eficial as a handy reference source. It offers what is probably the most complete coverage of the topic by recognized authorities to date.

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Nitration, Methods and Mechanisms. By George A. Ohla, R. Malhotra, and S. C. Narang. VCH Verlagsgesellschaft, Weinheim, 1989, xii + 325 pp., ISBN 0-89573-144-4, $65.00 (hardback).

After an ultrabrief (first) chapter (all of 7 pages) addressed loosely to "Definitions, Historical, Scope, Mechanistic Classification and Industrial Use and Research Significance," the authors plunge into a tedious second chapter (96 pages) on "Reagents and Methods of Aromatic Nitration." Then comes an interesting third chapter (90 pages) on "Mechanisms of Aromatic Nitration," followed by the fourth and concluding chapter (67 pages) on "Aliphatic Nitration".

The third chapter, on the mechanisms of aromatic nitration, is very interesting and really is the "meat" of the book. The second chapter is descriptive and, at best, tedious and impossible to read. Chapter 2 laboriously describes every conceivable reagent and method used in aromatic nitrations. A comprehensive list of reagents, as, for example, compiled in Table 41 of Chapter 3, is much more useful. Furthermore, many of the reagents and methods are repeated when the mechanisms are discussed in the next chapter.

Chapter 4 contains a hodge-podge of various "aliphatic" nitrations. While this category would certainly include nitration of alkanes and cycloalkanes, also discussed are active methylene nitration by means of alkyl nitrites, nitrodesilylation and nitrodestannylation, nitration of alkenes, nitromercuration and nitroselenation, and nitration at heteroatoms. This reviewer always thought of the formation of alkyl nitrates as an esterification rather than a nitration on oxygen. It is true that alkyl nitrates can be formed by several methods, but why not entitle the section as one on alkyl nitrates rather than nitration on oxygen? In terms of various mechanisms, the last set of topics drifts into many different mechanistic territories, such as an S_N reaction of an alkyl halide with nitrite ion, which can hardly be labeled as nucleophilic aliphatic nitration.

While the book has abundant examples on how to introduce nitro groups into organic molecules, a researcher (or teacher) will have to hunt around to find the information and is sometimes confronted with lesser-known name reactions in organic chemistry. I am not at all sure how many are familiar with the ter Meer and Kaplan-Schechter reactions. One might as well look up the preparation of specific compounds in *Chemical Abstract* instead of chasing around in this book to find appropriate examples.

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Biomimetic Polymers. Edited by Charles G. Begelein. Plenum Press, New York, 1990, viii + 297 pp., $75.00.

This book is a collection of 16 papers, 10 of which are based on the proceedings of the American Chemical Society Symposium on Enzyme Mimetic and Related Polymers, held at the Third Chemical Congress of North America, July 5–8, 1988, in Toronto, Ontario, Canada. The book primarily describes methods for creating synthetic polymers which imitate the activity of natural bioactive polymers. The individual papers are rich in experimental results and conclusions which may stimulate further thoughts and research interests. What is most noteworthy is the fact that the structural monomeric units of the naturally occurring bioactive polymers serve as the base for synthetic polymers. The book is well edited; however, a few typographical errors have been noted (e.g., 31 instead of 51 amino acids for insulin, Chap. 16, p. 282, paragraph 4, line 3).

Several classes of important biopolymers have been considered. The first seven papers describe studies involving polymers which mimic the catalytic activity of enzymes. Some of these polymers can find their use as catalysts in stereoselective synthesis and in chiral preparative chromatography. In the first chapter, utilization of polymers with chiral cavities in organic synthesis is nicely described by Wolff. Burdick and Schaeffer then describe the application of thin films of some biocatalysts, similar to photographic films, in the synthesis of some important biochemicals. The third chapter (Mathias *et al.*) illustrates enzyme-like activity of polymers based on 4-diallylaminopyridine that can catalyze hydrolytic and esterification reactions. All of these chapters are descriptive with good illustrations. In Chapter 4, Carraher *et al.*, detail the inclusion chemistry and unique biochemical reactions of potentially bioactive poly(amino acids) containing platinum or titanium atoms. Zeolites and inorganic analogues of biopolymers are described in Chapter 5 as potential biomimetics with various-sized cavities (Herron). The illustrations in Chapter 4 could have been improved, whereas those in Chapter 5 could have been minimized.

The sixth and seventh chapters describe the modification of natural polymers to introduce enzymic properties. Hilvert discusses the bioactivity of catalytic antibodies, and Keyes and Albert describe the structural modification of ordinary proteins to make them behave like regular enzymes. References to any recent review article in this area would have been helpful.

Heparin, an anionic polysaccharide anticoagulant, is the central polymer in the next three chapters (Chapters 8–10). Linhardt and Loganathan describe in detail the chemistry and biological properties of heparin and biomimetic analogues of heparin. The extracorporeal removal of heparin from the blood is the subject matter covered by Yang and Teng. The final chapter in this group by Aleyamma and Sharma deals with the blood compatibility of some potential dialysis membranes derived from polyvinyl alcohol and containing heparin-like polymers.

The membrane theme continues in Chapter 11, by Imanishi and Kimura, who describe the use of synthetic polypeptides as components of membrane compartment polymers for the enkephalins. In the next two chapters Penczek and Klosinksi describe the synthesis of two important classes of bioactive polymers, the teichoic acids (found in the cell walls of many bacteria) and the nucleic acids. These two chapters are extremely well written, including the classic example of using a nucleic acid analogue in actual therapy. Takemoto *et al.*, in the following chapter, also describe nucleic acid analogues, but the chemistry is based on polypeptides or polyethylene imines with pendant nucleic base units. The next synthetic nucleic acid paper by Gebelin contains an extensive discussion on medical applications of nucleic acid analogues. The final chapter, by Wang, details the sustained delivery of insulin in rats at low dose levels.

The book could have been more organized by grouping similar chapters under subsections or subheadings. However, the editor was successful in assembling a group of renowned scientists working in the area of biomimetic polymers. This book is the first of its kind addressing the use of novel biomimetic polymers in medicine, particularly in controlled drug delivery. I can recommend this book to any research scientist working in the fields of biopolymers, biomaterials, and novel drug delivery systems. It will be a valuable addition to all research libraries.

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