oxide" (p 84); its correct term is "dihydrogen oxide". As with most other books on cognate subjects, Detection and Measurement (Chapter 2) have been discussed superficially with a cursory mention of TLC, GLC, LC, and immunoassays and two brief paragraphs on analyte detection. Since some toxicants are routinely analyzed by GC−MS, it is surprising that mass spectrometry should be completely omitted in a list of chromatographic detectors (Table 2.2) that is titled Some Modern Analytical Detectors. Moreover, not a single technique for analysis of inorganic toxicants (e.g., atomic absorption spectrometry) is even mentioned. The difficulty of accurately measuring low concentrations has been highlighted, but the possible improvements have not even been mentioned.

In contrast, topics on toxicology constitute the stronger aspect of the book although molecular mechanisms of toxicity could have been dealt with in greater detail to avoid any confusion. For example, although binding to sulfhydryl groups may be a dominant mechanism, the toxicity of arsenic is species-dependent and may involve other mechanisms as well.

Overall, the clarity of exposition and the range of topics covered would commend this book to undergraduates as an appropriate text for an introductory course on environmental toxicology and/or environmental chemistry. Corrections to the indicated misstatements would undoubtedly enhance the utility of the next edition.

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JA985626S

S0002-7863(98)05626-1

Principles of Molecular Biology, Volume 5: Molecular and Cellular Genetics. Edited by E. Edward Bittar and Neville Bittar (University of Wisconsin). JAI Press: Greenwich, CT. 1996. xiv + 412 pp. $128.50. ISBN 1-55938-809-9.

The authors of this book have attempted to fill in an important piece of a puzzle which, regrettably, keeps changing at breath-taking speed. Because the knowledge in the field of molecular genetics is literally exploding, the authors had a difficult task of critically discussing important subjects which are in rapid flux. The volume fulfills an essential need. Specifically, it presents in a review-like format the 1995-96 state-of-the-art of the subject based on information available *at that time*. Most of the chapters are written concisely and informatively.

The topics of nucleosome structure and DNA replication are handled with clarity and enthusiasm. The chapter on DNA methylation, an important subject for most aspects of nucleic acid function, is poorly written and organized in an uninteresting fashion. The chapters on histone acetylation, synthesis and activity of transcription factors, and alternative DNA splicing are well written and presented with skill. The protein−DNA interaction subject is presented in a somewhat heavy-handed manner with exuberant description of spacial modalities but with little consideration of relevant consequences.

The potential use of antisense nucleic acid fragments for inhibition of gene expression is skillfully explored. The essential aspects of specificity, efficiency, delivery, and toxicity are well addressed. The use of antisense reagents in clinical medicine shows interesting promise in the fight against viruses and cancer.

The possible mechanism and pathways for signal transduction from external cell-membrane receptors to intranuclear DNA are presented with insight. The emphasis is mainly on the dynamic aspects of the process such as distribution and equilibria of architectural proteins and protein kinase activities. Other important aspects of transduction such as changes in cell morphology and availability of cytoloplasm-produced metabolites are acknowledged but not considered. The subject of DNA damage and repair is succinctly exposed and linked to some known hereditary human disorders in which a repair function does not conform to the normal cellular response to DNA damage.

The chapters on PCR, molecular cloning, and use of DNA probes deal mostly with standard techniques in experimental molecular genetics.

Overall, I enjoyed reading Volume 5. It covers quite satisfactorily most of the important subjects in the field of molecular and cellular genetics. Graduate students in biochemistry, molecular biology, and genetics may find the book edited by the Bittars useful and informative. The introductions of each chapter review concisely some important basic principles in the field. Unfortunately, by 1998, Volume 5 of *Principles of Medical Biology* is out of date. While this may limit its value for researchers, the book can be quite useful for trainees, graduate students, and educators.

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JA975579O

S0002-7863(97)05579-0

Plasma Source Mass Spectrometry: Developments and Applications. Edited by Grenville Holland (University of Durham) and Scott D. Tanner (PE-Sciex). American Chemical Society: Washington, DC. 1997. x + 329 pp. $136.00. ISBN 0-85404-727-1.

This book represents the proceedings of the 5th International Conference on Plasma Souce Mass Spectrometry, which was held in September 1996 at the University of Durham, U.K. There are 31 papers on ICP mass spectrometry and 1 on glow discharge emission spectrometry. The ICP-MS papers span a wide range of interests, with fundamental papers on (a) the effects of droplets and particles on the ICP, (b) space charge effects on ion optics, (c) the use of a hexapole collision cell for removing polyatomic ions, (d) a magnetic sector MS that is capable of higher spectral resolution and sensitivity than the usual quadrupole analyzer, and (e) the use of solvent removal and multicomponent analysis to deal with spectral interferences.

Applications of ICP-MS is the main theme of this conference, and some of the topics emphasized include flow injection for matrix removal and preconcentration, speciation, the analysis of biological materials such as urine, plants, and food, trace element measurements in steel, landfills, drinking water, and Antarctic waters, radionuclides in concrete, etc.

All the papers are quite current. Some are of very high impact, such as the initial description of the desolvated microconcentric nebulizer. Except for a few overview papers, each article is an original work, not a rehash of material published elsewhere. The application papers span most of the scientific uses of ICP-MS and provide a good picture of the types of problems addressed by this technique. The papers are edited to a fairly uniform format. There are very few errors, the most serious one being the statement on p 52 that a shielded plasma cannot be operated under normal "hot" conditions. A good index is provided.

This book is very valuable for the ICP-MS practitioner who wants a survey of the main new developments under a single cover. It belongs in the library of every research group or institution that is active in ICP-MS. It is not a textbook but would serve as a valuable resource for any course in analytical atomic spectrometry, in a mass spectrometry course that includes inorganic analysis, or in an instrumental analysis course. I commend the editors for a job very well done.

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JA975652A

S0002-7863(97)05652-7

Catalytic Reductive Carbonylation of Organic Nitro Compounds. By Sergio Cenini and Fabio Ragaini (Università degli Studi di Milano). Kluwer Academic: Dordrecht. 1997. xii + 340 pp. $169.00. ISBN 0-7923-4307-7.

This monograph is the 20th volume in the series Catalysis by Metal Complexes edited by Renato Ugo and Brian R. James. These generally involve comprehensive reviews of a narrowly defined topic within the field of catalysis. Such is the case with the current book. Catalytic carbonylations of nitro groups, especially for the production of isocyanates and carbamates, are of special interest as a replacement for existing phosgene-based technology. The great interest in this area originated in industrial laboratories, and a large portion of the literature is located in patents. To their credit, the authors have included a review of the patent literature, and this summary alone greatly enhances the value of this volume. Many of the catalytic systems are homogeneous and are based on soluble complexes of palladium and ruthenium. Throughout the book, the authors nicely complement the survey of

catalytic conditions, yields, etc. with potentially relevant stoichiometric chemistry.

After a brief introduction (Chapter 1), highlights are given for the synthesis of isocyanates (Chapter 2), carbamates and ureas (Chapter 3), amines, imines, azo derivatives, and other noncyclic compounds (Chapter 4), and heterocycles (Chapter 5). A thorough summary of the kinetic and mechanistic studies is included in Chapter 6. Over the past decade and a half, the authors have published extensively on their own research in this field and are two of the leading authorities in this area. This book will be a useful addition to the library of researchers working in this area. It also represents an excellent starting point for someone interested in developing a program in catalytic carbonylations.

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JA975571E

S0002-7863(97)05571-6

Structure and Properties of Rubberlike Networks. By Burak Erman (Bogazici University) and James E. Mark (University of Cincinnati). Oxford University Press: New York. 1997. xiii + 370 pp. $70.00. ISBN 0-19-508237-0.

Both Erman and Mark are well-known for their research contributions to rubberlike elasticity, and they have brought that experience to the preparation of this work to review a wide range of topics on the subject. This book covers much the same subject matter as their earlier introductory work, *Rubberlike Elasticity: A Molecular Primer*, Wiley, 1988, but at a much more comprehensive level, and does so in a readable, concise style. The authors limit their scope to equilibrium properties throughout, eschewing much discussion of viscoelastic behavior as a subject still too much in progress to be within their scope. The initial chapters of the new book present models for the equilibrium elasticity of network polymers in sufficient detail for the reader to comprehend the development of the field from its earliest days through recent treatments, with citations to much of the relevant original literature. The four chapters comprising this presentation will be a valuable resource, both to the scholar new to the subject and to those with some experience in the field. The models presented are applied in subsequent chapters to the discussion of several experiments, including the stress−strain behavior of network polymers, the swelling of networks, critical phenomena and phase transition in gels (i.e., in highly swollen networks), and thermoelasticity. Developments in numerical simulation of network elasticity are discussed, as are issues of segmental orientation in a strongly deformed network, the use of small-angle neutron scattering to study the chain structure in a network under deformation, and the preparation of model network polymers. These chapters provide useful, concise surveys of the literature on these diverse subjects. An additional four chapters deal with specialized topics, at various levels of development. These include networks from semiflexible chains, networks with complex distributions for the lengths of the chains between cross-links, networks comprising biopolymers, and networks filled with rigid particles. Each of these will be useful entries to the field, and are well documented. The authors emphasize the disparity between the strong technological importance and the relative lack of theoretical treatments available for filled elastomers. Finally, the authors have included an eclectic set of appendices, and a general bibliography to augment the literature cited at the end of each chapter. Each entry in the bibliography is annotated with a comment on the relation of the content to rubberlike elasticity.

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JA9756681

S0002-7863(97)05668-0

Modern Catalytic Methods for Organic Synthesis with Diazo Compounds from Cyclopropanes to Ylides. By Michael P. Doyle. Wiley: New York. 1998. v + 652 pp. $69.95. ISBN 0-471-13556-9.

This book is a worthy addition to the experimentalist's library with some caveats. The authors have reviewed the, primarily English language, literature covered by the title. They have primarily concentrated on literature which has appeared since 1980. There has been considerable growth in the area since the recognition of the utility of employing chiral ligands to gain enantiomeric excesses and the employing of catalysts based on metals other than copper as a result of the work of Aratani with chiral copper(II) salicylimine systems and that with ruthenium by Robert Paulissen and Andre Hubert at Liege. An earlier treatise of metal salt catalyzed carbenoid reactions published in 1980 does exist. Users are cautioned to employ *Chemical Abstracts* back to 1900 to avoid repeating and reporting work which has already been accomplished.

The primary thrust is toward synthetic applications with numerous clearly presented reaction schemes, which include general conditions and tabulations of the impact of variation. They have included a number of specific experimental procedures which have been interleaved within the text and reaction schemes. Their number is perhaps excessive and occupies considerable space.

There are some mechanistic treatments. Sadly the present treatise is uncritical and repeats a number of simplistic proposals. Some of the mechanisms advanced were originally put forth by workers other than those cited.

Considerable attention is given to the question of the valence state of copper in diazo carbenoid reactions. It is not established, and the work cited to support Cu(I) is severely faulted. An uncited alternative interpretation and rebuttals have been published in full detail and include responses from the copper(I) proponent.

Each chapter ends with full references to the work cited, including titles, but there is no list of authors. The index is primarily one of compounds and at times becomes obscure due to employing acronyms for the multitudinous ligands employed to modify catalyst behavior. A glossary would have been most helpful for the intended users. If they knew what the acronyms meant, they probably would not need the book.

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JA985631W

S0002-7863(98)05631-5