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Efficient Methods for Preparing Silicon Compounds is a unique and valuable handbook for chemists and students involved in advanced studies of preparative chemistry in academia and industry. Organized by the various coordination numbers (from two to six) of the central silicon atom of the reported compounds, this book provides researchers with a handy and immediate reference for any compound or properties needed in the area. Edited by a renowned expert in the field, each chapter explores a different type of compound, thoroughly illustrated with useful schemes and supplemented by additional references. Knowledgeable contributors report on a broad range of compounds on which they have published and which are already used on a broad scale or have the potential to be used in the very near future to develop a new field of research or application in silicon chemistry. Includes contributions and edits from leading experts in the field Includes detailed chemical schemes and useful references for each preparative method Organized by the coordination numbers of the central silicon atom for each compound for easy navigation Serves as a go-to primer for researchers in novel compositions of silicon matter

This book discusses different aspects of energy consumption and environmental pollution, describing in detail the various pollutants resulting from the utilization of natural resources and their control techniques. It discusses diagnostic techniques in a simple and easy-to-understand manner. It will be useful for engineers, agriculturists, environmentalists, ecologists and policy makers involved in area of pollutants from energy, environmental safety, and health sectors.

A destitute tenant farmer, in Pyung Yang, Korea, gives away his twelve year old son to the nationalist patriot, Doh Sahn, in 1908. Following the ardent Patriot, thrusts the teenager into the midst of an international struggle raging in the Korean Peninsula. Japan proceeds to annex Korea into the Japanese Empire. The Patriot fights to thwart the annexation. As the Japanese police close in, the Patriot and the teenager escape to Tsingtao and Vladivostok; the two finally reach New York in 1911, as Korea is no more. The teenager struggles alone to survive in America, and enters Asbury College in Kentucky. Rev. Robert Nahm-Soo Chung in 1926 returns to his homeland. His Evangelistic Crusade Team carries a huge tent of six thousand capacity, on a van-truck provided by American campgrounds and churches. The Team travels even to the remote areas of the Peninsula. He preaches to the throngs suffering under the Japanese, during their darkest hours. Hundreds of thousands of people come to Jesus. He suffers torture in the Japanese prison, for preaching the gospel, and for his close tie with the Patriot. You will walk through his tears and triumphs to preach the gospel. Paul M. Chung, PH.D, is a retired engineering Professor and Dean Emeritus of an engineering college.

Pincer complexes are formed by the binding of a chemical structure to a metal atom with at least one carbon-metal bond. Usually the metal atom has three bonds to a chemical backbone, enclosing the atom like a pincer. The resulting structure protects the metal atom and gives it unique properties. The last decade has witnessed the continuous growth in the development of pincer complexes. These species have passed from being curiosity compounds to chemical chameleons able to perform a wide variety of applications. Their unique metal bound structures provide some of the most active catalysts yet known for organic transformations involving the activation of bonds. The Chemistry of Pincer Compounds details use of pincer compounds including homogeneous catalysis, enantioselective organic transformations, the activation of strong bonds, the biological importance of pincer compounds as potential therapeutic or pharmaceutical agents, dendrimeric and supported materials. * Describes the chemistry and applications of this important class of organometallic and coordination compounds * Covers the areas in which pincer complexes have had an impact * Includes information on more recent and interesting pincer compounds not just those that are well-known

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Metal-Ligand Interactions - Structure and Reactivity emphasizes the experimental determination of structure and dynamics, supported by the theoretical and computational approaches needed to establish the concepts and guide the experiments. Leading experts present masterly surveys of: clusters, inorganic complexes, surfaces, catalysis, ab initio theory, density functional theory,semiempirical methods, and dynamics. Besides the presentations of the fields of study themselves, the papers also bring out those aspects that impinge on, or could benefit from, progress in other disciplines. Refined in the fire of an interactive and stimulating conference, the papers presented here represent the state of the art of current research.

Surface-Enhanced Raman Spectroscopy: Principles, Experiments, and Applications is a comprehensive, up to date, and balanced treatment of the theoretical and practical aspects of Surface-Enhanced Raman Scattering (SERS), a useful branch of spectroscopy for several areas of science. This book describes the basic principles of SERS, including SERS mechanisms, performing SERS measurements, and interpreting data. Also emphasized are applications in electrochemistry; catalysis; surface processing and corrosion; Self-Assemble-Layer and L-B Films; polymer science; biology; medicine and drug analysis; sensors; fuel cells; forensics; and archaeology. It is an essential guide for student and professional analytical chemists.

The lecture notes presented here in facsimile were prepared by Enrico Fermi for students taking his course at the University of Chicago in 1954. They are vivid examples of his unique ability to lecture simply and clearly on the most essential aspects of quantum mechanics. At the close of each lecture, Fermi created a single problem for his students. These challenging exercises were not included in Fermi's notes but were preserved in the notes of his students. This second edition includes a set of these assigned problems as compiled by one of his former students, Robert A. Schluter. Enrico Fermi was awarded the Nobel Prize for Physics in 1938.

Pincer Compounds: Chemistry and Applications offers valuable state-of-the-art coverage highlighting highly active areas of research—from mechanistic work to synthesis and characterization. The book focuses on small molecule activation chemistry (particularly H2 and hydrogenation), earth abundant metals (such as Fe), actinides, carbene-pincers, chiral

catalysis, and alternative solvent usage. The book covers the current state of the field, featuring chapters from renowned contributors, covering four continents and ranging from still-active pioneers to new names emerging as creative strong contributors to this fascinating and promising area. Over a decade since the publication of Morales-Morales and Jensen’s The Chemistry of Pincer Compounds (Elsevier 2007), research in this unique area has flourished, finding a plethora of applications in almost every single branch of chemistry—from their traditional application as very robust and active catalysts all the way to potential biological and pharmaceutical applications. Describes the chemistry and applications of this important class of organometallic and coordination compounds Includes contributions from global leaders in the field, featuring pioneers in the area as well as emerging experts conducting exciting research on pincer complexes Highlights areas of promising and active research, including small molecule activation, earth abundant metals, and actinide chemistry

Praise for the previous editions "An excellent text . . . will no doubt provide the benchmark for comparative works for many years." —Journal of the American Chemical Society "An excellent state-of-the-art compilation of catalytic asymmetric chemistry . . . should be included in any chemistry reference collection." —Choice "This is a tremendous resource and an excellent read. I recommend immediate purchase." —Perkin Transactions Since this important work was first published in 1993, the field of catalytic asymmetric synthesis has grown explosively, spawning effective new methods for obtaining enantiomerically pure compounds on a large scale and stimulating new applications in diverse fields—from medicine to materials science. Catalytic Asymmetric Synthesis, Third Edition addresses these rapid changes through contributions from highly recognized world leaders in the field. This seminal text presents detailed accounts of the most important catalytic asymmetric reactions known today, and discusses recent advances and essential information on the initial development of certain processes. An excellent working resource for academic researchers and industrial chemists alike, the Third Edition features: Six entirely new chapters focusing on novel approaches to catalytic asymmetric synthesis including non-conventional media/conditions, organocatalysis, chiral Lewis and Bronsted acids, CH activation, carbon-heteroatom bond-forming reactions, and enzyme-catalyzed asymmetric synthesis A new section focusing on the important new reaction, asymmetric metathesis, in carbon-carbon bond-forming reactions Updated chapters on hydrogenation, carbon-carbon bond-forming reactions, hydrosilylations, carbonylations, oxidations, amplifications and autocatalysis, and polymerization reactions Retaining the best of its predecessors but now thoroughly up to date, Catalytic Asymmetric Synthesis, Third Edition serves as an excellent desktop reference and text for researchers and students from the upper-level undergraduates through experienced professionals in industry or academia.

Dienes and polyenes are an extremely important group of chemicals in the investigation of different types of syntheses. Dienes and Polyenes are found in a large number of natural and man-made products including such natural products as terpenes, cholesterol, Vitamin A, and many essential oils, as well as many polymers and rubber products. In recent years the organometallic complexes of these compounds have been found to play an important role in synthesis. This volume is an invaluable reference source for researchers in academia and industry in organic and natural product chemistry and materials science. An extensive work covering all aspects of the synthetic analytical, biochemical, physical, and environmental aspects of these important molecules.

This book is unique due to its collective approach to the key aspects of the interdependency between three entities: oxidative stress, tobacco smoke and carcinogenesis, operating in a cause-effect sequence, in a concise and to the point manner. This book will prove to be a helpful companion to the internist, the oncologist and the research scientist in molecular biology as well as a work of reference for the general practitioner and physician interested in cancer research.

This book highlights the display applications of c-axis aligned crystalline indium–gallium–zinc oxide (CAAC-IGZO), a new class of oxide material that challenges the dominance of silicon in the field of thin film semiconductor devices. It is an enabler for displays with high resolution and low power consumption, as well as high-productivity manufacturing. The applications of CAAC-IGZO focus on liquid crystal displays (LCDs) with extremely low power consumption for mobile applications, and high-resolution and flexible organic light-emitting diode (OLED) displays, and present a large number of prototypes developed at the Semiconductor Energy Laboratory. In particular, the description of LCDs includes how CAAC-IGZO enables LCDs with extremely low refresh rate that provides ultra-low power consumption in a wide range of use cases. Moreover, this book also offers the latest data of IGZO. The IGZO has recently achieved a mobility of 65.5 cm2?}V-s, and it is expected to potentially exceed 100 cm2?}V-s as high as that of LTPS. A further two books in the series will describe the fundamentals of CAAC-IGZO, and the application to LSI devices. Key features: • Introduces different oxide semiconductor field-effect transistor designs and their impact on the reliability and performance of LCDs and OLED displays, both in pixel and panel-integrated driving circuits. • Reviews fundamentals and presents device architectures for high-performance and flexible OLED displays, their circuit designs, and oxide semiconductors as an enabling technology. • Explains how oxide semiconductor thin-film transistors drastically can improve resolution and lower power consumption of LCDs.

This book explains the conversion of solar energy to chemical energy and its storage. It covers the basic background; interface modeling at the reacting surface; energy conversion with chemical, electrochemical and photoelectrochemical approaches and energy conversion using applied photosynthesis. The important concepts for converting solar to chemical energy are based on an understanding of the reactions’ equilibrium and non-equilibrium conditions. Since the energy conversion is essentially the transfer of free energy, the process are explained in the context of thermodynamics.

The chemistry of metals has traditionally been more understood than that of its oxides. As catalytic applications continue to grow in a variety of disciplines, Metal Oxides: Chemistry and Applications offers a timely account of transition-metal oxides (TMO), one of the most important classes of metal oxides, in the context of catalysis. The first part of the book

examines the crystal and electronic structure, stoichiometry and composition, redox properties, acid-base character, and cation valence states, as well as new approaches to the preparation of ordered TMO with extended structure of texturally defined systems. The second part compiles some practical aspects of TMO applications in materials science, chemical sensing, analytical chemistry, solid-state chemistry, microelectronics, nanotechnology, environmental decontamination, and fuel cells. The book examines many types of reactions - such as dehydration, reduction, selective oxidations, olefin metathesis, VOC removal, photo- and electrocatalysis, and water splitting - to elucidate how chemical composition and optical, magnetic, and structural properties of oxides affect their surface reactivity in catalysis. Drawing insight from leading international experts, Metal Oxides: Chemistry and Applications is a comprehensive and interdisciplinary reference for researchers that may also be used by newcomers as a guide to the field.

Reflecting the growing volume of published work in this field, researchers will find this book an invaluable source of information on current methods and applications.

Fundamentals of Modern Manufacturing is a balanced and qualitative examination of the materials, methods, and procedures of both traditional and recently-developed manufacturing principles and practices. This comprehensive textbook explores a broad range of essential points of learning, from long-established manufacturing processes and materials to contemporary electronics manufacturing technologies. An emphasis on the use of mathematical models and equations in manufacturing science presents readers with quantitative coverage of key topics, while plentiful tables, graphs, illustrations, and practice problems strengthen student comprehension and retention. Now in its seventh edition, this leading textbook provides junior or senior-level engineering students in manufacturing courses with an inclusive and up-to-date treatment of the basic building blocks of modern manufacturing science. Coverage of core subject areas helps students understand the physical and mechanical properties of numerous manufacturing materials, the fundamentals of common manufacturing processes, the economic and quality control issues surrounding various processes, and recently developed and emerging manufacturing technologies. Thorough investigation of topics such as metal-casting and welding, material shaping processes, machining and cutting technology, and manufacturing systems and support helps students gain solid foundational knowledge of modern manufacturing.

A comprehensive, interdisciplinary picture of how lignocellulosic biorefineries could potentially employ lignin valorization technologies.

This book distills the knowledge gained from research into atoms in molecules over the last 10 years into a unique, handy reference. Throughout, the authors address a wide audience, such that this volume may equally be used as a textbook without compromising its research-oriented character. Clearly structured, the text begins with advances in theory before moving on to theoretical studies of chemical bonding and reactivity. There follow separate sections on solid state and surfaces as well as experimental electron densities, before finishing with applications in biological sciences and drug-design. The result is a must-have for physicochemists, chemists, physicists, spectroscopists and materials scientists.

Handbook for Sound Engineers is the most comprehensive reference available for audio engineers, and is a must read for all who work in audio. With contributions from many of the top professionals in the field, including Glen Ballou on interpretation systems, intercoms, assistive listening, and fundamentals and units of measurement, David Miles Huber on MIDI, Bill Whitlock on audio transformers and preamplifiers, Steve Dove on consoles, DAWs, and computers, Pat Brown on fundamentals, gain structures, and test and measurement, Ray Rayburn on virtual systems, digital interfacing, and preamplifiers, Ken Pohlmann on compact discs, and Dr. Wolfgang Ahnert on computer-aided sound system design and room-acoustical fundamentals for auditoriums and concert halls, the Handbook for Sound Engineers is a must for serious audio and acoustic engineers. The fifth edition has been updated to reflect changes in the industry, including added emphasis on increasingly prevalent technologies such as software-based recording systems, digital recording using MP3, WAV files, and mobile devices. New chapters, such as Ken Pohlmann's Subjective Methods for Evaluating Sound Quality, S. Benjamin Kanters's Hearing Physiology—Disorders—Conservation, Steve Barbar's Surround Sound for Cinema, Doug Jones's Worship Styles in the Christian Church, sit aside completely revamped staples like Ron Baker and Jack Wrightson's Stadiums and Outdoor Venues, Pat Brown's Sound System Design, Bob Cordell's Amplifier Design, Hardy Martin's Voice Evacuation/Mass Notification Systems, and Tom Danley and Doug Jones's Loudspeakers. This edition has been honed to bring you the most up-to-date information in the many aspects of audio engineering.

This volume addresses what is currently known about the use of ApoE genotyping in diagnosing and predicting Alzheimer's disease. Because ApoE genetic testing has such far-reaching consequences, this volume will be of use not only to those in the medical and scientific community involved in the care of patients with Alzheimer's disease, but also to those concerned with the ethical, legal, epidemiological and public health policy issues as well. A summary will also be included of the results of working groups defining the issues, asking methodological questions, and discussing issues concerning genetic counselling and research-related questions.

From the reviews of the Fourth Edition ... "March has been uncompromising in his search for clarity and utility in presentations of a wide variety of essential organic chemistry. It remains an accessible and useful tool for both specialists and nonspecialists in the field. It does an excellent job both as a text for first-year graduate students and a handy reference for others."-Journal of Chemical Education "The ratio of information to price makes this book a wonderful bargain."-American Scientist New to this Fifth Edition: * Michael Smith from the University of Connecticut joins as coauthor for the Fifth Edition * Contains 20,000 valuable, selected references to the primary literature-5,000 new to this edition * 40 entirely new sections covering the most important developments in organic chemistry since the previous edition * Updated illustrations of molecular structures

Eleanor Smith's Hull House Songs: The Music of Protest and Hope in Jane Addams's Chicago reprints Eleanor Smith's 1916 folio of politically engaged songs, together with interdisciplinary critical commentary from sociology, history, and musicology.

This handbook provides an up-to-date account of hydrosilylation reactions and the directions in which synthetic and mechanistic studies as well as practical applications of these processes are proceeding. The book consists of two parts: the first is descriptive, presenting the catalytic, mechanistic, structural and synthetic aspects of hydrosilylation, as well as its application in organic and organosilicon chemistry. The second part, presented in tabular form sets out encyclopedic information concerning reaction conditions taken from more than 2000 papers and patents in the period 1965 - 1990.

See Table of Contents (PMP)

?The series Topics in Current Chemistry Collections presents critical reviews from the journal Topics in Current Chemistry organized in topical volumes. The scope of coverage is all areas of chemical science including the interfaces with related disciplines such as biology, medicine and materials science. The goal of each thematic volume is to give the non-specialist reader, whether in academia or industry, a comprehensive insight into an area where new research is emerging which is of interest to a larger scientific audience. Each review within the volume critically surveys one aspect of that topic and places it within the context of the volume as a whole. The most significant developments of the last 5 to 10 years are presented using selected examples to illustrate the principles discussed. The coverage is not intended to be an exhaustive summary of the field or include large quantities of data, but should rather be conceptual, concentrating on

the methodological thinking that will allow the non-specialist reader to understand the information presented. Contributions also offer an outlook on potential future developments in the field. The chapters “Ionic Liquid–Liquid Chromatography: A New General Purpose Separation Methodology”, “Proteins in Ionic Liquids: Current Status of Experiments and Simulations”, “Lewis Acidic Ionic Liquids” and "Quantum Chemical Modeling of Hydrogen Bonding in Ionic Liquids" are available open access under a Creative Commons Attribution 4.0 International License via link.springer.com.

• Japan is a leader in screening for and treating gastric cancer - this title first publishes Japan’s newest research in English • Contributors are internationally recognized specialists with publications on gastrointestinal cancers in many high ranking medical journals from Europe and the USA • Michio Kaminishi was president of the 3rd International Conference of the ISGC

NMR of Newly Accessible Nuclei, Volume 1: Chemical and Biochemical Applications is a 10-chapter text that explores the properties, advantages, developments, and chemical and biochemical applications of NMR technique. This book describes first the operation of an NMR spectrometer under its two aspects, namely, the instrumental and the computational aspects. The next chapters are devoted to some of the most important pulse sequences. The discussion then shifts to the various factors determining the position of the observed absorption and those responsible for the various relaxation processes. Th ...

This book gives a comprehensive introduction to the field of photovoltaic (PV) solar cells and modules. In thirteen chapters, it addresses a wide range of topics including the spectrum of light received by PV devices, the basic functioning of a solar cell, and the physical factors limiting the efficiency of solar cells. It places particular emphasis on crystalline silicon solar cells and modules, which constitute today more than 90 % of all modules sold worldwide. Describing in great detail both the manufacturing process and resulting module performance, the book also touches on the newest developments in this sector, such as Tunnel Oxide Passivated Contact (TOPCON) and heterojunction modules, while dedicating a major chapter to general questions of module design and fabrication. Overall, it presents the essential theoretical and practical concepts of PV solar cells and modules in an easy-to-understand manner and discusses current challenges facing the global research and development community.

Aziridines and epoxides are among the most widely used intermediates in organic synthesis, acting as precursors to complex molecules due to the strains incorporated in their skeletons. Besides their importance as reactive intermediates, many biologically active compounds also contain these three-membered rings. Filling a gap in the literature, this clearly structured book presents the much needed information in a compact and concise way. The renowned editor has succeeded in gathering together excellent authors to cover synthesis, applications, and the biological aspects in equal depth. Divided roughly equally between aziridines and epoxides, the twelve chapters discuss: * Synthesis of aziridines * Nucleophilic ring-opening of aziridines and epoxides * Organic synthesis with aziridine building blocks * Vinyl aziridines in organic synthesis * Diastereoselective aziridination reagents * Synthetic aspects of aziridinomitocene chemistry * Biosynthesis of biologically important aziridines * Organic catalysis of epoxide and aziridine ring formation * Metal-mediated synthesis of epoxides * Asymmetric epoxide ring opening chemistry * Epoxides in complex molecule synthesis * Biological activity of epoxide-containing molecules A high-quality reference manual for academic and industrial chemists alike.

* This book deals with the fundamentals of genetic algorithms and their applications in a variety of different areas of engineering and science * Most significant update to the second edition is the MATLAB codes that accompany the text * Provides a thorough discussion of hybrid genetic algorithms * Features more examples than first edition

This book honours the outstanding contributions of Vladimir Vapnik, a rare example of a scientist for whom the following statements hold true simultaneously: his work led to the inception of a new field of research, the theory of statistical learning and empirical inference; he has lived to see the field blossom; and he is still as active as ever. He started analyzing learning algorithms in the 1960s and he invented the first version of the generalized portrait algorithm. He later developed one of the most successful methods in machine learning, the support vector machine (SVM) – more than just an algorithm, this was a new approach to learning problems, pioneering the use of functional analysis and convex optimization in machine learning. Part I of this book contains three chapters describing and witnessing some of Vladimir Vapnik's contributions to science. In the first chapter, Léon Bottou discusses the seminal paper published in 1968 by Vapnik and Chervonenkis that lay the foundations of statistical learning theory, and the second chapter is an English-language translation of that original paper. In the third chapter, Alexey Chervonenkis presents a first-hand account of the early history of SVMs and valuable insights into the first steps in the development of the SVM in the framework of the generalised portrait method. The remaining chapters, by leading scientists in domains such as statistics, theoretical computer science, and mathematics, address substantial topics in the theory and practice of statistical learning theory, including SVMs and other kernel-based methods, boosting, PAC-Bayesian theory, online and transductive learning, loss functions, learnable function classes, notions of complexity for function classes, multitask learning, and hypothesis selection. These contributions include historical and context notes, short surveys, and comments on future research directions. This book will be of interest to researchers, engineers, and graduate students engaged with all aspects of statistical learning.

The past 30 years have seen the emergence of a growing desire worldwide that positive actions be taken to restore and protect the environment from the degrading effects of all forms of pollution – air, water, soil, and noise. Since pollution is a direct or indirect consequence of waste, the seemingly idealistic demand for “zero discharge” can be construed as an unreal- tic demand for zero waste. However, as long as waste continues to exist, we can only attempt to abate the subsequent pollution by converting it to a less noxious form. Three major questions usually arise when a particular type

of pollution has been identi?ed: (1) How serious is the pollution? (2) Is the technology to abate it available? and (3) Do the costs of abatement justify the degree of abatement achieved? This book is one of the volumes of the Handbook of Environmental Engineering series. The principal intention of this series is to help readers formulate answers to the last two questions above. The traditional approach of applying tried-and-true solutions to speci?c pollution p- blems has been a major contributing factor to the success of environmental engineering and has accounted in large measure for the establishment of a “methodology of pollution control. ” However, the realization of the ever-increasing complexity and interrelated nature of current environmental problems renders it imperative that intelligent planning of pollution abatement systems be undertaken.

Coumarins: Biology, Applications and Mode of Action predominantly focuses on the parent compound, coumarin, and its main metabolite in humans, 7-hydroxycoumarin. It describes in detail every facet of these compounds including history, toxicology, chemistry, metabolism, analysis, clinical, veterinary and other applications, their roles as immunomodulatory agents and speculates on their mode of action.

After learning that her life's purpose is to fulfill a prophecy to save our world, Roam finds that she is pregnant- and missing the love of her life with all of her heart. Logan, her best friend, stands by her, helping her to find a way back to West... despite his own love for her.On a journey that will take her to another body and life in 1955 and, eventually, to another world, Roam will discover that before she can rise and protect our world and her child from an immortal evil...She must fall.

This survey of advanced chemistry covers virtually all the useful reactions--600 all told--with the scope, limitations, and mechanism of each described in detail. Extensive general sections on the mechanisms of the important reaction types, and five chapters on the structure and stereochemistry of organic compounds and reactive intermediates are included as well. Of the more than 10,000 references included, 5,000 are new in this edition.

The volume "Electroluminescence" for the first time covers (almost) all kinds of electroluminescence. In its broadest sense electroluminescence is the conversion of electric power into optical power - light. The way, in which this goal is accomplished, and the goal, the application itself, has varied over time. First reported in the scientific literature in 1936 by the French physicist G. Destriau, it was for quite some decades the glow of a powder embedded in a resin under the action of an alternating voltage. The dream of "cold light" for illumination was born in the 50s. Modern semiconductor technology, using p-n juntion, but not in silicon or germanium, but in GaAs and GaP, created in the 70s the tiny Light emitting Diodes. Today about 50 for every human being have been sold. They are everywhere for signaling and display of numbers and short texts. And they are at the verge of an era of solid state lighting, replacing gradually incandescent bulbs and fluorescent lamps. In the first half of 1999 several j oint ventures between giants of the lighting industry and manufacturers of LEDs became known, including names as Philips, General Electric, Osram and Hewlett Packard, Emtron and Siemens, The reason, blue light emission of LEDs, for so long researched for unsuccessfully, has been achieved. Signaling, lighting will be the domains of LEDs in the next decades - a good start in the 21st millenium. But a the same time a paradigm shift in the display industry could come about. Dominated for the last 10 years by Liquid Crystal Displays (LCD), which are reflecting or transmitting light from extra light sources, self-emitting displays will challenge this dominance. Capable of handling very complex information by multiplexed addressing of millions of picture elements (pixels) in full color electroluminescence in the form of Organic LEDs and Thin Film Electroluminescence is gaining markets. Both technologies, much less matured than LED, incorporate much different physical features. The broad materials potential almost unexplored in both cases, they are good for surprises. The volume tries to present overviews ovber the 3 different technologies, covering in each case the mechanisms, the most important material properties, essential for the implementation of the working principles, the major applications and the system aspects. The reader will learn how the new long-life, maintenance free, power saving red traffic lights in the Silicon Valley function, and what the tail lights of his next car will be. The fascinating physics of polymer light emitters, eventually manufactured in a roll-to roll process, for cellular phones, or hand-held wireless computers, will become transparent. And why is it that up to now only sulfides can be used for the simplest design of displays capable of proven multiplex ratios of 1000? The comparison of the different electroluminescences, if this plural exists, will hopefully give experts of one of the fields, students of any of them, and application engineers new insights and ideas. Materials scientists and engineers will be caught by the comparison i n analyzing what else one could provide to improve performance.

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