berry sauce, or a vinaigrette consisting of 100 mL of lemon juice and 60 mL of oil (sesame oil!).

The verdict: the reader who wishes to go into the subject thoroughly, combining scientific accuracy with plenty of interesting and absorbing information, should buy Harold McGee's *On Food and Cooking—The Science and Lore of the Kitchen*. On the other hand, the reader seeking tasty recipes, precisely described and guaranteed to work, together with the chemistry involved in them, should buy Hervé This's *Révélations Gastronomiques.*

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Asymmetric Organic Reactions. Edited by *Tsutomu Katsuki*. Oxford University Press, Oxford 2001. xviii + 244 pp., hardcover £ 75.00.—ISBN 0-19-850201-X

This book is the tenth in the *Practical Approach in Chemistry* series, whose aim is to make important chemical techniques more accessible. As a contributor to another volume in the series, I should say that I consider this a laudable aim. The majority of the titles in the series have concentrated on preparative organic techniques, and this book on the topic of asymmetric oxidation, edited by Tsutomu Katsuki, is a very welcome addition. The list of authors reads like a "Who's Who" of the subject, and the book promised to be a very valuable source of practical tips of a kind that would not usually be included in a full paper. (The only source of more detailed, tested procedures is, of course, *Organic Syntheses.*) The book is divided into five sections dealing with asymmetric oxidation of C–H bonds (13 pp.), asymmetric oxidation of C=C bonds (127 pp.), asymmetric oxidation of C=O bonds (5 pp.), asymmetric oxidation of heteroatoms (28 pp.), and asymmetric oxidations using biocatalysts (45 pp.). The lengths of these sections not only reflect the relative importance of these topics but also indicate the level of maturity of the procedures that are available.

The style of the chapters is relatively uniform, including a brief overview of each area, followed by a representative selection of experimental procedures, which are generally written in such a way as to allow anyone with a reasonable training in practical organic chemistry to carry them out. One especially useful feature throughout the book is that in most cases procedures for determining *ee* values are also included.

Many of the procedures use commercially available materials. In other cases, however, the key starting materials are only described by reference to the primary literature; I feel that these latter procedures are unlikely to inspire the reader to get into the laboratory. Nevertheless, if you want an authoritative and comprehensive answer to a question such as "how can I best carry out an asymmetric hydroxylation of a disubstituted alkene", you need look no further than this book.

Although the book was published in 2001, you have to search very hard for references after 1997. This presumably reflects the time that it takes to coordinate the preparation of such a book, but it does mean that subjects in which there have been significant recent advances (for example, in asymmetric nucleophilic epoxidation, particularly as reported by the Shibasaki group) are not especially up-to-date. However, given that the book does not aim to be a research monograph, this is not a significant failing.

The inclusion of a substantial chapter on biocatalysts is a good feature in my view, and some transformations that are very interesting from a preparative viewpoint are described. Nevertheless, I feel that many traditionally trained organic chemists would struggle to carry out the transformations, since several unfamiliar techniques are necessary. It would have been useful to provide indications of suitable types of laminar air-flow cabinets, autoclaves, and bench-top fermenters, which appear to be the tools of the trade, with information about where they might be obtained. While most organic chemists will appreciate the precautions that need to be taken handling chemicals, I am not sure that they would know what to do with a Class 2 pathogen, and a little more guidance would have been welcome.

This book should be in every chemistry library, and I wholeheartedly recommend it.

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Peroxide Chemistry. Research Report. Mechanistic and Preparative Aspects of Oxygen Transfers. Edited by *Waldemar Adam.* Wiley-VCH, Weinheim 2000. 664 pp., softcover DM 198.00.—ISBN 3-527-27150-3

This very interesting book summarizes the results of a 6-year (1993–99), and 10 million DM, priority program of the Deutsche Forschungsgemeinschaft (DFG) with the same title. As such it is not a systematic monograph reviewing the field, but rather a compilation of reports on the individual projects involved, covering different aspects of the subject. Being a research report of a national funding institution, it is almost exclusively devoted to the work of German chemists. Yet, because of the excellent level of the German school in this area of chemistry, and the brief comparison with the international context that appears at the beginning of each individual report, it gives a fairly comprehensive and timely picture of what is going on in peroxide chemistry nowadays. As a research report, the book is mainly intended for experts in the wide area of peroxide chemistry, but it can also be of notable interest for organic and organometallic chemists in general.

The book is edited by Waldemar Adam, a worldwide recognized authority in the field, who contributes an interesting preface which includes the history of how the national program was conceived and launched. There is something to learn from this story which goes beyond the actual scientific context. In fact, given the success of the initiative as an investment, as an organizational model, and as scientific outcome, the preface (and the book) could also make interesting and fruitful reading for sci-

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entific administrators in national institutions (outside Germany) which provide support for fundamental research.

The contributions (30) are organized in five sections: A–Historical Mementos; B–Oxidation with Organic Peroxides; C–Enzymatic and Biomimetic Oxidations; D–Metal-Catalyzed Selective Oxidations; E–Spectroscopy/Theory. Each section is introduced by an invited contribution (review) on the field covered, and continues with a number of reports (varying from 4 to 13 apart from Section A) on the individual projects. Section A consists of one contribution (an invited one by M. Schulz): a very interesting history of the birth and development of peroxide chemistry during the past century, providing information that would be difficult to collect from other sources.

Section B (Oxidation with Organic Peroxides) opens with a review by W. Zeiss on homogeneously catalyzed epoxidations with emphasis on industrial applications. The remaining chapters address various facets of peroxide chemistry that do not involve metals: the use of azidohydroperoxides (A. G. Griesbeck), of singlet oxygen (W. Adam), of organosulfonic and sulfonimidic peracids (R. Kluge), the generation, characterization, and use of dioxiranes (W. Adam, W. Sander, H. D. Brauer), and the in-situ generation (from hydrogen peroxide) and use of peroxynitrous acid (H. Elias).

Section C (Enzymatic and Biomimetic Oxidations) starts with a review (by G. Spiteller) of the latest results on the consequences of lipid peroxidation in age-dependent diseases such as Alzheimer's and Parkinson's, diabetes, atherosclerosis, etc. It continues with more traditional subjects such as the generation and use of peroxycarboxylic acids by lipase (S. Warwel), the oxyfunctionalization of catechols and flavonols using Fe and Cu complexes (B. Krebs), the binding and activation of dioxygen by biomimetic ketoenamine complexes (E. G. Jäger), and the highly diastereoselective synthesis of functionalized tetrahydrofurans catalyzed by vanadyl complexes (J. Hartung).

Section D is dedicated to metal-catalyzed selective oxidations, and comprises the largest number (13) of individual contributions. The opening chapter by T. Katsuki gives a detailed review of enantioselective epoxidation, C–H hydroxylation, aziridination, and cyclopropanation using chiral metallo-salen complexes. The section continues in the same vein, with several chapters dedicated to the various facets of epoxidation (synthetic and mechanistic aspects, new catalysts, etc., by W. A. Herrmann and W. R. Thiel), enantioselective epoxidation (R. W. Saalfrank, T. Linker, A. Berkessel), oxidation of substituted arenes (A. Rieker), enantioselective Baeyer–Villiger oxidation (C. Bolm), oxidation of phenols, alcohols, and amines (K. Krohn), photocatalytic activation of oxygen by Fe porphyrins (H. Hennig), and the use of perfluorinated solvents (P. Knochel).

Finally, Section E (Spectroscopy/Theory) concludes the book with four contributions: an account by R. D. Bach of work on the nature of transition structures for oxygen transfers from peroxy acids, dioxiranes, and chiral bis(silyl)peroxides, some density functional studies on the mechanistic aspects of catalytic olefin epoxidation (N. Rösch), electronic spectroscopy of singlet oxygen and its photodissociation to oxygen atoms (M. S. Gudipati), and the chemistry of peroxides in the gas phase in the presence of transition metal ions (D. Schröder).

As in many books of this type, the style and breadth of the individual chapters is rather uneven. Some contributions have a broader scope whereas others deal with very specific aspects of peroxide chemistry. However, as I said, the average quality is remarkably high and the overall coverage wide. Personally, I noted the absence of two important fields of catalysis with organic peroxides: the use of polyoxometallates and the use of heterogeneous catalysts for the synthesis of bulk and specialty chemicals. As a matter of fact, the latter topic does not traditionally fall within the domain of organic chemistry but is usually assigned to other areas. In both cases, I believe that these omissions reflect the "national" character of the report.

There is no keyword index, but the individual topics can be located easily through a very detailed table of contents, prepared according to the style of other monographs from Wiley-VCH.

Given the broad scope of the original program, the excellent reputation of all the scientists involved, and the wealth of new results that are reviewed, in my opinion the book constitutes the most comprehensive report in this area of organic chemistry since the publication of the Patai classic *The Chemistry of Peroxides* almost 20 years ago.

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Experimental Methods in Polymer Science. (Series: Polymers, Interfaces, and Biomaterials.) Edited by *Toyoichi Tanaka*. Academic Press, San Diego 2000. xii + 604 pp., hardcover £ 59.95.—ISBN 0-12-683265-X

This book aims to introduce the reader to the most important characterization methods used in modern polymer science. It consists of six chapters providing a thorough description of modern techniques of polymer analysis, at a level suitable for readers who already have a basic knowledge of the chemistry and physics of polymers. Chapters 1–5 deal in turn with light scattering methods, neutron diffraction, fluorescence spectroscopy, NMR spectroscopy, and mechanical spectroscopy. A sixth chapter is devoted to phase transformations in polymer gels. Most of the chapters are very useful, as they summarize the latest published work on particular methods in a clear and understandable form, providing a starting point for a more detailed study. Therefore the book is a valuable addition to the literature, and all libraries should have a copy.

The first chapter, by Wu and Chu, is especially useful. It covers static and dynamic light scattering, providing a very readable survey of currently used methods. The chapter is too condensed for beginners, but it offers those with some knowledge of the subject a quick and convenient route into the recent literature. It also provides a useful overview of the most important theoretical results and, for example, lists the main theoretical expressions for shape factors in light scattering by polymers. The part

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