The Chemistry And Technology Of Petroleum Fifth Edition Chemical Industries By James G Speight 31 Mar 2014 Hardcover

The purpose of the book is to provide its readers a comprehensive background and information about developments in the areas of fat science and fat technology. The book tries to provide information pertaining to both basic and technological aspects and to embrace new technology, like biotechnology, that the enormous commercial importance and potential in the 21st century. The book will help better understanding of extraction technology and would be useful to students & other readers involved in the area of refining.

A Complete Guide to Magnesia-From Mining to End Use Often relegated to footnote status in texts, magnesia isnevertheless a valuable substance widely used in applicationsranging from wastewater treatment to catalysis. The Chemistry andTechnology of Magnesia fills the long-standing gap in theliterature with a comprehensive, one-stop reference to "all thingsmagnesia." The book brings together the many strands of information onmagnesium compounds, their production, testing and evaluation,technology, applications, and markets. Opening with an introductoryhistory of the chemical, it covers the life cycle of magnesia,natural and synthetic production, and uses in different fieldsincluding the environmental, health, and agricultural industries.Readers will find the section on health and safety issuesparticularly relevant. Chapters include: * The History of Magnesia * Synthetic Magnesia * Pulp Applications * Environmental Applications * Magnesia Cements * Furnaces

and Kilns * Post Calcination Processing * Other Magnesia Products * Mining and Processing Magnesite * The Physical and Chemical Properties of Magnesium Oxide * Water and Wastewater Application for Magnesia Products * Magnesia in Polymer Applications * The Role of Magnesium in Animal, Plants, and HumanNutrition * Magnesium Salts and Magnesium Metal * The Formation and Occurrence of Magnesite * Calcination of Magnesium Hydroxide and Carbonate * Miscellaneous Magnesia Applications
Developments in potato chemistry, including identification and use of the functional components of potatoes, genetic improvements and modifications that increase their suitability for food and non-food applications, the use of starch chemistry in non-food industry and methods of sensory and objective measurement have led to new and important uses for this crop. Advances in Potato Chemistry and Technology presents the most current information available in one convenient resource.The expert coverage includes details on findings related to potato composition, new methods of quality determination of potato tubers, genetic and agronomic improvements, use of specific potato cultivars and their starches, flours for specific food and non-food applications, and quality measurement methods for potato products. * Covers potato chemistry in detail, providing key understanding of the role of chemical compositions on emerging uses for specific food and non-food applications * Presents coverage of developing areas, related to potato production and processing including genetic modification of potatoes, laboratory and industry scale sophistication, and modern quality measurement techniques to help producers identify appropriate varieties based on anticipated use *Explores novel application uses of potatoes and potato by-products to help producers identify potential areas for development of potato variety and structure
The Chemistry and Technology of Edible Oils and Fats and

their High Fat Products covers the theoretical and practical aspects associated with the chemistry and technology of oils and fats. The book discusses the chemistry of edible fats; vegetable-oil separation technology; and water- and heat-promoted fat separation from animal and plant "fatty tissues". The text also describes the refining process; the fat-modification processes; and the production of edible-fat products of high fat content. The technologies applied to speciality fats; the storage and transport of oils and fats; and energy demands of the oil-milling and edible-fat processing operations. People involved in the processing of edible oils and fats will find the book useful.

Chemistry and Technology of Plant Substances

Wheat: Chemistry and Technology

Microsystem Technology in Chemistry and Life Sciences

Developments in the Chemistry and Technology of Organic Dyes

Starch: Chemistry and Technology

Soft drinks and fruit juices are produced in almost every country in the world and their availability is remarkable. From the largest cities to some of the remotest villages, soft drinks are available in a variety of flavours and packaging. The market for these products continues to show a remarkable potential for growth. The variety of products and packaging types continues to expand, and among the more significant developments in recent years has been the increase in diet drinks of very high quality, many of which are based on spring or natural mineral water. This book provides an overview of the chemistry and technology of soft drinks and fruit juices. The original edition has been completely revised and extended, with new chapters on Trends in Beverage Markets, Fruit and Juice Processing, Carbohydrate and Intense Sweeteners, Non-Carbonated Beverages, Carbonated Beverages, and Functional Drinks

containing Herbal Extracts. It is directed at graduates in food science, chemistry or microbiology entering production, quality control, new product development or marketing in the beverage industry or in companies supplying ingredients or packaging materials to the beverage industry.

This second edition has been designed to monitor the progress in develop ment over the past few years and to build on the information given in the first edition. It has been extensively revised and updated. My thanks go to all who have contributed to this work. D.F.W. May 1996 Preface to the first edition This book is the result of a group of development scientists feeling that there was an urgent need for a reference work that would assist chemists in understanding the science involved in the development of new products. The approach is to inform in a way that allows and encourages the reader to develop his or her own creativity in working with marketing colleagues on the introduction of new products. Organised on a product category basis, emphasis is placed on formulation, selection of raw materials, and the technology of producing the products discussed. Performance considerations, safety, product liability and all aspects of quality are covered. Regulations governing the production and sale of cosmetic products internationally are described, and sources for updated information provided. Throughout the book, reference is made to consumer pressure and environmental issues-concerns which the development scientist and his or her marketing counterpart ignore at their own, and their employer's peril. In recent years, many cosmetic fragrances and toiletry products have been converted from aerosols to mechanically press uri sed products or sprays, and these are described along with foam products such as hair conditioning mousses.

Modern flavours and fragrances are complex formulated products,containing blends of aroma compounds with auxiliary materials,enabling desirable flavours or fragrances to be added to a hugerange of products. From the identification and synthesis ofmaterials such as cinnamaldehyde and vanillin in the 19th Centuryto the current application of advanced analytical techniques foridentification of trace aroma compounds present in naturalmaterials, the flavour and fragrance industry has developed as akey part of the worldwide specialty chemicals industry. With contributions mainly coming from industry based experts,Chemistry & Technology of Flavours and Fragrancesprovides a detailed overview of the synthesis, chemistry andapplication technology of the major classes aroma compounds. Withseparate chapters covering important technical aspects such as thestability of aroma compounds, structure – odour relationshipsand identification of aroma compounds, this book will be essentialreading for both experienced and graduate level entrants to theflavour & fragrance industry. It will also serve as animportant introduction to the subject for chemists andtechnologists in those industries that use flavours and fragrances,eg food, cosmetics & toiletries, and household products. David Rowe is Technical Manager at De Monchy Aromatics Ltd.,Poole UK

Research and development of solid state gas sensor devices began in the 1950s with several uncoordinated independent efforts. The number and pace of these investigations later accelerated in response to increasing pressure placed on the environment and public health by industrial activities. Since 1970, several thousand articles have been written on the subject, and laboratories around the globe have introduced novel methodologies and devices to address needs associated with particular technological

developments. Despite the rapid development of this important new technology, very little has been done to review and coordinate data related to sensor science and technology itself. Physics, Chemistry and Technology of Solid State Gas Sensor Devices focuses on the underlying principles of solid state sensor operation and reveals the rich fabric of interdisciplinary science that governs modern sensing devices. Beginning with some historical and scientific background, the text proceeds to a study of the interactions of gases with surfaces. Subsequent chapters present detailed information on the fabrication, performance, and application of a variety of sensors. Types of sensor devices discussed include: Gas-sensitive solid state semiconductor sensors Photonic and photoacoustic gas sensors Fiber optic sensors Piezoelectric quartz crystal microbalance sensors Surface acoustic wave sensors Pyroelectric and thermal sensors For analytical chemists using solid state sensors in environment-related analysis, and for electrical engineers working with solid state sensors, this book will expand and unify their understanding of these devices, both in theory and practice.

Chemistry and Technology of Cyanate Ester Resins

Chemistry and Technology of Flavours and Fragrances

Chemistry and Technology of Surfactants

Chemistry and Technology of Carbodiimides

Chemistry and Technology of Silicones

Chemistry and Technology of Isocyanates is a comprehensive book on isocyanate chemistry and technology. It highlights the industrial applications of diisocyanates in the manufacture of flexible and rigid foams, elastomers, coatings and adhesives; discusses ionomers used in water-based coatings, polymer networks and biomedical polymers; and reviews current and future environmental issues, including toxicity and safe handling of

isocyanates, recycling of isocyanate derived polymers and monomers derived from natural products.

Chemistry and Technology of Plant Substances: Chemical and Biochemical Aspects demonstrates the progress and promise of developing new chemical substances from renewable sources of chemical raw materials. The volume brings together new achievements in the field of research and processing of plant raw materials and the synthesis of natural compounds for the production of biologically active substances and drugs. The volume looks closely at the rational use of renewable raw materials, which is the source of new compounds and intermediates for the chemical industry. It covers a wide range of problems associated with the use of the components of plants to produce new substances with a wide variety of purposes. According to the latest estimates, plants form about a million chemical substances. In some cases, plant products have pharmacological or biological activity that can be of therapeutic benefit in treating diseases. In addition, due to the structural diversity of plant material, chemical synthesis is easily reachable. Synthetic analogs of natural products with improved potency and safety can be prepared by chemical synthesis. Such synthetic analogs are safer for humans. Plant materials are often used as starting points for drug discovery. Chemistry and Technology of Plant Substances: Chemical and Biochemical Aspects presents the theoretical trends and recent practical achievements on complex processing of plant-based raw materials. Low molecular weight components, isolated from plant material, are widely used in fine organic synthesis. High molecular weight polysaccharides of conifers and other greens, such as pectin and hemicellulose, are the basis for the creation of anticoagulants and other drugs. The range of research papers presented in the book is quite wide: from fundamental and applied problems of wood chemistry

and organic synthesis to biological activity of natural compounds. The book provides valuable information for those skilled in organic chemistry, chemical engineers, researchers and scientists as well as for faculty and upper-level students. This volume, Chemistry and Technology of Plant Substances: Chemical and Biochemical Aspects, was created on the initiative of Emanuel Institute of Biochemical Physics of the Russian Academy of Sciences (Moscow) and the Institute of Chemistry of Komi Scientific Center of Ural Branch of the Russian Academy of Sciences (Syktyvkar).

Wheat science has undergone countless new developments since the previous edition was published. Wheat: Chemistry and Technology, Fourth Edition ushers in a new era in our knowledge of this mainstay grain. This new edition is completely revised, providing the latest information on wheat grain development, structure, and composition including vital peer-reviewed information not readily available online. It contains a wealth of new information on the structure and functional properties of gluten (Ch. 6), micronutrients and phytochemicals in wheat grain (Ch. 7), and transgenic manipulation of wheat quality (Ch. 12). With the new developments in molecular biology, genomics, and other emerging technologies, this fully updated book is a treasure trove of the latest information for grain science professionals and food technologists alike. Chapters on the composition of wheat-proteins (Ch. 8), carbohydrates (Ch. 9) lipids (Ch. 10), and enzymes (Ch. 11.), have been completely revised and present new insight into the important building blocks of our knowledge of wheat chemistry and technology. The agronomical importance of the wheat crop and its affect on food industry commerce provide an enhanced understanding of one of the world's largest food crop. Most chapters are entirely rewritten by new authors to focus on modern developments. This 480-page monograph includes a new

large 8.5 x 11 two-column format with color throughout and an easy to read style. Wheat: Chemistry and Technology, Fourth Edition provides a comprehensive background on wheat science and makes the latest information available to grain science professionals at universities, institutes, and industry including milling and baking companies, and anywhere wheat ingredients are used. This book will also be a useful supplementary text for classes teaching cereal technology, cereal science, cereal chemistry, food science, food chemistry, milling, and nutritional properties of cereals. Cereal and food science graduate students will find Chapter 1 - Wheat: A Unique Grain for the World particularly helpful because it provides a succinct summary of wheat chemistry. "WHAT DOES NOT NEED TO BE BIG, WILL BE SMALL", a word by an engineer at a recent conference on chips technology. This sentence is particularly true for chemistry. Microfabrication technology emerged from microelectronics into areas like mechanics and now chemistry and biology. The engineering of micron and submicron sized features on the surface of silicon, glass and polymers opens a whole new world. Micromotors smaller than human hair have been fabricated and they work fine. It is the declared goal of the authors to bring these different worlds together in this volume. Authors have been carefully chosen to guarantee for the quality of the contents. An engineer, a chemist or a biologist will find new impulses from the various chapters in this book.

The Chemistry and Technology of Solid Rocket Propellants (A Treatise on Solid Propellants)

Chemistry and Technology of Emulsion Polymerisation

Physics, Chemistry and Technology of Solid State Gas Sensor Devices

The Chemistry and Technology of Magnesia

This Brief explains and discusses honey

and its production from a chemical perspective. It outlines why honey is a special and unique food, being produced by bees from the nectar of plants or from secretions of living parts of plants. Although glucose and fructose are the main constituents of honey, its overall composition is far from being simple or uniform: other substances such as organic acids, enzymes, or minerals are found in varying amounts. In this Brief, the author addresses the factors that influence the composition of the honey as well as the consequences that the composition has on properties such as color, crystallization, density, viscosity, or the refractive index. This Brief also introduces some of the most commonly used quality parameters for the determination of ageing and/or overheating: 5-hydroxymethylfurfural (HMF) and diastase. Other recently proposed constituents for quality parameters are also mentioned, e.g. 1,2 dicarbonyl compounds (3 deoxyglucosone, methylglyoxal, glyoxal) and furosine, also named 2-furoylmethyl lysine. Refineries must not only adapt to

evolving environmental regulations for cleaner product specifications and processing, but also find ways to meet the increasing demand for petroleum products,particularly for liquid fuels and petrochemical feedstocks. The Chemistry and Technology of Petroleum, Fourth Edition offers a 21st century perspective

Sustainable development is now accepted as a necessary goal for achieving societal, economic and environmental objectives. Within this chemistry has a vital role to play. The chemical industry is successful but traditionally success has come at a heavy cost to the environment. The challenge for chemists and others is to develop new products, processes and services that achieve societal, economic and environmental benefits. This requires an approach that reduces the materials and energy intensity of chemical processes and products; minimises the dispersion of harmful chemicals in the environment; maximises the use of renewable resources and extends the durability and recyclability of products in a way that

increases industrial competitiveness as well as improve its tarnished image. The use of lubricants began in ancient times and has developed into a major international business through the need to lubricate machines of increasing complexity. The impetus for lubricant development has arisen from need, so lubricating practice has preceded an understanding of the scientific principles. This is not surprising as the scientific basis of the technology is, by nature, highly complex and interdisciplinary. However, we believe that the understanding of lubricant phenomena will continue to be developed at a molecular level to meet future challenges. These challenges will include the control of emissions from internal combustion engines, the reduction of friction and wear in and continuing improvements to lubricant performance and machinery, life-time. More recently, there has been an increased understanding of the chemical aspects of lubrication, which has complemented the knowledge and understanding gained through studies dealing with physics and engineering.

This book aims to bring together this chemical information and present it in a practical way. It is written by chemists who are authorities in the various specialisations within the lubricating industry, and is intended to be of interest to chemists who may already be working in the lubricating industry or in academia, and who are seeking a chemist's view of lubrication. It will also be of benefit to engineers and technologists familiar with the industry who require a more fundamental understanding of lubricants.

Chemistry and Technology of Lubricants

Chemistry and Technology of the Cosmetics and Toiletries Industry

Chemistry and Technology of Polyesters and Copolyesters

The Chemistry and Technology of Pectin

Chemistry and Technology of Honey Production

This book is a "world first", since the furfural industry has been traditionally secretive to the point of appearing shrouded in clouds of mystery. Even renowned encyclopedic works have published but scant and often erroneous information on the subject. Striking a healthy

balance between theory and practice, the book leads the reader from reaction mechanisms and kinetics to the technology of making furfural by various old and new processes, using conventional raw materials or sulfite waste liquor. Detailed discussions of means of increasing the yield are of great chemical and technological interest as well as of immense economic importance. From furfural proper, the treatise shifts to the fascinating field of wanted and unwanted by-products ranging from largely unutilized carboxylic acids to troublesome impurities such as 5-methyl furfural and 2-furyl methyl ketone, and then to extremely valuable serendipitous flavor compounds such as diacetyl and 2,3-pentanedione. A wide variety of derivatives are discussed; considerable space is devoted to polytetrahydrofuran, an important building block of stretchable synthetic fibers, while furan resins from both furfural and furfuryl alcohol are given the attention commensurate with their industrial importance. Notable supplementary chapters cover the in-line measurement of furfural, the treatment of furfural waste water, and various aspects of corrosion. A chapter on the applications of furfural elaborates not only traditional uses in extracting petroleum and vegetable oils but also the sensational discovery that furfural is a highly effective

"indirect nematocide". Without becoming toxic, it changes the microflora of the soil by stimulating bacteria antagonistic to nematodes, thereby reducing the nematode population to zero, at an unprecedented low price. It is believed that this application will be the principal outlet for furfural in the future. A comprehensive list of physical properties, some never published before, make the book an indispensable companion for producers, users and researchers alike.
Carbodiimides play an important role as condensation agents in the synthesis of polypeptides, polynucleotides, polysaccharides and numerous other chemical transformations. Chemistry and Technology of Carbodiimides is the first book to examine both the chemistry and technology of carbodiimides. This book provides a comprehensive and in-depth coverage of the synthesis and reactions of this industrially important class of chemicals while focusing on industrial applications, including the $M-sectors of biochemical synthesis, pharmaceuticals, polymers, ceramics, and herbicides. Written by a well-known authority in the field this book will prove a valuable reference tool for anyone working in this area of chemistry.
Agrochemical products and adjuvants are of vital importance in agriculture, to protect food and fibre crops from weeds, insect pests and

diseases, in order to feed and clothe the growing world population. In recent years there have been increasing pressures to produce agrochemical formulations which have a lower environmental impact and are safer in use. Enormous changes have taken place in the chemistry and technology of agrochemicals over the last twenty years or so and this book provides a timely review of the most important area of technology in the development of new products. This book covers issues around international product quality and safety standards and describes the current and likely future trends which will carry the industry forward into the next millennium. It brings together well known international experts with many years of practical experience from agrochemical companies, consultancies, academic institutions and regulatory bodies. Chemists and technologists involved in developing new or improved agrochemical formulations will find this book an essential reference in the course of their work. The book will also be of interest to those working in research and development departments of raw material suppliers, as a concise review of this important field.

Surfactants are used throughout industry as components in a hugerange of formulated

products or as effect chemicals in theproduction or processing of other materials. A detailedunderstanding of the basis of their activity is required by allthose who use surfactants, yet the new graduate or postgraduatechemist or chemical engineer will generally have little or noexperience of how and why surfactants work. Chemistry & Technology of Surfactants is aimed at newgraduate or postgraduate level chemists and chemical engineers atthe beginning their industrial careers and those in later life whobecome involved with surfactants for the first time. The book is astraightforward and practical survey of the chemistry ofsurfactants and their uses, providing a basic introduction tosurfactant theory, information on the various types of surfactantand some application details. This will allow readers to build ontotheir scientific education the concepts and principles on which thesuccessful use of surfactants, across a wide range of industries,is based.

The Chemistry and Technology of Coal

Chemistry and Technology of Epoxy Resins

Chemistry and Technology of Soft Drinks and Fruit Juices

Chemistry and Technology of Agrochemical Formulations

The Chemistry and Technology of Waxes

The Chemistry and Technology of PetroleumCRC Press

The Chemistry and Technology of Petroleum, Third Edition fully covers the subject, from the underground formation of petroleum to recovery of refined products. The third edition contains additional chapters on the structure of petroleum, refining heavy feedstocks, instability and incompatibility in petroleum products, environmental aspects of refining and much more.

Chemistry and Technology of Silicones retains the nature of a monograph despite its expanded scope, giving the reader in condensed form not only a wide-ranging but also a thorough review of this rapidly growing field. In contrast to some other monographs on organosilicon compounds that have appeared in the interim, the silicones occupy in this edition the central position, and the technological part of the work is entirely devoted to them. This book comprises 12 chapters, and begins with a general discussion of the chemistry and molecular structure of the silicones. The following chapters then discuss preparation of silanes with nonfunctional organic substituents; monomeric organosilicon compounds RnSiX4-n; and organosilanes with organofunctional groups. Other chapters cover preparation of polyorganosiloxanes; the polymeric organosiloxanes; other organosilicon polymers; production of technical silicone products from polyorganosiloxanes; properties

of technical products; applications of technical silicone products in various branches of industry; esters of silicic acid; and analytical methods. This book will be of interest to practitioners in the fields of molecular chemistry.

This work has been selected by scholars as being culturally important and is part of the knowledge base of civilization as we know it. This work is in the public domain in the United States of America, and possibly other nations. Within the United States, you may freely copy and distribute this work, as no entity (individual or corporate) has a copyright on the body of the work. Scholars believe, and we concur, that this work is important enough to be preserved, reproduced, and made generally available to the public. To ensure a quality reading experience, this work has been proofread and republished using a format that seamlessly blends the original graphical elements with text in an easy-to-read typeface. We appreciate your support of the preservation process, and thank you for being an important part of keeping this knowledge alive and relevant.

Chemistry and Technology of Isocyanates

The Chemistry and Technology of Petroleum

The Chemistry and Technology of Edible Oils and Fats and Their High Fat Products

Chemistry and Technology of Oils & Fats

The Chemistry and Technology of Rubber

A fundamental understanding of polymers has

evolved in recent years concurrent with advances in analytical instrumentation. The theories and methodologies developed for the galacturonan biopolymers (collectively called pectins) have seldom been discoursed comprehensively in the context of the new knowledge. This text explains the scientific and technical basis of many of the practices followed in processing and preparing foods fabricated with or containing pectin. The material is presented in a very readable fashion for those with limited technical training. Structural analysis Commercial extractions methods Pectin formulations and tropical fruit analysis Molecular mechanisms of gelatin Enzymology Polymer comformation techniques Analytical methods of polymer analysis

Corn: Chemistry and Technology, Third Edition, provides a broad perspective on corn from expert agronomists, food scientists and geneticists. This encyclopedic storehouse of comprehensive information on all aspects of the world's largest crop (in metric tons) includes extensive coverage of recent development in genetic modification for the generation of new hybrids and genotypes. New chapters highlight the importance of corn as a raw material for the production of fuel bioethanol and the emerging topic of phytochemicals or nutraceutical compounds associated to different types of corns and their effect on human health, especially in the prevention of chronic diseases and cancer. Written

by international experts on corn, and edited by a highly respected academics, this new edition will remain the industry standard on the topic. Presents new chapters that deal with specialty corns, the production of first generation bioethanol, and the important relationship of corn phytochemicals or nutraceuticals with human health Provides contributions from a new editor and a number of new contributors who bring a fresh take on this highly successful volume Includes vastly increased content relating to recent developments in genetic modification for the generation of new hybrids and genotypes Contains encyclopedic coverage of grain chemistry and nutritional quality of this extensively farmed product Covers the production and handling of corn, with both food and non-food applications
The book is a treatise on solid propellants in nine chapters, covering the history, chemistry, energetics, processing and characterization aspects of composite solid propellants, internal ballistics, advanced solid propellants, safety, quality and reliability and homogenous or double base propellants. The book also traces the evolution of solid propellant technology in ISRO for launch vehicles and sounding rockets. There is a detailed table of contents, expanded index, glossary, exhaustive references and questions in each chapter. It can be used as a textbook for science and engineering students, as a reference book for

researchers and as a companion to scientists and engineers working in the research, development and production areas of solid propellants.

Many excellent volumes have been written on the chemistry of cellulose and its derivatives. Judging by the number of conferences which have been assembled to deal with the topic, cellulose and its derivatives continue to arouse great scientific interest. Matching this interest has been the development in copolymer science and technology. In both instances the driving force has been the search for products having useful, new or interesting properties. It appeared inevitable that these two concepts would be brought together at some time in the research and development of cellulosic copolymers. That time has arrived. In assembling this text our aim was to present an informative account of the chemistry and technology of cellulosic copolymers. As such, we intended that the contents be of interest to all those concerned with the production and use of cellulosic products whether in academic or industrial circles. Sections of the text should be of value in undergraduate and post-graduate teaching, provided the student is given guidance in following the text. The volume is divided into eight chapters, each dealing with factors which are relevant to an under standing of cellulosic copolymers. Each chapter carries its own bibliography and is reasonably self-contained.

The Chemistry and Technology of Cellulosic Copolymers

Chemical and Biochemical Aspects

Modern Polyesters

Corn

Chemistry and Technology

The demand for coal use (for electricity generation) and coal products, particularly liquid fuels and chemical feedstocks, is increasing throughout the world. Traditional markets such as North America and Europe are experiencing a steady increase in demand whereas emerging Asian markets, such as India and China, are witnessing a rapid surge in demand for clean liquid fuels. A detailed and comprehensive overview of the chemistry and technology of coal in the twenty-first century, The Chemistry and Technology of Coal, Third Edition also covers the relationship of coal industry processes with environmental regulations as well as the effects of combustion products on the atmosphere. Maintaining and enhancing the clarity of presentation that made the previous editions so popular, this book: Examines the effects of combustion products on the atmosphere Details practical elements of coal evaluation procedures Clarifies misconceptions concerning the organic structure of coal Discusses the physical, thermal, electrical, and mechanical properties of coal Analyzes the development and current status of combustion and gasification techniques In addition to two new chapters, Coal Use and the Environment and Coal and Energy Security, much of the material in this edition been rewritten to incorporate the latest developments in the coal industry. Citations from review articles, patents, other books, and technical articles with

substantial introductory material are incorporated into the text for further reference. The Chemistry and Technology of Coal, Third Edition maintains its initial premise: to introduce the science of coal, beginning with its formation in the ground to the production of a wide variety of products and petrochemical intermediates in the twenty-first century. The book will prove useful for scientists and engineers already engaged in the coal and/or catalyst manufacturing industry looking for a general overview or update on the clean coal technology as well as professional researchers and students in chemistry and engineering.

After epoxy resins and polyimides, cyanate esters arguably form the most well-developed group of high-temperature, thermosetting polymers. They possess a number of desirable performance characteristics which make them of increasing technological importance, where their somewhat higher costs are acceptable. The principal end uses for cyanate esters are as matrix resins for printed wiring board laminates and structural composites. For the electronics markets, the low dielectric loss characteristics, dimen sional stability at molten solder temperatures and excellent adhesion to conductor metals at temperatures up to 250°C, are desirable. In their use in aerospace composites, unmodified cyanate esters offer twice the frac ture toughness of multifunctional epoxies, while achieving a service tem perature intermediate between epoxy and bis-maleimide capabilities. Applications in radome construction and aircraft with reduced radar signatures utilize the unusually low capacitance properties of cyanate esters and associated low dissipation factors. While a number of commercial cyanate ester monomers and prepoly mers are now available, to date there has been no comprehensive review of

the chemistry and recent technological applications of this versatile family of resins. The aims of the present text are to present these in a com pact, readable form. The work is primarily aimed at materials scientists and polymer technologists involved in research and development in the chemical, electronics, aerospace and adhesives industries. It is hoped that advanced undergraduates and postgraduates in polymer chemistry and technology, and materials science/technology will find it a useful introduc tion and source of reference in the course of their studies.

Starch: Chemistry and Technology, Second Edition focuses on the chemistry, processes, methodologies, applications, and technologies involved in the processing of starch. The selection first elaborates on the history and future expectation of starch use, economics and future of the starch industry, and the genetics and physiology of starch development. Discussions focus on polysaccharide biosynthesis, nonmutant starch granule polysaccharide composition, cellular developmental gradients, projected future volumes of corn likely to be used by the wet-milling industry, and organization of the corn wet-milling industry. The manuscript also tackles enzymes in the hydrolysis and synthesis of starch, starch oligosaccharides, and molecular structure of starch. The publication examines the organization of starch granules, fractionation of starch, and gelatinization of starch and mechanical properties of starch pastes. Topics include methods for determining starch gelatinization, solution properties of amylopectin, conformation of amylose in dilute solution, and biological and biochemical facets of starch granule structure. The text also takes a look at photomicrographs of starches, industrial microscopy of starches, and starch and dextrins in

prepared adhesives. The selection is a vital reference for researchers interested in the processing of starch.

Epoxy resins have been commercially available for about 45 years and now have many major industrial applications, especially where technical advantages warrant their somewhat higher costs. The chemistry of these resins is fascinating and has attracted study by many very able scientists. The technological applications of the epoxy resins are very demanding and there are many new developments each year. The aims of the present book are to present in a compact form both theoretical and practical information that will assist in the study, research and innovations in the field of epoxy resin science and technology. The literature on epoxy resins is so vast that it is not possible to be encyclopaedic and that is not the function of the present text. It is the editor's hope that the selection of topics discussed will provide an up-to-date survey. There is some overlap in the chapters but this is minimal and so each chapter is essentially self contained. As with all chemicals there are toxicological and other hazards. These are not dealt with in this text since a little knowledge can be dangerous, but material supplied can provide information regarding any safety precautions that may be necessary. However, often these precautions are not onerous and epoxy resins, or more specifically the hardeners, can be handled readily. It is hoped that this text will provide an up-to-date outline of the science and technology of epoxy resins and stimulate further research into unsolved problems and assist further technological developments.

Handbook of Green Chemistry and Technology

Advances in Potato Chemistry and Technology

The Chemistry and Technology of Paints

The Chemistry and Technology of Printing Inks

Brewing Chemistry and Technology in the Americas

Provides an overview of the family of polyester polymers which comprise an important group of plastics that span the range of commodity polymers to engineering resins. It describes the preparation, properties and applications of polyesters. Readers will also find details on polyester-based elastomers, biodegradable aliphatic polyester, liquid crystal polyesters and unsaturated polyesters for glass-reinforced composites. Presents an overview of the most recent developments. Explores synthesis, catalysts, processes, properties and applications. Looks at emerging polyester materials as well as existing ones. Written by foremost experts from both academia and industry, ensuring that both fundamentals and practical applications are covered.

The Chemistry and Technology of Food and Food Products

The Chemistry and Technology of Furfural and its Many By-Products

The Chemistry and Technology of Waxes ... Second Edition

Second Edition