# Book Reviews

**Cell Cycle Inhibitors in Cancer Therapy. Current Strategies**. Antonio Giordano and Kenneth J. Soprano, Eds. (Cancer Drug Discovery and Development). Humana Press, Totowa, NJ. www.humanapress.com. 2003. 326 pp. $135.00.

Disturbance of biological homeostasis may lead to a variety of human diseases. At the cellular level, cancer can be viewed as a diverse group of diseases resulting from the imbalance of cell proliferation and cell death. Malfunction of the cell cycle regulatory mechanisms plays an important role in carcinogenesis and cancer progression. Thus, suppression of cellular proliferation by inhibiting cell cycle progression is an important therapeutic strategy for cancer treatment. *Cell Cycle Inhibitors in Cancer Therapy* is an excellent book that summarizes the most up-to-date information on cell cycle control mechanisms, the naturally occurring and synthetic molecules that modulate cell cycle events, and their potential roles in cancer therapeutics and prevention.

Each chapter in this book focuses on a specific area of cell cycle control and its clinical relevance. Chapter 1 provides an excellent overview of cyclin-dependent kinases (CDKs) and their inhibitors (CKIs). The alterations in CKI expression in various types of human cancers are summarized in a reader-friendly format. Chapter 2 focuses on p27kip1, a CKI that is able to inhibit the activity of various cyclin/Cdk complexes. This chapter examines the alteration of p27 in cancer and its prognostic value. Chapter 3 gives a comprehensive review of cell cycle control of transcription at the G1/S phase transition, with special emphasis on the E2F transcription factor and its interaction with other important molecular players. Chapter 4 summarizes several important tumor suppressor genes, their role in cell cycle control, and their alterations in human cancers. Chapter 5 provides an integrated view of the regulation of cell cycle and cell death (apoptosis) and the molecules that play important roles in the integrated control of the cell cycle and apoptosis. Chapter 6 reviews small molecules that affect CDKs activity and their potential use in chemoprevention. Chapter 7 focuses on the cell cycle regulatory genes as the targets of retinoids, with a special emphasis on the metabolism and mechanisms of action of retinoids and their therapeutic implications in solid tumors and leukemia. Chapter 8 describes small molecules that inhibit or modulate CDK activity, their relative specificity in inhibiting CDKs, and the biological consequence of CDK inhibition. The clinical trials of two small molecules, flavopiridol and UCN-01, are reviewed in this article. Chapter 9, with 390 references, provides a comprehensive review of cell cycle regulators, their interactions, and potential roles in cancer diagnosis, prognosis, and treatment. Chapter 10 gives a mechanistic view of how the cell cycle regulators may serve as the targets for cancer therapy, with specific examples of targeting certain signal transduction molecules and CDKs. Chapter 11 focuses on the regulation of CDK inhibitors by the ubiquitin system and its therapeutic potential. Chapter 12 describes molecular strategies to modulate cell cycle by synthetic oligopeptides.

This book delivers, in a clear language, current findings on cell cycle regulation mechanisms, cell cycle inhibitors, and their clinical implications in cancer treatment. It is a valuable book for physicians and laboratory scientists in the field of cancer research, especially for those who are interested in molecular cancer therapeutics.

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**Protein Targeting Transport and Translocation**. Ross E. Dalbey and Gunnar von Heijne, Eds. Academic Press, San Diego, CA. www.academicpress.com. 2002. 424 pp. $69.95.

I highly recommend this book as a source of up-to-date information on the molecular mechanisms of protein targeting, transport, and translocation. It is intended for those familiar with the basic molecular architecture of the cell, interested in obtaining a more in-depth understanding of the molecular cell biology and biochemistry of organelle biogenesis, protein trafficking, export, and turnover mechanisms. The book starts with a foreword written by Günter Blobel, 1999 Nobel Laureate in Physiology and Medicine, whose original contributions laid the foundations of the signal hypothesis. Each chapter that follows is concisely written by leading experts in the field.

The fundamentals of genetics, biochemistry, and molecular biology of protein biogenesis, insertion, and translocation, and the protein export pathway are extensively covered in the context of the signal hypothesis. Focus is on general principles, with less emphasis on particular tissue- or cell type-specific differences and protein transport mechanisms unrelated to the signal hypothesis. In breadth, the book summarizes the history and latest advances in biogenesis, transport, and turnover of organellar and cell surface proteins, spanning a range of organisms from bacteria to yeast to mammalian cells.

Subjects reviewed in the different chapters include protein-targeting sequences, protein insertion and sorting at the endoplasmic reticulum, Golgi and plasma membrane, mitochondrial, choloroplast, and peroxisome biogenesis, vesicular transport and secretion, and nucleocytoplasmic transport. It also covers aspects concerning protein modification and degradation at these different compartments. Each chapter is followed by an extensive list of references and suggested readings, providing interested readers with an excellent starting point for more detailed exploration.

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**Tumor Models in Cancer Research.** Beverly A. Teicher, Ed. Humana Press, Totowa, NJ. www.humanapress.com. 2002. 690 pp. $175.00.

Tumor models play a significant role in cancer research. This book, part of the Cancer Drug Discovery and Development series, is a first book describing comprehensively the state-of-the-art in tumor model studies and their applications in cancer research. The editor, Beverly A. Teicher, has led a panel of experts in the field to concisely provide a broad view of different model systems.

The book is divided into nine parts. The first part is intended to familiarize the reader with the history of tumor models. In part 2, "Transplantable Syngeneic Rodent Tumors," several rodent leukemia, solid tumor, and melanoma models are discussed. Some of these models were established several decades ago and have played a central role in anticancer drug screening and evaluations. Part 3 is concerned with human tumor xenografts. Three chapters, "Xenotransplantation of Human Cell Cultures in Nude Mice," "GFP-Expressing Metastatic Models," and "Human Tumor Xenografts" in this part present a major breakthrough for tumor models in cancer drug development. Being "disease-oriented" and of low cost, xenografts/human explants have become the gold standard in cancer drug development in which molecular target-directed treatment strategies are employed. In Part 4, carcinogen-induced tumor models, such as hamster oral cancer model, rat model of mammary carcinogenesis, and colon-cancer models are described. Part 5 deals with tumor models involving genetic manipulations. These animal models, either expressing "oncogenes" or missing "tumor suppressor" genes, represent the most advanced tumor models and bring understanding of human malignancy and cancer drug screening to a new level. In Part 6, models for metastasis, which is responsible for most cancer-related deaths, are covered. The two chapters in this part explore a variety of tumor models and molecular targets as well as their suitability for metastasis identification, quantitation, and therapy. Part 7 discusses the applications of normal tissue response models in cancer drug development. Chapter 18 presents animal models for oral mucositis, an important dose-limiting toxicity of cancer drug and radiation therapy. Chapter 19 demonstrates the usage of intestine model in stem-cell behavior studies. Other topics covered in Part 7 include models of SENCAR mouse-skin tumorigenesis and bone-marrow transplant conditioning, and anesthetic considerations for the study of murine tumor models. Disease- and target-specific models, such as those of human breast cancer, melanoma, renal cell carcinoma, mesothelioma, leukemia, and lymphoma, are discussed in detail in Part 8. Two other chapters in Part 8 present models for evaluating topoisomerase-I-targeted drugs and spontaneous pet animal cancers, respectively. The book ends with Part 9, which provides several experimental methods and end points in cancer research.

Overall, the book synthesizes years of knowledge on all major models available for cancer research. As a first comprehensive summary on tumor models in many years, it is certainly a good reference to those working in preclinical and clinical cancer research and drug development.

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**Principles and Practice of Pharmaceutical Medicine**. Andrew J. Fletcher, Lionel D. Edwards, Anthony W. Fox, and Peter Stonier, Eds. John Wiley & Sons, United Kingdom, www.wiley.co.uk. 2002. 541 pp. $150.00.

The book is a good introduction to the development of new products and their worldwide marketing. The book provides an overview of the whole drug discovery and development process in an easily comprehensible format for the transition of health professionals into pharmaceutical medicine. Pharmaceutical medicine is described by the author as "the discipline of medicine that is devoted to the discovery, research, development, and support of ethical promotion and safe use of pharmaceuticals, vaccines, medical devices, and diagnostics." He also includes in the broad description all medically active agents from nutraceuticals to cosmeceuticals and over-the-counter (OTC) pharmaceuticals to prescription drugs. This book may also function as a fundamental education for graduate students with no preexposure yet in the pharmaceutical industry.

The book is organized into eight main sections, which are further subdivided into specific chapters, functioning as guides for regulatory and clinical requirements. The book begins with an overview of pharmaceutical medicine, covering the basic steps and much of the considerations during drug development and good clinical practice, ending with an international regulatory focus on how to obtain marketing approval not only in the United States but worldwide.

Most chapters in the book are of good quality and provide a highly comprehensible review. Chapters that were singled out by my regulatory and development department for the most detailed information were the following:

Chapter 5: Pharmaceutics
Chapter 6: Non-clinical Toxicology
Chapter 8: Good Clinical Practices
Chapter 11: Phase II and Phase III Clinical Studies
Chapter 21: Statistical Principles and their Application in Biopharmaceutical Research
Chapter 22: Data Management

Furthermore, the section on drug registration can be considered as adequate. The United States Regulation chapter delves into some history, but without providing an updated version of the up-to-date law and legislation. Perhaps newer editions may provide greater depth in this area with more recent facts.

The book also serves as an essential tool for those interested in foreign applications. Chapter 41 guides the reader through pharmaceutical business, regulatory, and clinical requirements in Middle Eastern and Asian countries. This chapter also contains useful addresses and tips that may be helpful if planning clinical trials in that part of the world.

This book is by no means the summit of knowledge required for drug submission to regulatory agencies; however, it functions as a good reference that can help by increasing the familiarity of new scientists with the pharmaceutical industry.

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**Forensic Science. An Introduction to Scientific and Investigative Techniques**. Stuart H. James and Jon J. Nordby, Eds. CRC Press, Boca Raton, FL. www.crcpress.com. 2002. 689 pp. $79.95.

Of the three or four introductory forensic science books currently in print, this one is the newest, and it is the most comprehensive in its coverage of forensic sciences. Most introductory books that focus on the laboratory aspects of forensic science (as against the investigative ones) stress what we usually call criminalistics. Criminalistics can be thought of as generally encompassing the range of activities and analyses in a typical full-service forensic lab: drug and controlled substance identification; trace and materials evidence (such as fibers, hairs, glass, paint) including microscopy; biological evidence analysis, including DNA; documents, firearms, tool marks, and fingerprints. This book includes all these subjects, but it also devotes complete chapters to forensic pathology/death investigation, forensic toxicology, odontology (dentistry), anthropology, and taphonomy. There are also multiple chapter sections on forensic computer crime and computer science, psychology/psychiatry including profiling, forensic engineering, crime scene analysis, and legal/ethical issues. Full disclosure: This reviewer is co-author of the chapter on fingerprints.

Generally speaking, this is a good introductory book, well worth the price. As with any book that tries to cover this much ground using different authors, there is some unevenness in style and coverage. Forensic scientists could quibble among themselves about this and some oddities such as putting the fire and explosion chapter under "forensic engineering." But it is fair to say that this would be a good place to go for your introduction to any of the subjects covered. The chapters are generally written by thoroughly knowledgeable authors, who in some cases are also well known. The book is done in four-color printing, so there are good color photographs of many things that would not present well in black and white. It is also attractively laid out. There are topics lists at the beginning of each section and chapter, and helpful pedagogic aids including review questions, references, and further readings.

There is not much in a book like this that would be of direct *professional* interest to pharmacists. The forensic toxicology chapter discusses aspects of workplace drug testing methods and programs. The focus is naturally on drugs of abuse, but the chapter comes closes to what pharmacists would recognize as clinical toxicology. The chapter on controlled substance analysis gives a good, comprehensive picture of the methods and procedures used as well as discussion of clandestine laboratories. Although most of the specimens submitted to forensic labs for "drug testing" are controlled or illegal, the same methods would be employed in the analysis of most dosage forms.

For an overall introduction to forensic science in its many manifestations and specialties, this book provides a good single-source reference at a competitive price.

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**Chemistry and Applications of Polyphosphazenes.** Harry R. Allcock. John Wiley & Sons, Hoboken, NJ. www.wiley.com. 2003. 725 pp. $325.00.

Investigation of the macromolecular systems with inorganic rather than organic elements in the backbone is of great interest in order to overcome the limitations of organic macromolecules. Polyphosphazenes are one of the most attractive classes of macromolecules based on inorganic backbones with alternating nitrogen and phosphorus atoms. The properties of polyphosphazenes are manifest by the nature of a variety of organic or inorganic side groups attached to phosphorus atoms at the backbone. The author has been involved in phosphazene science for more than 35 years, and many of the major developments of basic chemistry and applications in this field have originated from his research group. This book provides a comprehensive overview and perspective of the expanding field of phosphazene science including small molecules, polymers, and novel applications.

This book consists of three main parts. Part I with three chapters describes underlying concepts, overviews of methods in synthesis, and characterization of polyphosphazenes. In addition, small-molecule phosphazenes are introduced as models and starting points for the more challenging phosphazene polymers. This type of organization provides us how basic science can be developed to real applications. Part II organized with eight chapters describes the details of synthetic pathways for a variety of architectures of polyphosphazenes, ranging from the design of polymerization monomers to the special polymerization techniques such as ring-opening polymerizations, condensation polymerizations, macromolecular substitutions, and so on. In particular, Chapter 6 includes an excellent summary on the very recent advances in the phosphoranimine polymerization, which is a unique route for the synthesis of phosphazene–phosphazene or phosphazene–organic block copolymers. Readers in the biomedical or phar-

maceutical area may find interesting applications of those block copolymers as a unique nanocarrier for drugs. Part III consists of eight chapters covering the structure, properties, and uses of polyphosphazenes. Chapters 12–14 deal with structure–property relationships, which would be a useful guide to design macromolecular architectures for specific applications. Chapters 15–19 provide the details of uses in various areas such as biomedicine, membranes, ionic conductors, optical and electrooptical materials, and some other applications. Particularly, the researchers in pharmaceutical field can find many interesting aspects of polyphosphazenes in Chapter 15, whose title is "Polyphosphazenes as Biomedical Materials." A variety of biomedical applications of phosphazenes are introduced such as stimuli-sensitive hydrogels, matrices for bone regrowth, bioerodible polymers for controlled drug release, dental materials, antimicrobial materials, antitumor derivatives, microspheres, vesicles and micelles for drug carriers, biomedical membranes, and other bioactive species.

This book is an excellent reference for readers in various areas such as chemists, materials scientists, biomedical researchers, and other engineers because they may wish to begin with different chapters based on their own interests. In particular, this book will be very useful for those who are interested in the application of polyphosphazenes in biomedical and drug delivery areas.

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**Sensors Update Volume 11. Sensor Technology—Applications—Markets.** H. Baltes, G. K. Fedder, and J. G. Korvink, Eds. Wiley-VCH, Weinheim. www.wiley-vch.de. 2003. 317 pp. $205.00.

The book consists of seven chapters. Four are concerned with sensor configuration issues such as signal to noise, sensing algorithms, and component design. The other three applications chapters address earthquake sensing, lead bonding, and an electronic tongue. None of these devices are biosensors *per se,* and they have no apparent clinical application. The closest is the artificial tongue, which uses an array of nonspecific sensors. Collective, differential patterns of response are used to "identify" different chemicals, which is more or less how natural tongues work.

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**Multilayer Thin Films. Sequential Assembly of Nanocomposite Materials**, Gero Decher and Joseph B. Schlenoff, Eds., Wiley-VCH, Weinheim. www.wiley-vch.de. 2003. 524 pp. $145.

Thin film formation by sequential multilayering of different components, such as polyelectrolytes or colloidal particles, has drawn a great deal of attention for the last decade. Multilayering allows formation of well-defined thin films on almost any surfaces through simple processes. The multilayer thin-film technology has great potential for many applications including surface modification and drug delivery. This book presents recent research efforts by the acknowledged leaders in the field. It contains 17 chapters dealing with various subjects on mutilayer thin films. Chapter 1 provides an overview on the polyelectrolyte multilayers, which includes the layer-by-layer technique, characterization methods, and the structure of multilayers. This review chapter contains more than 300 references and is a good starting point for understanding the multilayer thin-film technology.

Multilayer formation by sequential adsorption of oppositely charged polyelectrolytes is one of the most extensively studied subjects. Chapter 2 focuses on the fundamentals of polyelectrolyte complexes, such as thermodynamics, kinetics, and mechanisms. Chapter 3 shows theoretical work on the formation of polyelectrolyte complexes. Chapter 4 deals with the role of salts in multilayer formation and function. Chapter 5 focuses on the pH-dependent formation of weak polyelectrolyte multilayers. Building blocks other than polyelectrolytes were also used to form organic/inorganic (Chapters 6, 7, 9, and 14) or polyelectrolyte/nanoparticle multilayers (Chapter 8 and 10).

This book also covers potential applications of diverse mutilayer thin films such as electro- and photosensitive multilayers (Chapters 11, 15, and 16), multilayer coating of various types of particles (e.g., polymeric nanoparticles, protein particles, small-molecular-weight crystals, and cells) (Chapters 12 and 13), and multilayers with ion-transport selectivity (Chapter 17). Chapters 12 and 13 are highly useful for pharmaceutical applications of the thin film technologies.

One of the strengths of this book is that it contains numerous references that the readers can consult with. Because the layer-by-layer technology is expected to grow exponentially in the years to come, this book will serve as a valuable source of information for those working in layer-by-layer self-assemblies. It is the first book that updates the advances in the multilayer thin-film technology and will remain as the most important book in the field for a while.

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**Biomaterials. Principles and Applications.** Joon B. Park and Joseph D. Bronzino, Eds. CRC Press, Boca Raton, FL. www.crcpress.com. 2003. 250 pp. $99.95.

This book's strengths include a fairly wide coverage of the field, with chapters on metallic, ceramic, polymeric, composite, biodegradable, and collagen-based biomaterials. In

addition, there were several chapters focused more on actual devices (hard tissue replacements; hip joint prosthesis fixation; cardiovascular prostheses). Each chapter was written by different authors, and many of these have worked extensively in the area they write about. The authors' familiarity with their topic is a plus for the book that comes across clearly in very succinct and apt descriptions of the biomaterials and devices. I thought the many illustrations in the book showing devices and biomaterials made it a useful source for introducing students to the field.

The style of the book was largely descriptive with emphasis on compositional and mechanical properties. Some of the chapters were less comprehensive than others and included too much material from the authors' recent research, e.g., in the chapter on polymers, polyurethanes received a total of four lines of text, while almost six pages were devoted to work by the authors on new surfaces with chemical gradients. There was relatively little information in this book on mechanisms of bodily response to biomaterials; e.g., no chapters were devoted to blood clotting, bone bonding, infection, or the foreign body reaction, although these responses are mentioned in context in the text of other chapters. Surface characterization of biomaterials is not presented. In addition, the currently very active areas of tissue engineering and stent development were not covered very well, so it was not very up to date. Similarly, the chapter on hip joint fixation was based on a paper originally presented in 1996.

When I gave lectures in our biomaterials course about hard biomaterials, I found this book to be of some use because of its simpler, somewhat less technical approach. Some of the students in the course found the book to be useful and liked the way it was organized, the concise approach, and the definition of terms at the end of each section own terminologies. I also like the listing of terms, but in this regard the chapters varied a great deal in how useful they were (19 terms defined in the chapter on metallic biomaterials, over 30 in the collagen and cardiovascular device chapters, but only two terms were defined in the chapter on polymers). Another useful feature was the inclusion at the end of some chapters of both cited references and lists of sources for further information.

Overall, I would recommend the book to those seeking a basic, concise overview of properties of biomaterials and some of the devices they are used in.

Note: According to the information on the back of its title page, the material in this book was originally published in Vol. 1 of *The Biomedical Engineering Handbook,* 2nd ed., Joseph D. Bronzino, Ed., CRC Press, Boca Raton, FL, 2000.

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**Statistical Models and Methods for Lifetime Data** (2nd Ed.) Jerald F. Lawless. John Wiley & Sons, Hoboken, NJ. www.wiley.com. 2003. 630 pp. $162.00.

Using the term "lifetime data" in the title of this book may be a disadvantage because pharmaceutical scientists may be more familiar with the terms "survival analysis" or "failure time data." All three terms are synonymous, however. Lifetime data arises when individuals are followed for a period of time, and the time to occurrence of some event is measured. Examples of lifetime data include time to death, onset of drug activity, or time to occurrence of some adverse event, such as nausea. Often the data are right censored, in that a study is terminated before the event has occurred in all subjects, which makes the analysis of such data not as straightforward as in the complete case analysis.

It has been 20 years since the last edition of this book, and much has happened in the field of survival analysis since then. The book begins with basic concepts, probability distributions, and how these concepts apply to censored data. The book then moves to nonparametric and graphic models, specifically the Kaplan-Meier survivor function, and applying these methods to censored data. The author then goes to parametric models based on probability distribution functions such as the exponential and inverse Gaussian distribution, illustrating how maximum likelihood can be used to estimate model parameters and discriminate between alternative models. Models for censored data and mixture models are also considered. Once a parametric model is identified, an analyst then usually wishes to make some inference on the parameter estimates. For instance, does some parameter equal zero? The next chapter deals with making such inferences and how to generate confidence intervals for parameter estimates. The chapter also provides further material on discriminating between two competing probability distributions. Following this is a chapter on how to introduce covariates in the model, such as the use of white blood cell count at baseline as a predictor of survival times in patients with multiple myeloma and assessing goodness of fit. The next two chapters deal with semiparametric models, the most familiar being the Cox proportional hazards model. The author then deals with multiple modes of failure, such as arises when we are interested not only in time of death but in multiple causes of death. The last chapter deals with multivariate survival data, where we have several different events for a subject.

This is not a book to be taken lightly. Lawless developed this text as a graduate level text or reference source. The material presented is largely theoretical, although many examples are provided. At the end of each chapter are problems, but the answers to such problems are not provided. The use of software in the analysis of lifetime data is discussed in every chapter, but specific code is not provided, nor is any output from any statistical program shown. I would not recommend this book as a first-time introduction to survival data. This book is an excellent secondary source and provides a wealth of information for those familiar with the area.

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**Books on Thermodynamics**

**Thermodynamics of Pharmaceutical Systems. An Introduction for Students of Pharmacy**. Kenneth A. Connors. Wiley-Interscience, Hoboken, NJ. www.wiley.com. 2002. 344 pp. $49.95.

**Thermodynamics and Statistical Mechanics, Basic Concepts in Chemistry**. John M. Seddon and Julian D. Gale. Wiley-Interscience, New York, NY. www.wiley.com. 2002. 161 pp. $34.95.

**Thermodynamics of Biochemical Reactions**. Robert A. Alberty. John Wiley & Sons, Hoboken, NJ. www.wiley.com. 2003. 397 pp. $69.95.

**Bioenergetics3**. David G. Nicholls and Stuart J. Ferguson. Academic Press, San Diego, CA. www.academicpress.com. 2002. 297 pp. $49.95.

Thermodynamics is a difficult subject to learn and teach except for those who have been involved with the topic for decades in their research. Understanding the topic is one thing, and teaching it is entirely another matter. More than two decades ago, I had the privilege of taking courses from Professor Kenneth Connors, who has a gift of explaining difficult subject matters in simple terms. Professor Connors is now retired from teaching and research, and so his lectures are not available any more. Fortunately, however, he published a book on the topic of thermodynamics. Reading his book is like listening to the tapes of his lectures. His emphasis on the flow of ideas rather than rigorous mathematics works very well for the readers to grasp the basic concepts on thermodynamics easily. *Thermodynamics of Pharmaceutical Systems. An Introduction for Students of Pharmacy* is the book for those who are just entering the world of thermodynamics as well as for those who have been living there without active participation. The subtitle ′An Introduction for Students of Pharmacy′ is a drastic understatement of the quality and scope of the book. Not only pharmacy students but also many advanced researchers should benefit tremendously from reading the book. The basic thermodynamics in the first part is followed by thermodynamics of physical processes, including phase transformation and solubility. The third part deals with thermodynamics of chemical processes, e.g., acid-base equilibria, which are one of the most important topics in pharmaceutics. For easiness of reading and extensive coverage of pharmaceutical systems, this book should be the one to read first before any other books.

The basic concepts on thermodynamics are also covered in the book *Thermodynamics and Statistical Mechanics, Basic Concepts in Chemistry*, but its main focus is on ideal gases. This book is also easy to follow, mainly because of its brevity in developing thermodynamic quantities in a coherent way.

Finishing one of the above two books, or both, prepares us to read the remaining two books without difficulty. *Thermodynamics of Biochemical Reactions* emphasizes the application of the fundamental equations of thermodynamics to systems of enzyme-catalyzed reactions making up the metabolism of living organisms. This book differs from others in that it deals with a Legendre transform to define a transformed Gibbs energy, which provides the criterion for equilibrium and spontaneous change at the specified pH. The second half of the book shows data and programs for quantitative calculations on systems of biochemical reactions written using a mathematical application, Mathematica®.

The last book *Bioenergetics3*, which is the third edition of the book, describes the principles of chemiosmotic aspects of membrane bioenergetics. Bioenergetics is a discipline dealing with mechanism on the coupling of energy (produced by the oxidation of substrates or the absorption of light) to "uphill" reactions, e.g., ion accumulation across a membrane. This book is not about explaining thermodynamics but about utilizing Gibbs energy to quantify chemiosmotic energy transduction. This book would be highly useful for those who study artificial lipid bilayers and/or polymer membranes that simulate cell membranes.

Graduate students in pharmaceutics and those scientists in pharmaceutical industry will find the book *Thermodynamics of Pharmaceutical System* invaluable in their research. This is the book that I carry with me all the time.

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## Books Received

### Molecular Biology

*Functional Genomics.* Michael J. Brownstein and Arkady B. Khodursky, Eds. (Methods and Protocols. Volume 224). Humana Press, Totowa, NJ. www.humanapress.com. 2003. 258 pp. $89.50.

*Novel Anticancer Drug Protocols.* John K. Buolamwini and Alex A. Adjei, Eds. (Methods in Molecular Medicine). Humana Press, Totowa, NJ. www.humanapress.com. 2003. 355 pp. $125.00.

*DNA and RNA Binders. From Small Molecules to Drugs.* M. Demeunynck, C. Bailly and W. D. Wilson, Eds. Volume 1. Wiley-VCH Verlag, Weinheim. www.wiley-vch.de. 2003. 336 pp. $355.00.

*Nucleases. Molecular Biology and Applications.* Nawin C. Mishra. John Wiley & Sons, Hoboken, NJ. www.wiley.com. 2003. 314 pp. $79.95.

*Handbook of Detection of Enzymes on Electrophoretic Gels.* 2nd Ed. Gennady P. Manchenko. CRC Press, Boca Raton, FL. www.crcpress.com. 2003. 553 pp. $159.95.

### Organic and Polymer Chemistry

*Handbook of Pharmaceutical Excipients.* 4th Ed. Raymond C. Rowe, Paul J. Sheskey, and Paul J. Weller, Eds. Pharmaceutical Press, Grayslake, IL. www.pharmpress.com. 2003. 776 pp. $299.95.

*An Introduction to Polymer Physics.* David I. Bower. Cambridge University Press, New York, NY. www.cambridge.org. 2002. 444 pp. $45.00.

*Handbook of Free Radical Initiators*. E. T. Denisov, T. G. Kenisova, and T. S. Pokidova. John Wiley & Sons, Hoboken, NJ. www.wiley.com. 2003. 879 pp. $300.00.

*Nonwoven Fabrics. Raw Materials, Manufacture, Applications, Characteristics, Testing Processes.* W. Albrecht, H. Fuchs, W. Kittelmann, Eds. Wiley-VCH Verlag, Weinheim. www.wiley-vch.de. 2003. 748 pp. $215.00.

*Validating Medical Packaging.* Ronald Pilchik. CRC Press, Boca Raton, FL. www.crcpress.com. 2003. 151 pp. $149.95.

*Plastics and the Environment.* Anthony L. Andrady, Ed. John Wiley & Sons, Hoboken, NJ. www.wiley.com. 2003. 762 pp. $125.00.

*Principles of the Quantum Control of Molecular Processes.* Moshe Shapiro and Paul Brumer. John Wiley & Sons, Hoboken, NJ. www.wiley.com. 2003. 354 pp. $79.95.

*Solvents and Solvent Effects in Organic Chemistry.* 3rd Ed., Updated and Enlarged Edition. Christian Reichardt. Wiley-VCH Verlag, Weinheim. www.wiley-vch.de. 2003. 629 pp. $135.00.

*Industrial Dyes. Chemistry, Properties, Applications.* Klaus Hunger, Ed. Wiley-VCH Verlag, Weinheim. www.wiley-vch.de. 2003. 660 pp. $185.00.

**Others**

*Food Safety Handbook.* Ronald H. Schmidt and Gary E. Rodrick. John Wiley & Sons, Hoboken, NJ. www.wiley.com. 2003. 850 pp. $175.00.

*Medicinal Plants of the World. Chemical Constituents, Traditional and Modern Medicinal Uses.* 2nd Edition. Ivan A. Ross. Humana Press, Totowa, NJ. www.humanapress.com. 2003. 491 pp. $99.50.

*CRC Directory of Outpatient Prescribed Medications. Demographics Data Analysis.* 2003/2004 Edn. Alan B. Fleischer, Jr., Hoa Teuschler, John Chen, and Steven Feldman. CRC Press, Boca Raton, FL. www.crcpress.com. 2003. 666 pp. $249.95.

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