Book Reviews

The Biomedical Engineering Handbook. Edited by Joseph D. Bronzino. CRC Press, Boca Raton, 1995, xxxii, 2862 pp, illustrations, $135.

The CRC Biomedical Engineering Handbook is a tremendous resource for engineers, medical scientists, and biologists alike. In approximately 3000 pages, one finds a compendium of valuable information for the exciting and evolving interdisciplinary area of biomedical engineering. For example, the emergent areas of biosensors, tissue engineering, biomaterials, and biosystems control are all covered in depth. Of course, it would be impossible to cover every possible intersection of the fields of biology, medicine, and engineering in a single volume; however, editor-in-chief Joseph Bronzino has assembled a cast of contributors which span this discipline in a most effective manner. For the engineers, there are concise summaries of physiologic systems; for the medical scientists, there are clear tutorials on signal processing and control theory; and for the biologists, there are informative summaries of imaging devices and measurement technology (to name a few examples). While one cannot expect to find a complete exposition of a particular subject (for example, identification of physiologic systems), the individual chapters give an excellent review of the appropriate subjects and provide a starting point to other references in the field for interested researchers seeking more details. The CRC Biomedical Engineering Handbook is a valuable addition to one's library, and is likely to become an often used resource for biomedical engineers.

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Inhalation Aerosols. Edited by Anthony J. Hickey. Marcel Dekker, Inc. New York, xv, 511 pp., illustrations, $175.00.

Prof. Hickey has previously edited a popular book entitled "Pharmaceutical Inhalation Aerosol Technology". He has accomplished another admirable task by editing a valuable book that caters to a similar audience but presents several chapters on topics quite different from the first book. The first part of the book on "Aerodynamic Behavior" contains a thorough review of the extensive literature produced by one of the authors of the two introductory chapters, Martonen. I was somewhat disappointed to see little analysis of oropharyngeal deposition which plays a major part in the poor efficiency and variability of most conventional aerosol delivery systems (this topic is lightly touched upon in the chapter on mathematical models of aerosol deposition by Swift).

The contribution by Altiere and Thompson on "Biological Considerations" is a comprehensive review of lung physiology and pharmacology. It is presented very refreshingly from the perspective of biological scientists, without getting entangled in unnecessary minutia of little interest to the pharmaceutical scientist. Another excellent chapter with the right balance between the basic methods and specific applications to pulmonary delivery entitled "Bioavailability and Pharmacokinetics of Inhaled Drugs" was contributed by Adjei, Qiu and Gupta. It is complemented by two related chapters (on solute transport by Effros and on metabolism by Ma, Bhat and Rojanasakul). There are two very timely contributions on basic (Johnson) and applied (Hickey and Evans) aspects of metered dose inhalers, with special emphasis on the new propellants. Niven and Greenspan review various atomization and nebulization methods including the recent developments in electrohydrodynamic generators. Another very topical review in the book is by Sacchetti and Van Oort on preparation of powders for inhalation by spray-drying and by application of the supercritical fluid technologies. A summary of existing methods of aerosol generation for therapeutic applications is provided by Dalby, Tiano and the editor. I found one totally absurd statement in the chapter on therapeutic uses of aerosols: "The safest, most convenient, and most economical method to deliver drugs to the lung is the oral route", where "oral" meant "via the gastrointestinal tract".

The last two decades exhibited an incredible growth of the therapeutic inhalation market which looks like significantly expanding further in the future—this would not be possible without very clear clinical and economic advantages of the inhalation route. Inevitably, there is quite a lot of overlap between the chapters but this by no means reduces my enthusiasm for this book—it is a collection of well written reviews that should become a very useful addition to the new generation of books on pulmonary drug delivery.

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Pharmaceutical Dosage Forms. Disperse Systems. Volume I. Herbert A. Lieberman, Martin M. Rieger, and Gilbert S. Banker, Eds. Marcel Dekker, Inc., New York, 1996. xviii, 532 pp., illustrations. $165.

Pharmaceutical Dosage Forms: Disperse Systems. Volume II. Herbert A. Lieberman, Martin M. Rieger, and Gilbert S. Banker, Eds. Marcel Dekker, Inc., New York, 1996. xx, 506 pp., illustrations. $165.

Volume 1 deals with theoretical aspect of various disperse system drug products, such as suspensions, emulsions, colloidal polymer particles, and aerosols. The main emphasis was given to the concepts of equilibrium and interfacial free energy, the understanding of which is essential in overcoming nonequilibrium states of disperse system products. Volume 2, which covers the product development of disperse systems, focuses on the practical examples rather than theoretical aspects. These books provide almost everything one likes to know about disperse systems with plenty of examples. These books, however, could have been much more attractive if the state-of-the art technologies were included. Throughout both books, the attractive interaction energies were described by using Hamaker constants and repulsive interaction energies were handled by classical thermo-

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dynamic approaches. Neither treatment is quite up-to-date. Recent advances in computational chemistry and theoretical approaches have made it possible to calculate interaction energies more accurately. Furthermore, new instruments, such as atomic force microscope, allow measurements of interaction energies at the molecular level. The lack of such information, however, is minor compared to the vast amount of information provided in these books. Overall, I believe that these books are indispensable for those pharmaceutical scientists involved in the development of disperse dosage forms. These books will also be very helpful in teaching at the graduate level. There is no doubt that these books will serve as valuable reference books for the years to come, and I feel relieved to know that I can always turn to them whenever I need facts on disperse systems.

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Books Received

BIOMATERIALS AND BIOPROCESSES

Biomimetics: Design and Processing of Materials. Mehmet Sarikaya and Ilhan A. Aksay, Eds. American Institute of Physics, Woodbury, New York, 1995. xi, 285 pp., illustrations. $65.

Biomedical Functions and Biotechnology of Natural and Artificial Polymers. Manssur Yalpani, Ed. ATL Press, Inc., Shrewsbury, Massachusetts, 1996. vi, 283 pp., illustrations. $225.

Polysaccharides in Medicinal Applications. Severian Dumitriu, Ed. Marcel Dekker, Inc., New York, 1996. viii, 794 pp., illustrations. $195.

Interfacial Phenomena and Bioproducts. John L. Brash and Peter W. Wojciechowski, Eds. Marcel Dekker, Inc., New York, 1996. xi, 510 pp., illustrations. $175.

DICTIONARY

Analysis of Surfactants. Dietrich O. Hummel. Hanser Publishers, Inc., New York, 1996. viii, 567 pp., illustrations. $654.

Concise Dictionary of Biomedicine and Molecular Biology. Pei-Show Juo. CRC Press, Boca Raton, 1996. ii, 983 pp., illustrations. $69.95.

DRUG DELIVERY

Diffusion In and Through Polymers: Principles and Applications. Wolf R. Vieth. Hanser Publishers, Inc., New York, 1991. xiii, 322 pp., illustrations. $65.

Oral Mucosal Drug Delivery. Michael J. Rathbone, Ed. Marcel Dekker, Inc., New York, 1996. xiii, 440 pp., illustrations. $175.

Microencapsulation: Methods and Industrial Applications. Simon Benita, Ed. Marcel Dekker, Inc., New York, 1996. xi, 640 pp., illustrations. $150.

DRUG DEVELOPMENT

The Drug Development Process: Increasing Efficiency and Cost-Effectiveness. Peter G. Welling, Louis Lasagna, and Umesh V. Banakar, Eds. Marcel Dekker, Inc., New York, 1996. xi, 447 pp., illustrations. $150.

Ways to Successful Strategies in Drug Research and Development. H. Harald Sedlacek, Alice M. Sapienza, and Volker Eid. VCH Publishers Inc., Weinheim, 1996. xiii, 265 pp., illustrations. DM 128.

EXPERIMENTAL DESIGN, MODELING, ANALYSIS, AND SIMULATION

Modeling and Data Treatment in the Pharmaceutical Sciences. J. T. Carstensen. Technomic Publishing Company, Inc., Lancaster, Pennsylvania, 1996. xiii, 270 pp., illustrations. $145.

Principles of Experimental Design for the Life Sciences. Murray R. Selwyn. CRC Press, Boca Raton, 1996. viii, 160 pp., illustrations. $39.95.

Advanced Tutorials for the Biomedical Sciences: Animations, Simulations, and Caluclations Using Mathematica®. Charles Pidgeon, Ed. VCH Publishers, Inc., New York, 1996. xxvii, 275 pp., illustrations + diskettes. Paper. $79.95.

Molecular Modeling of Polymer Structures and Properties. Bruce R. Gelin. Hanser Publishers, Inc., New York, 1994. xii, 168 pp., illustrations. $89.

PHARMACEUTICAL TECHNOLOGY AND METHODOLOGY

Pharmaceutical Coating Technology. Graham Cole, John Hogan, and Michael Aulton. Taylor and Francis, London, 1995. ix, 489 pp., illustrations. $175.

Liquid-and-Surface-Borne Particle Measurement Handbook. Julius Z. Knapp, Thomas A. Barber, and Alvin Lieberman, Eds. Marcel Dekker, Inc., New York, 1996. viii, 915 pp., illustrations. $195.00.

PHARMACOKINETICS

Biopharmaceutics of Orally Administered Drugs. P. Macheras, C. Reppas, and J. B. Dressman. Ellis Horwood, London, 1995. viii, 281 pp., illustrations. $140.

POLYMERS AND MATERIALS

Physical Properties of Polymers Handbook. James E. Mark, Ed. American Institute of Physics, Woodbury, New York, 1996. xv, 723 pp., illustrations. $120.

Polyelectrolytes: Formation, Characterization and Application. Herbert Dautzenberg, Bukart Philipp, Christian Seidel, Dorothea Stscherbina, Werner Jaeger, and Joachim Kötz. Hanswer Publishers, Inc., New York, 1994. xiv, 343 pp., illustrations. $98.50.

Practical Handbook of Materials Selection. James F. Shackelford, William Alexander, and Jun S. Park. CRC Press, Boca Raton, 1995. xii, 625 pp. $74.95.

Seymour/Carraher's Polymer Chemistry: An Introduction. Charles E. Carraher, Jr. Marcel Dekker, Inc., New York, 1996. xxvii, 688 pp., illustrations. $59.75.

Polypropylene Handbook. Edward P. Moore, Jr., Ed. Hanser Publishers, Inc., New York, 1996. xix, 419 pp., illustrations. $136.

Cellulosic Polymers: Blends and Composites. Richard D. Gilbert, Ed. Hanser Publishers, Inc., New York, 1994. xii, 244 pp., illustrations. $95.

THERAPEUTICS AND PHARMACOLOGY

Antimicrobial Resistance: A Crisis in Health Care. Donald L. Jungkind, Joel E. Mortensen, Henry S. Fraimow, and Gary B. Calandra, Eds. Plenum Press, New York, 1995. x, 248 pp., illustrations. $79.50.

Eicosanoids: From Biotechnology to Therapeutic Applications. Gian Carlo Folco, Bengt Samuelsson, Jacques Maclouf, and G. P. Velo, Eds. Plenum Press, New York, 1996. viii, 208 pp., illustrations. $79.50.

Recent Advances in Cellular and Molecular Aspects of Angiotensin Receptors. Mohan K. Raizada, M. Ian Philips, and Colin Sumners, Eds. Plenum Press, New York, 1996. xv, 270 pp., illustrations. $85.

The Pathology of Drug Abuse. Steven B. Karch, M.D. CRC Press, Boca Raton, 1996. xiii, 462 pp., illustrations. $65.95.

VACCINES

Mucosal Immunization Genetic Approaches & Adjuvants. Nancy Mulford, Ed. International Business Communications, Southborough, MA, 1996. iv, 21 chapters, illustrations. Paper. $69.50.

Vaccines: New Generation Immunological Adjuvants. Gregory Gregoriadis, Brenda McCormack, and Anthony C. Allison, Eds. Plenum Press, New York, 1995. viii, 192 pp., illustrations. $75.