider plasma fractionation, pathogen safety in plasma products, the pharmaceutical environment applied to plasma fractionation, and the market for plasma products and the economics of fractionation.

QP399 9781848720824

Language and action in cognitive neuroscience.

Title main entry. Ed. by Yann Coello and Angela Bartolo. (Contemporary topics in cognitive neuroscience)

Psychology Press, ©2013 357 p. \$80.00

For academics, students, and professionals in cognitive psychology, neuropsychology, neuroscience, psycholinguistics, and philosophy, Coello and Bartolo (cognitive psychology and neuropsychology, U. of Lille, France) assemble 17 chapters that consider the ways cognitive and neural processes are responsible for language processing, focusing on the link between action and language and the contribution of the motor system to language perception and comprehension. Cognitive psychologists, neuroscientists, and other researchers from Europe, New Zealand, and the US discuss embodied cognition, communication, and the language faculty; the idea that language evolved mainly from a repertoire of manual gestures; experimental studies of the processing of action-related words and sentences; the role of action in language acquisition; the issue of the integration of spatial relationships in verbal description and motor behavior; and features common to both language and action, with discussion of brain-damaged and autistic individuals. Psychology Press is an imprint of the Taylor & Francis Group.

QP532 9781420084337

Fundamental QSARs for metal ions.

Walker, John D. and Michael C. Newman, Monica Enache.
CRC Press, ©2013 288 p. \$139.95
 Environmental toxicologist Walker, a consultant to the US Environmental Protection Agency; Newman (marine science, College of William and Mary, Virginia); and cell biologist Enache (biotechnology, U. of Agricultural Science and Veterinary Medicine, Bucharest, Romania) provide guidelines for the regulatory and regulated communities on developing the same kind of quantitative structure-activity relationships (QSARs) for metal ions that they now use for organic chemicals. Among their topics are the electronic structure of metals and atomic parameters, properties of metal and metal ions related to QSAR studies, descriptors for organometallic complexes, regulatory limits and applications, and constructing QSARs for metal ions.

QP751 9783527330980

Lipidomics; technologies and applications.

Title main entry. Ed. by Kim Ekroos.
Wiley-VCH, ©2012 336 p. \$125.00
 For students and scientists studying lipids, lipoproteins, membranes, and lipid-related diseases, specialists summarize the current status of using a lipidomic approach in which all the lipid elements and processes are considered a single complex system within a larger biological organism. Their topics include lipids in cells, multidimensional mass spectrometry-based shotgun lipidomics, lipids in human diseases, lipidomics for elucidating metabolic syndrome and related lipid metabolic disorder, and the tumor mitochondrial lipidome and respiratory bioenergetic insufficiency.

MICROBIOLOGY

QR53 9780470610756

Engineering complex phenotypes in industrial strains.

Title main entry. Ed. by Ranjan Patnaik.
John Wiley & Sons, ©2013 268 p. \$99.95
 Chemists, chemical engineers, biotechnologists, and related scientists review current trends and developments in engineering industrial strains of renewable biomass to produce bulk chemicals and biofuels commercially. They focus on complex phenotypes -- traits in a microbe that require more than one gene change to be modulated simultaneously in the microorganism's genome for full expression. Among the topics are the tracer-based analysis of metabolic flux networks,

strain improvement through evolutionary engineering, developing and optimizing the rapid fermentation process, an unsequenced microalga as a case study of complex system engineering, and the meiotic recombination-based genome shuffling of *Saccharomyces cerevisiae* and *Schefferomyces stiptis* for increased inhibitor tolerance to lignocellulosic substrate toxicity.

QR115 9781908230157

Real-time PCR in food science; current technology and applications.

Title main entry. Ed. by David Rodríguez-Lázaro.

Caister Academic Press, ©2013 291 p. \$319.00

Rodríguez-Lázaro (Instituto Tecnológico Agrario de Castilla y León, Spain) offers an 18-chapter text on the application of real-time polymerase chain reaction (PCR) in food science, particularly food safety and quality, for those in microbiology laboratories or involved in food microbiology or the detection of foodborne pathogens. Food scientists, microbiologists, and others from the US, Europe, and South Africa explain the use of PCR diagnostics in food science, the principles and methods of sample preparation, the verification and control of PCR procedures, and the use of PCR to detect various foodborne pathogens, including *Salmonella*, *Listeria*, *E. coli*, *Campylobacter*, *Yersinia*, *Staphylococcus*, *Clostridium*, viruses, and parasites. A chapter on the standardization of real-time PCR methods in food microbiology is included. The final section covers food quality and the use of real-time PCR for the analysis of genetically modified organisms, food allergens, and for the identification of animal or plant species. Distributed in the US by ISBS.

QR395 9780470979655

Reverse genetics of RNA viruses; applications and perspectives.

Title main entry. Ed. by Anne Bridgen.

Wiley-Blackwell, ©2013 391 p. \$149.95

For bioscience, medical, and veterinary students, researchers, and academics, Bridgen compiles 12 chapters summarizing recent developments in reverse genetics of RNA viruses through applications in each of the core virus groups, including positive sense, negative sense, and double stranded RNA viruses. Scientists from Europe and the US discuss coronavirus and rhabdovirus reverse genetics, reverse genetic tools to study the hepatitis C virus, calicivirus genetics, modification of the measles virus and application to pathogenesis studies,

bunyavirus reverse genetics and applications to studying interactions with host cells, using reverse genetics to improve influenza vaccines, Bluetongue virus reverse genetics, genetic modification in mammalian orthoreoviruses, and reverse genetics and quasispecies.

QT34 9781845939564

Microbial biotechnology; energy and environment.

Title main entry. Ed. by Rajesh Arora. *CABI Publishing*, ©2012 396 p. \$180.00
 For researchers and students in microbiology, biotechnology, and environmental sciences, as well as biofuel industry personnel, Arora, a scientist who works for the Ministry of Defense in India, assembles 19 chapters that consider the role that microbes play in biofuels and bioremediation. Scientists from around the world detail the latest developments in microbial bioenergy development, then the microbiology of microbial electric systems, an assessment of bioelectrochemical systems and enzymatic fuel cells, electrical energy from microorganisms, and rumen microbial fuel cells; the mechanistics of bioenergy production, including a systems microbiology approach to bioenergy, nanotechnology and bioenergy, and host engineering for biofuel-tolerant and phenotypes; bioenergy from wastes and pollutant removal; microalgae for biofuels; bioremediation technologies for petroleum hydrocarbons, polycyclic aromatic hydrocarbons (PAHs), and the role of biological control in the creation of bioremediation technologies; and the roles of microbes in bioremediation of nuclear waste and extremophilic microorganisms in environmental cleanup. Distributed in the US by Stylus Publishing.

QU58.5 9781936113507

Introduction to protein-DNA interactions; structure, thermodynamics, and bioinformatics.

Stormo, Gary D. *Cold Spring Harbor Lab. Press*, ©2013 198 p. \$45.00 (pa)
 Stormo (genetics, Washington U.) introduces the structural analysis of DNA and proteins, biochemical and biophysical methods for measuring binding of a protein for a particular DNA sequence, and statistical approaches to modeling and predicting binding sites based on large data sets. Illustrated by color figures and table, the book is intended for researchers working in one of the three areas who want to learn about the other two fields.

ENGINEERING (GENERAL, CIVIL)

TA418 9783908158639

Adaptive, active and multifunctional smart materials systems; select papers.

Symposium A "Adaptive, Active and Multifunctional Smart Materials Systems" of the Int'l Conference "Smart Materials, Structures and Systems" (4th: 2012: Montecatini Terme, Italy) Ed. by Pietro Vincenzini et al. (*Advances in science and technology*; v.77)
Trans Tech Publications, ©2013 365 p. \$166.00 (pa)
 The 55 selected papers in this collection were presented at the Adaptive, Active, and Multifunctional Smart Materials Systems symposium during the CIMTEC 2012 Fourth International Conference on Smart Materials, Structures, and Systems. General topics include: smart inorganic materials systems, stimuli responsive polymers and gels, luminescent and chromogenic materials systems, non-volatile memory devices, metamaterials, graphene, and multifunctional materials for energy harvesting. Editors are Vincenzini (World Academy of Ceramics, Italy), Hahn (Chonbuk National U., Korea), Iannotta (IMEM-CNR, Italy), Lendlein (Helmholtz-Zentrum Geesthacht GmbH, Germany), Palermo (ISOF-CNR, Italy), Paul (De Montfort U., UK), Sibilgia (U. of Rome, Italy), Silva (U. of Surrey, UK), and Srinivasan (Oakland U.).

TA418 9789814327817

Handbook of carbon nano materials; 2v.

Title main entry. Ed. by Francis D'Souza and Karl M. Kadish. (World Scientific series on carbon nanoscience)
World Scientific, ©2011 877 p. \$320.00
 To celebrate the 25th anniversary of the discovery of buckminsterfullerene -- first known as buckyballs and now as fullerenes -- chemists and physicists summarize the current state of fullerenes and the related forms of carbon, nanotubes and graphenes. The first volume, *Synthesis and Supramolecular Systems*, explores such topics as new reactivity in fullerene chemistry, perfluoroalkylation of fullerenes, metallic oxide clusters in fullerene cages, solubilized carbon nanotubes and their redox chemistry, the covalent functionalization and characterization of carbon nanotubes, and porphyrin-fullerene supramolecular chemistry. Among topics in the second volume, *Electron Transfer and Applications*, are photoinduced electron transfer between fullerenes and

electron-donors through molecular bridges, electron donor-acceptor nanohybrids and their application to light-energy conservation, fullerenes for photoelectrochemical and photovoltaic devices, functionalized fullerene derivatives in organic molecular electronics, and thermal conductive materials based on carbon nanotubes and graphene nanosheets. The two volumes are paged consecutively and both have the the cumulative index.

TA418 9789814343381

Inorganic nanomaterials from nanotubes to fullerene-like nanoparticles; fundamentals and applications.

Tenne, Reshef. (World Scientific series in nanoscience and nanotechnology; v.5) *World Scientific*, ©2013 312 p. \$140.00
Tenne (Weizmann Institute of Science, Israel) has been studying the subject for a couple of decades -- since the era when it was on the fringes, to the present day and its current center-stage position. He has written several hundred papers and book chapters over the years, out of which he has made a selection for this presentation. In the preface he points out that many of his writings have been collaborative efforts, and his name is but one of several or more on almost all of the selections. Arrangement is in broad thematic sections covering the discovery stage, synthesis, characterization, and application. As a means of tracing the development of the field, Tenne choose to include some papers that later proved to be in error. He supplies a general introduction and a "preamble" for each section. The selections are printed in facsimile. There is no index.

TA418 9781845646448

Mechanics of granular matter.

Sun, Qicheng and Guangqian Wang. *WIT Press*, ©2013 192 p. \$258.00
Sun and Wang (hydraulic engineering, Tsinghua U., China) focus on the basic mechanics and underlying physics of granular materials. Topics addressed include contact mechanics of individual particles, soft-sphere approach and hard-sphere approach, liquid bridge forces, force chains, jamming and structure transformations, point loading response and shear band evolution, granular flows, and preliminary multiscale mechanics. The U.S. office of WIT Press is Computational Mechanics.

TA418 9783037855249

Near-surface depth profiling of solids by mono-energetic positrons.

Title main entry. Ed. by B.N. Ganguly and G. Brauer. (Defect and diffusion forum; v.331) *Trans Tech Publications*, ©2012 138 p. \$138.00 (pa)

Physicists explain how beams of positrons -- anti-electrons -- can be created and used to analyze the interior of solids in materials science, chemistry, and the life sciences. Their topics include designing and constructing a slow positron beam for solid and surface investigations, a low background digital coincidence spectrometer to investigate positron annihilation in flight, depth-resolved positron annihilation studies of silicon and metal silicides, structural studies of nanocrystalline thin palladium films electrochemically doped with hydrogen, defect behavior in yttria-stabilized zirconia nanomaterials studied by positron annihilation techniques, and positron chemistry in polymers.

TA418 9783527410804

Polymer composites with carbonaceous nanofillers; properties and applications.

Tjong, Sie Chin. *Wiley-VCH*, ©2012 388 p. \$170.00

Tjong (physics and materials science, City U. of Hong Kong) reviews recent findings and applications of using one-dimensional and two-dimensional graphene as fillers to modify the biological, mechanical, and physical features of composites. These nanometer-scale carbon forms are much cheaper to produce and manipulate than, for example carbon nanotubes, which can serve much the same purpose but at prohibitive costs. After explaining the preparation of polymer nanocomposites, he describes their thermal, mechanical, and electrical properties. Then he surveys applications in fuel cells, biomedicine, electromagnetic shielding, and sensors.

TA455 9783037855676

Chinese ceramics communications III; selected papers.

Workshop on Synthesis, Characterization and Applications of Inorganic Powders (2012: Cuilin, China) Ed. by Jin Hu, Nanchun Chen and Cheng Zhang. (Advanced materials research; v.624) *Trans Tech Publications*, ©2013 323 p. \$200.00 (pa)

Hu (Kumming U. of Science and Technology, China) et al. present 73 papers from the 2012 Workshop on Synthesis, Characterization, and Applications of Inorganic Powders, convened in July 2012 in Guilin, China. Chinese scientists

working in materials science and technology, ceramics, engineering, chemistry, physics and electronics, stomatology, and other fields address topics such as the effects of preparation methods, reaction synthesis, phase and microstructure evolution, characterization, properties, morphology, fabrication, solution phase synthesis, microstructure observation and analysis, property improvement, crystallization and photocatalytic-activity, and the influence of heat treatment on various powders. The volume is the second in a set of 140 papers from the workshop.

TA645 9780470404775

Handbook of measurement in science and engineering; v.1.

Title main entry. Ed. by Myer Kutz.

John Wiley & Sons, ©2013 987 p. \$350.00

This first of two volumes examines measurement in five engineering disciplines: civil, environmental, mechanical, biomedical, and industrial. The contributors, mostly in the US but some in Europe, consider such topics as new and emerging technologies in structural health monitoring, the seismic testing of highway bridges, mobile source emissions testing, mass properties measurement, resistive strain measurement devices, pressure and velocity measurements, luminescent methods for measuring pressure, heat transfer measurements for non-boiling two-phase flows, human energy measurements, evaluating and selecting technology-based projects, and measuring organizational performance. The second volume covers materials properties and testing, instrumentation, and measurement standards.

TA660 9781605950341

Design and analysis of structural joints with composite materials.

Heslehurst, Rikard Benton.

DEStech Publications, Inc., ©2013 459 p.

\$195.00

Heslehurst (engineering and information technology, U. of New South Wales, Australia) presents a complete set of composite joint design requirements, design methods, and analysis equations and techniques to aid engineers, technology managers, and technicians in developing structurally efficient and cost-effective composite structural joints. Focusing on methods that are the easiest to implement and fiber-reinforced types of composite materials, he describes composite materials and their properties, types of joining methods, the

fundamentals of composite mechanics, structural joint design requirements, adhesively bonded joints, mechanically fastened joints, welded joints, and other joining methods.

TA1520 9780470911402

Illumination engineering; design with nonimaging optics.

Koshel, R. John.

John Wiley & Sons, ©2013 302 p. \$125.00

With some help from colleagues in the US and Spain, Koshel (optical sciences, U. of Arizona-Tuscon) explores the design of lighting systems in which no image is required, and the emphasis is on the efficient transfer of radiation from source to target. He covers the concept of *étendue*; squeezing the *étendue*; the simultaneous multiple-surface three-dimensional design method; solar concentrators; lightpipe design; and sampling, optimization, and tolerancing.

TA1637 9781466557963

Image super-resolution and applications.

El-Samie, Fathi E. Abd and Mohiy M.

Hadhound, Said E. El-Khamy.

CRC Press, ©2013 488 p. \$99.95

El-Samie (electronics and electrical communications), Hadhoud (information technology, both Menoufia U., Egypt), and El-Khamy (emeritus, electrical engineering, Alexandria U. Egypt) explain how to obtain high-resolution images from single or multiple low-resolution images. They present interpolation as a building block in the super-resolution reconstruction process, and compare the polynomial and inverse approaches to interpolation. Among their topics are adaptive polynomial image interpolation, color image interpolation, image interpolation for pattern recognition, image fusion, and the blind super-resolution reconstruction of images.

TA1705 9780857092724

Handbook of solid-state lasers; materials, systems and applications.

Title main entry. Ed. by B. Denker and E.

Shklovsky. (Woodhead Publishing series in

electronic and optical materials; no.35)

Woodhead Publishing, ©2013 660 p.

\$325.00

Scientists and engineers from Europe, the Americas, and Australia overview the current state of lasers in general and solid-state lasers in particular. The topics include oxide laser crystals doped with rare earth and transition metal ions, nonlinear crystals for solid-state lasers, operation regimes for solid-state lasers,

neodymium-doped yttrium aluminum garnet and neodymium-doped yttrium orthovanadate, microchip lasers, mid-infrared optical parametric oscillators, surgical solid-state lasers and their clinical applications, and environmental applications of solid-state lasers.

TA2020 9781118016237

Atmospheric pressure plasma for surface modification.

Wolf, Rory A.

Scrivener/Wiley, ©2013 244 p. \$175.00

Wolf (technology director, Enercon Industries) explains the mechanisms for surface reactions by atmospheric plasma systems that eliminate the need for vacuum chambers on production lines, and how the technology is applied to different substrates. Intended for manufacturing process engineers, the practical handbook describes the properties of surface modification effects, characterization methods, and the atmospheric plasma modification of roll-to-roll and 3D polymeric surfaces, textiles, paper, and metal. The closing chapters explore antimicrobial surface effects, economic and ecological considerations, and future applications.

ENVIRONMENTAL TECHNOLOGY

TD192 9780470938492

Bioremediation of petroleum and petroleum products.

Speight, James G. and Karuna K. Arjoon.
(Energy and environment)

John Wiley & Sons, ©2012 567 p. \$195.00

Speight (senior fuel consultant and adjunct, chemical and fuels engineering, U. of Utah) and Arjoon (consultant, affiliated with the National Association of Corrosion Engineers) explore the health issues stemming from petroleum-related spills and explosions from both scientific and engineering perspectives. They address the methods and techniques used in bioremediation and relevant technologies. Topics include petroleum composition and properties, sample collection and preparation, analytical methods, biodegradation of petroleum and related fuels and oils, bioremediation methods, and the future of bioremediation. The text is very readable considering the nature of the topic and extensive references are included.

TD196 9781439816677

Decontamination of heavy metals; processes, mechanisms, and applications.

Chen, Jiaping Paul. (Advances in industrial and hazardous wastes treatment)

CRC Press, ©2013 435 p. \$119.95

Although some heavy metals are essential to living organisms, the presence of too much in the environment is harmful both to humans and environmental processes. This guide explores ways of reducing the amounts of 11 important heavy metals, from oxidation and reduction techniques to the use of sorption technology. Chen (environmental engineering, National U. of Singapore) also devotes a whole chapter to the emerging technology of precipitation-crystallization, presenting eight case studies. The last chapter covers the mathematics involved in analyzing metal ion uptake.

TD430 9781612336190

Nanotechnology for water purification.

Title main entry. Ed. by Tania Dey.

Universal Publishers, ©2012 249 p. \$69.95 (pa)

Nanostructured materials can now be used for the removal of heavy metals, chemical effluents and bacteria from drinking water. These 10 articles cover the use of materials from surface engineered silica to silver-impregnated cyclodextrin, with a final chapter devoted to ecological risk assessment. While the back cover notes the inclusion of "several review-style chapters," this does not appear to be the case. Dey has worked as a research scientist in colloid/polymer science, advanced materials and nanotechnology. No index is provided.

TD885 9780784412718

Climate change modeling, mitigation, and adaptation.

Title main entry. Ed. by Rao Y. Surampalli, Tian C. Zhang, C.S.P. Ojha, B. Gurjar, R.D. Tyagi, and C.M. Kao.

Am. Society of Civil Engineers, ©2013 708 p. \$170.00 (pa)

Consisting of 25 papers divided into three sections, the first part of this collection identifies the sources of greenhouse gas emissions and assesses recent trends in sector emissions and global climate patterns. Part two presents different methods for modeling and predicting the effects of climate change, particularly rainfall and implications for farming. The final section reviews technologies for enhancing verdurization, capturing carbon, treating wastewater and sludge, reducing emissions at landfills, recycling waste, generating electricity, and controlling emissions from wetlands. Featuring several contributions from India, the book is appropriate for both engineers and government policymakers around the world.

BUILDING CONSTRUCTION

TH9705 9781466626591

Securing critical infrastructures and critical control systems; approaches for threat protection.

Title main entry. Ed. by Christopher Laing, Atta Badii and Paul Vickers.

Information Science Reference, ©2013 430 p. \$195.00

While there are numerous benefits to be gained from the gradual convergence of cloud services, smart grid (the evolving intelligent electric grid), and mobile telecommunications, the changes they bring to the technology environment also open up that environment to new security vulnerabilities. In response, the contributors explore critical infrastructure, mitigation of and protection against attacks, and failure-recovery emergency response policy creation at both national and international levels. Topics addressed include: security threats and risks of intelligent building systems, detecting cyber attacks on SCADA (supervisory control and data acquisition) and other critical infrastructures, industrial control systems, assessing critical infrastructure in terms of cyber threats and protections, designing a security audit plan, fortifying large-scale networks, and more. Editors are Laing and Vickers (Northumbria U., UK), Badii (U. of Reading, UK).

MECHANICAL ENGINEERING & MACHINERY

TJ230 9783037855867

Advanced materials in machine design; special topic volume.

Title main entry. Ed. by A. Muc, M. Barski and P. Kedziora. (Key engineering materials; v.542)

Trans Tech Publications, ©2013 234 p. \$138.00 (pa)

This book contains 19 invited and accepted papers on the topic of advanced materials in machine design. Most of the papers are based on the authors' own research and the achievements of others in the industry. The book is intended for researchers, engineers, designers, and students. A sampling topics includes: current problems in design of quantum dots used in semiconductors, piezoelectric transducers, application of composite materials in modern construction, innovative construction of 3-component aerodynamic balance, and synthesis of the active cab suspension. Editors are Muc, Barski and Kedziora (Cracow Institute

of Technology, Poland).

TJ812 9783527332465

Polymeric materials for solar thermal applications.

Title main entry. Ed. by Michael Köhl, Michaela Georgine Meir, Philippe Papillon, Gernot Michael Wallner and Sandrin Saile.

Wiley-VCH, ©2012 393 p. \$190.00

In 1977 the International Energy Agency founded the Solar Heating and Cooling Programme to advance international collaboration with the goal of achieving 30% of the world's heating and cooling with solar thermal (in contrast with photovoltaic) energy by 2030. The Programme began a conference series in 2012, and the first was held in San Francisco that year. This information being supplied, readers might deduce that the studies here were presented at that conference. Researchers in physical, chemical, materials, and commercial aspects of solar energy consider such topics as the solar thermal market, thermal loads on solar collectors and options for reducing them, polymer durability for solar thermal applications, collectors and heat stores, and architecturally appealing solar thermal systems as a marketing tool to attract new customers and market segments.

TJ853 9781848168015

Extended-nanofluidic systems for chemistry and biotechnology.

Title main entry. Ed. by Kazuma Mawatari et al.

Imperial College Press, ©2012 180 p. \$74.00
Mawatari (U. of Tokyo) et al. describe the basic techniques and practices of nano-in-micro structural fabrication, recent advances in fluidic control methods for extended nanospace, single molecule detection methods, liquid properties in one-dimensional and two-dimensional extended nanospaces, and the measurement of fluidic properties. The final chapter briefly introduces applications for molecule separation, control of ion transport, concentration operations, single molecule handling, bioanalysis, and energy devices. Distributed in the U.S. by World Scientific.

TJ853 9780803175556

Nanofluids.

Title main entry. Ed. by K. Narayan Prabhu. (Journal of ASTM International; selected technical papers; STP.1567))

ASTM International, ©2012 188 p. \$82.50 (pa)
Liquids containing nanometer-size particles of metals, oxides, carbides, nanotubes, or other

material have extensive application as coolants in the electronic, nuclear, and heat-treatment industries and also have enhanced lubricating properties that can reduce vehicular emissions. Further applications await a better understanding of the basic mechanisms of heat transfer and better stability in nanofluids. Such matters are addressed by the 11 papers here. The topics include comparing the performance of copper oxide nanofluid with water in electronic cooling, preparing and characterizing surfactant-coated cerium-zirconium nanoparticles and nanofuel, the boundary-layer flow of a nanofluid past a stretching sheet under uniform heat and mass flux, the effect of adding aluminum nanoparticles on the cooling performance and quench severity of water during immersion quenching, and using ultrasound thermometry to study natural convection in opaque nanofluids. There is no index.

ELECTRICAL ENGINEERING, ELECTRONICS, NUCLEAR ENGINEERING

TK1005 9781608075119

Power system state estimation.

Ahmad, Mukhtar. (Artech House power engineering series)

Artech House, ©2013 205 p. \$119.00

Ahmad (electrical engineering, Aligarh Muslim U.) explains the role of state estimation in power system security monitoring and control, and introduces several state estimation techniques that receive the voltage magnitude, real and reactive power of bus injections, and line flow measurements to determine the state of the system. Appropriate for both electric utility engineers and graduate students, the book describes methods for analyzing network observability and detecting bad data, the application of phasor measurement units in static and dynamic state estimation, and robust estimation programs that work well even in the presence of bad data.

TK1087 9781466506909

Power electronics and control techniques for maximum energy harvesting in photovoltaic systems.

Femia, Nicola and Giovanni Petrone, Giovanni Spagnuolo, Massimo Vitelli. (Industrial electronics)

CRC Press, ©2013 323 p. \$99.95

While there have been books written on the advances in connecting photovoltaic (PV) technology to the electric grid, the authors of this book saw a void in the literature in the areas

of control circuits, systems, and techniques focused on maximizing the electricity produced by PV sources and address those topics. Specific subjects include PV modeling, maximum power point tracking (MPPT) efficiency: noise sources and methods for reducing their effects, distributed MPPT of PV arrays, and design of high-energy high-efficiency power converters for PV MPPT applications. The book is intended as a reference for researchers and professionals in the industry. Authors are Femia (electrotechnics, U. of Salerno, Italy), Petrone (electrotechnics, power electronic circuits, and renewable energy sources, U. of Salerno), Spagnuolo (electrical engineering, U. of Salerno), and Vitelli (engineering, Second U. of Naples, Italy).

TK1087 9780415621083

Project development in the solar industry.

Title main entry. Ed. by Albert Fong & Jesse Tippet.

A.A. Balkema, ©2013 249 p. \$99.95

This reference provides a comprehensive explanation of the procedures involved in large-scale solar plant development. Topics include: technology basics, permitting, land and siting, transmission, power purchase agreements, renewable energy credits, design considerations, legal issues in solar development, finance, insurance, and risk management. Also included is a market study on the current status of the U.S. solar market. The book would be useful for professionals in the solar and related industries, policy makers, engineers, project developers, or those readers who are curious about the large-scale solar industry. Editors are Fong (project execution, Talesun Solar) and Tippet (business/renewable energy development, Aries Power & Industrial). Balkema is an imprint of the Taylor & Francis Group.

TK1503 9781608075799

Inside Bluetooth low energy.

Gupta, Naresh. (Artech House mobile communications series)

Artech House, ©2013 395 p. \$139.00

In this guide meant to be a companion to the specification, Gupta, a design manager who works at a multinational technology company and has worked on Bluetooth and Bluetooth Low Energy, explains Bluetooth Low Energy to engineering students, software and hardware engineers, architects, and engineering and business managers new to the technology. He covers both Bluetooth and Bluetooth Low Energy concepts, including the fundamentals and architecture, the Bluetooth protocol stack

and examples, message sequence charts, and air sniffer logs, as well as setting up the development environment and step-by-step deployment of a real-world application. He describes the history of the technology, terms, use cases, and how it works. He details the lower layers of Bluetooth Low Energy, including single and dual-mode devices, the protocol stack from bottom to top, the main enhancements of each layer, and how the technology leads to reductions in power consumption; the upper layers, Logical Link Control and Adaptation Protocol, the Security Manager, the concept of attributes and Attribute Protocol, the Generic Access Profile, Generic Attribute Profile (GATT)-based profiles, and how to develop basic applications; and the testing and qualification process. No prior knowledge of Bluetooth or other wireless protocols is needed, but familiarity with the Unix or Linux operating systems is valuable, as is basic knowledge of any scripting language. Commands and programs have been written directly on the Linux shell prompt or using the basic features of Perl or C language.

TK5101 9781118130513

Telecommunications system reliability engineering, theory, and practice.

Ayers, Mark L.

IEEE/Wiley, ©2012 231 p. \$110.00

Ayers (GCI Communications Corp) seeks to provide the reader with the knowledge and skills necessary to perform telecommunications system reliability analysis and to examine systems designs with a critical eye. The reader is expected to have a basic working knowledge of engineering mathematics and experience with telecommunication system design and network topologies. Chapters discuss concepts and theories of system reliability analysis and their application to fiber-optic networks, terrestrial microwave systems, mobile wireless systems, power systems and HVAC elements of communications networks, and software and firmware issues.

TK5102 9781439899137

Green communications and networking.

Title main entry. Ed. by F. Richard Yu, Xi Zhang and Victor C.M. Leung.

CRC Press, ©2013 379 p. \$99.95

Energy consumption, whether in wired or wireless networks is higher than usually supposed. And in terms of pollution it is estimated that one small computer server generates as much greenhouse gas as the typical SUV. Edited by Yu (systems and computer engineering, Carleton U.) and

Zhang (electrical and computer engineering, Texas A&M U.), this work explores novel ways of reducing energy use in networks, including the development of smart grids. It is appropriate for both researchers and practitioners.

TK5103 9781608075256

Digital communication systems engineering with software-defined radio.

Pu, Di and Alexander M. Wyglinski. (Artech House mobile communications series)

Artech House, ©2013 289 p. \$119.00

Pu and Wyglinski (both electrical engineers, Worcester Polytechnic Institute, Massachusetts) introduce communication technology in which all the baseband processing of the wireless transceiver is entirely performed by software source code. They write for graduate and senior undergraduate students of digital communications, telecommunication professionals, and researchers. The field is very new, they say, so cutting-edge research is not far away the entry point. Their topics include what software-defined-radio is, digital transmission fundamentals, receiver structure and the waveform synthesis of a transmitter and a receiver, spectrum sensing techniques, and applications.

TK5103 9781119943402

Global networks; engineering, operations and design.

Cambron, G. Keith.

John Wiley & Sons, ©2013 375 p. \$115.00

Longtime telecommunications professional Cambron (former president and CEO, AT&T Labs) explores today's and coming trends in the industry and provides background on the challenges of network design, introduction, and management. A sampling of topics includes network systems hardware and software, access and aggregation networks, cloud services, engineering and operations, customer marketing and care, fault management, integration and innovation, disasters and outages, and carrier transformations. While it is a complex topic, the text is clearly written and includes a convenient and extensive list of industry acronyms.

TK5103 9780857092359

Handbook of terahertz technology for imaging, sensing and communications.

Title main entry. Ed. by Daryoosh Saeedkia. (Woodhead Publishing series in electronic and optical materials; no. 34)

Woodhead Publishing, ©2013 662 p. \$325.00
Physicists and engineers describe systems and applications that involve radiation oscillating a trillion times per second. They cover fundamentals of terahertz technology in the three fields, recent developments and novel techniques, and applications. Among specific topics are optoelectronic techniques for generating and detecting terahertz waves, terahertz wireless communications, the resonant field enhancement of terahertz waves in subwavelength plasmonic structures, novel techniques in terahertz near-field imaging and sensing, terahertz frequency metrology based on frequency comb techniques, terahertz applications in tomographic imaging and material spectroscopy, terahertz applications in wood products, and terahertz applications in art conservation.

TK5103 9781466628120

Self-organization and green applications in cognitive radio networks.

Al-Dulaimi, Anwer and John Cosmas, Abbas Mohammed.

Information Science Reference, ©2013

337 p. \$190.00

In a cycle of sensing, learning, and adapting, cognitive radio can jump between channels according to temporal and spatial opportunities and so, at least in the near term, alleviate congestion in the scarce spectrum. Here electrical engineers present advanced research results into cognitive networks that combine network architectural design with the necessary technical modifications to deliver high quality services. The instruction manual provides practicing engineers with immediate solutions that incorporate new concepts and techniques. Among the topics are the iterative optimization of energy detector sensing time and periodic sensing interval, a novel spectrum sensing scheduling algorithm, and the secondary use of radio spectrum by high altitude platforms.

TK5105 9780470923542

Broadband wireless multimedia networks.

Bing, Benny. (Wiley series on information and communication technology.)

John Wiley & Sons, ©2013 351 p. \$99.95

Writing for practicing engineers, researchers, and students, Bing (Georgia Institute of Technology, Atlanta) describes a broad range of key wireless technologies, and comparatively assesses their strengths and weaknesses. He also discusses the role of high-speed indoor networks and broadband fourth-generation systems in driving the utility of new personal devices and

mobile video support. His topics include long term evolution; mesh, relay, and interworking networks; wireless video streaming; and green communications in wireless home area networks.

TK5105 9781466628335

Intelligent multimedia technologies for networking applications; techniques and tools.

Title main entry. Ed. by Dimitris N.

Kanellopoulos.

Information Science Reference, ©2013

508 p. \$190.00

Computer scientists, telecommunications engineers, graphic designers, and other contributors set out theoretical frameworks and recent empirical research findings regarding multimedia intelligence technologies for such applications as electronic commerce and electronic learning. They cover intelligent multimedia networking, adaptive video streaming and video coding techniques, multimedia content adaptation, intelligent multimedia applications and services, multimedia social networks and geo-social systems, and intelligent image processing and image retrieval. The material could interest practitioners and researchers in multimedia intelligence.

TK5105 9781466566989

Multihomed communication with SCTP (Stream Control Transmission Protocol).

Title main entry. Ed. by Victor C.M. Leung, Eduardo Parente Ribeiro, Alan Wagner and Janardhan Iyengar.

CRC Press, ©2013 231 p. \$119.95

The protocol was originally intended for telephony signaling over Internet Protocol (IP), but was recognized and designed as a general purpose transport protocol for the Internet. The focus here is on multihoming, an innovative feature that allows a transport layer association to span multiple IP addresses at each endpoint. The topics include fundamental concepts and mechanisms, support of node mobility between networks, low delay communication and multimedia applications, high-performance computing using commodity hardware and software, and the application interface.

TK5105 9781466626607

Multimedia networking and coding.

Title main entry. Ed. by Reuben A. Farrugia and Carl J. Debono.

Information Science Reference, ©2013

456 p. \$190.00

Written by international contributors in electrical

and electronic engineering, this work is accessible to non-experts, including students in engineering and computer science, but with enough depth for experts. The first two sections contain introductory material for understanding video compression and transmission systems, covering basic concepts and methods in multimedia signal processing and communications. Topics include motion estimation in the context of 3D TV, compensation methods for compression artifacts in video coding, and peer-to-peer video streaming. The last section of the book presents multimedia applications in areas such as improved subject identification in surveillance videos using super-resolution. The book's readership includes undergraduate and graduate students with previous introductory courses in signal processing and communications. Farrugia and Debono are affiliated with the University of Malta.

TK7872 9780470667095

Control of power inverters in renewable energy and smart grid integration.

Zhong, Qing-Chang and Tomas Hornik.

John Wiley & Sons, ©2013 411 p. \$120.00

The concepts of energy and sustainability may not at first seem to be complementary, but technological advances in power inverters used in integrating renewable energy and distributed generation (power generated from a source other than a central power plant, like rooftop solar panels) into an intelligent electric grid -- routinely referred to as a smart grid -- are important to a sustainable energy supply. Authors Zhong (The U. of Sheffield, UK) and Hornik (Turbo Power Systems Ltd., UK) explain that the initiative to integrate renewable energy into smart grids could be the "new frontier" for the smart grid endeavor. They address the issues and challenges inverter technologies present: power quality control, neutral line provision, power flow control, and synchronization. The book would be useful for engineers, researchers, as well as other professionals in the field, and graduate students in relevant fields of study. Co-published with IEEE.

TK7874 9781439856802

Advanced nanoelectronics.

Title main entry. Ed. by Razali Bin Ismail, Mohammad Taghi Ahmadi, and Sohail Anwar. (Nano and energy)

CRC Press, ©2013 424 p. \$139.95

This reference for professionals, researchers, and scientists develops and applies numerical algorithms useful for modeling and simulation

of nanodevices. After a review of carbon-based materials concepts and basic physics, some areas explored include carbon nanotube field effect transistor models, graphene nanoribbon field effect transistors, bilayer and trilayer graphene nanoribbon transport modeling, and silicon nanowire field effect transistor modeling. The final chapter overviews nanoelectronics research and commercialization in the US. The book includes a glossary and an appendix of MATLAB codes used to generate figures. Ismail is affiliated with Technological University of Malaysia.

TK7874 9781118071915

One-dimensional nanostructures; principles and applications.

Title main entry. Ed. by Tianyou Zhai and Jiannian Yao.

John Wiley & Sons, ©2013

554 p. \$149.95

Nanowires, nanotubes, and nanobelts -- all one-dimensional nanostructures -- are fundamental to nanoscience and nanotechnology; and there's no aspect of the economy and society of the 21st century that won't be touched by nano developments. Editors Zhai (materials science and engineering, Tsinghua U., China) and Yao (chemistry and materials science, Chinese Academy of Sciences) have brought together a profoundly useful reference for those in the field, presenting 25 contributed chapters that offer detailed coverage of research findings and applications: synthesis, properties, energy applications, photonics and optoelectronics applications, and sensing, plasmonics, electronics, and biosciences applications. The majority of the contributors are based in China; Europe, North America, Australia, Japan, and India are also represented.

TK7875 9780857091185

MEMS for automotive and aerospace applications.

Title main entry. Ed. by Michael Kraft and Neil M. White. (Woodhead Publishing series in electronic and optical materials; no.32)

Woodhead Publishing, ©2013 342 p.

\$240.00

Writing for MEMS manufacturers, researchers, and engineers, international contributors explain how micro-electromechanical systems (MEMS) are used in the automotive and aerospace industries. The section on automotive applications looks at applications in areas such as passenger safety, vehicle stability, tire pressure monitoring systems, radar sensors, and

passenger comfort. The next section describes aerospace applications for active drag reduction, inertial navigation systems, harsh environment sensors, and thrusters for nano- and pico-satellites. A final chapter explores the future role of MEMS in space exploration and exploitation. B&w photos are included. Kraft and White are affiliated with the University of Southampton, UK.

TK7882 9780819491558

Military displays; technology and applications.

Desjardins, Daniel D. (Tutorial texts in optical engineering; v.TT95)

SPIE, ©2013 156 p. \$66.00 (pa)

Retired from the US Air Force, Desjardins explains the various kinds of display technology the US military uses -- primarily cathode ray tubes, active matrix liquid crystal displays, and active matrix organic light-emitting diodes -- and the equipment and contexts where display are used. His goal is to provide a guide for engineers and companies seeking to tap into the very lucrative market of the world's biggest and richest military. Little or no prior knowledge of displays is required, and only a brief knowledge of the sciences. He covers display fundamentals, military display technologies, display Components, military display characterization, and military applications.

TK8316 9780819488305

High dynamic range imaging; sensors and architectures.

Darmont, Arnaud.

SPIE, ©2012 123 p. \$55.00 (pa)

Electronic engineer Darmont specializes in high dynamic range imaging, and here offers an intermediate account of the sensors and techniques for the practice, and its application in such areas as on-board systems, road traffic monitoring, corporate security, and the military. Compared to conventional imaging, he says, it is more robust against direct sunlight or reflection of strong lights on metals, and better at detecting objects in shadow. His interest is not in the artistic merits, but in the various sensor and pixel architectures and software approaches to creating images out of lower dynamic range sensors or image sets.

MOTOR VEHICLES, AERONAUTICS, ASTRONAUTICS

TL787 9780877035879

Dynamics and control of space systems; proceedings; 2v. (CD-ROM included)

International Academy of Astronautics Conference on Dynamics and Control of Space Systems (1st: 2012: Porto, Portugal) Ed. by Anna D. Guerman, Peter M. Bainum and Jean-Michel Contant.

Univelt Inc., ©2012 1728 p. \$350.00

Presented in two volumes, and also on an included CD-ROM, the proceedings of the first Dynamics and Control of Space Systems conference (DyCoSS '2012), held in Portugal, March 2012, comprise approximately 100 papers. Arrangement is according to theme: attitude dynamics and control; orbital dynamics and determination; spacecraft guidance, navigation, and control; attitude sensors and actuators; mission design and optimization; satellite constellations and formation flying; and space structures and tethers, among other topics. The conference was sponsored by the International Academy of Astronautics, and the proceedings are published for the American Astronautical Society by Univelt. The volumes are part of the Advances in the Astronautical Sciences series and are identified as volume 145, parts I and II. There is no subject index for the set, but the included CD-ROM is no doubt fully searchable.

CHEMICAL TECHNOLOGY

TP159 9780470974308

Responsive membranes and materials.

Title main entry. Ed. by D. Bhattacharyya, Thomas Schäfer, S.R. Wickramasinghe and Sylvia Daunert.

John Wiley & Sons, ©2013

405 p. \$155.00

Chemical engineers and related researchers explore efforts to assemble elements, molecules, and molecular systems into membranes and materials that respond to their environment in a desirable manner. Many of the underlying principles are from the biological sciences, and the materials and assembly processes from the physical sciences. Among the topics are carbon nanotubes as an idealized platform for protein channel mimetic pumps, responsive membranes for water treatment, magnetic nanocomposites for remote controlled responsive therapy and *in vivo* tracking, responsive colloids with controlled topology, and novel biomimetic polymer gels

exhibiting self-oscillation.

PUBLISHING, LIBRARY SCIENCE, BIBLIOGRAPHY

Z674 9781856048583

Collaboration in libraries and learning environments.

Title main entry. Ed. by Maxine Melling and Margaret Weaver.

Facet Publishing, ©2013 198 p. \$49.95 (pa)
Melling (operations, U. of Gloucestershire, UK) and Weaver (library and student services, U. of Cumbria, UK) provide library leaders and practitioners, as well as students, with an overview of the issues involved in collaboration in higher education libraries. In 10 essays, library and information services and other specialists from the UK, US, Canada, and Australasia consider alternative approaches to providing library and support services in a time of uncertainty due to shifts in financial and fiscal policies. They argue that successful libraries optimize opportunities for collaboration at every level, discussing the role of the student voice in the delivery of higher education, the role of professional associations in providing guidance and support to higher education leaders, the cultures and values that underpin collaborative working, managing complex change collaboratively, the significance of leadership, the effects of collaborative technology tools on student experiences of the library, learning-space design, super-converged services, and joint-use libraries. Distributed in the US by Neal-Schuman.

Z675 9781466618978

Library collection development for professional programs; trends and best practices.

Title main entry. Ed. by Sara Holder.

Information Science Reference, ©2013 478 p. \$175.00

North American academic and public librarians describe approaches to collection development carried out in support of professional and/or applied academic programs such as law, teacher education, medicine, business, architecture, or even library science itself. They cover creating plans for budgeting and buying; how discipline shapes practice; collecting for the professional subfields; and case studies, projects, and surveys. Among the topics are approval profiles from a vendor's perspective, information sources and collection planning for engineering, developing a juvenile literature collection in an academic library, supporting the College of

Health Sciences and Human Services and the School of Nursing at Murray State University, and collaborating with faculty to weed an entire science and engineering book collection.

ZA4080 9781466629912

Recent developments in the design, construction, and evaluation of digital libraries; case studies.

Cool, Colleen and Kwong bor Ng. (Advances in library and information science series)
Information Science Reference, ©2013 257 p. \$175.00

For librarians, students, and academics, Cool and Ng (library and information studies, Queens College, City U. of New York) compile 13 case studies by library and information studies, education, and technology scholars and researchers from the US, Europe, and New Zealand, who address recent developments in the design, construction, and evaluation of digital libraries in a variety of environments, with an emphasis on practical strategies and lessons learned from real-world case studies. They first examine issues related to content management infrastructure design, including the design of an infrastructure built on service-oriented technologies, the replacement of a digital asset management system with an open source system, and the problem of de-contextualization and how metadata schemes may cause loss of contextualization in semantic meaning of digitized primary resources. The second section contains cases on designing effective access, new preservation methods, and expanded services in newer digital library environments, while the third covers the importance of developing methods for evaluating digital libraries, with cases on the differences between traditional and digital libraries, evaluation methods for a cultural heritage collection, and the cognitive dimension of users' experiences. The last section addresses the larger social environment, such as digital libraries being "for the people" and an instrument of social change, teaching digital imaging to foster experiential learning, and the context of communication and collaboration enhanced by Web 2.0 technology.

ZP3075 9781856048224

Rethinking information literacy; a practical framework for supporting learning.

Title main entry. Ed. by Jane Secker and

Emma Coonan.

Facet Publishing, ©2013 169 p. \$95.00 (pa)
UK contributors in education, library studies, and information literacy present the results of research from Cambridge University's Arcadia Programme. They provide case studies on 10 strands of A New Curriculum for Information Literacy (ANCIL), which is a new curriculum standard for undergraduate information literacy. The cases begin with the transition from high school to higher education and include aspects of managing information, creating new knowledge, and understanding the social dimension of information. Each strand chapter includes a description of a practical resource, tool, or approach, an outline of how it supports the development of independent learning, and a brief overview of pedagogical principles. The book is written in a conversational tone and includes chapter opening summaries, b&w process diagrams, and screen shots. Appendices offer about 20 pages of ANCIL curriculum materials, lesson plans, worksheets, and interview questions. The authors invite readers to submit their own cases and other resources to the companion blog, mailing list, and wiki. Secker is a digital literacy advisor. Coonan is affiliated with Cambridge University Library. The book is distributed in the US by Neal-Schuman.