

PUBLICATIONS

Book reviews

Preparative-Scale Chromatography (Chromatographic Science Series, Vol. 46), edited by Eli Grushka (Marcel Dekker Inc., 270 Madison Ave., New York, NY 10016, 1989, 344 pp., \$99.75 US and Canada, \$119.50 elsewhere).

This latest offering from the Chromatographic Science Series gives an informative and up-to-date discussion of large-scale chromatography. Although this volume deals mainly with preparative liquid chromatography (PLC), other preparative methods such as gas, countercurrent and thin-layer chromatography are also discussed.

The various contributors to this book have provided detailed equations and calculations to aid the reader in column design and operating parameter optimization. Subjects discussed in detail include: simulation of band propagation, solute-solute interactions, column design, optimum injection and column operating conditions, influence of sample mass and flow velocity, role of packing particle size, and characterization of strongly nonlinear elution peaks. Although the examples of compounds separated by using preparative-scale chromatography will not typically be of interest to oil chemists, the general nature of the remainder of this book makes it useful for anyone wishing to perform this technique.

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Crystallization and Polymorphism of Fats and Fatty Acids (Surfactant Science Series/31), edited by Nissim Garti and Kiyotaka Sato (Marcel Dekker Inc., 270 Madison Ave., New York, NY 10016, 1988, 464 pp., \$150 US and Canada, \$180 elsewhere).

Polymorphism, the property of crystallizing in two or more forms with distinct structure, is commonly found in fats and fatty acids. This theoretically intriguing phenomenon has important practical ramifications in the fats and oils industry—

in margarines, cocoa butter and other products.

This book consists of 11 chapters by 10 contributors. Six chapters are grouped under the heading "Fundamentals" and five under the heading "Applications." Most of the chapters have comprehensive reference lists, so that the book serves as an excellent guide to the extensive literature in this area through the year 1986. Some of the most recent references, of course, are not included; although unavoidable, it is a limitation in this rapidly developing field.

Most of the important techniques used in studying polymorphism are discussed in this book. In Chapter 2, Hagemann concentrates on thermal analysis (especially differential scanning calorimetry) of acylglycerides. Hernqvist (Chapter 3) discusses "Crystal Structure of Fats and Fatty Acids" by using mainly information obtained by X-ray diffraction, although other relevant techniques are discussed as appropriate here and throughout the book. Kobayashi (Chapter 4, "Vibrational Spectroscopic Aspects of Polymorphism and Phase Transition of Fats and Fatty Acids") emphasizes infrared and Raman spectroscopies. Precht (Chapter 8, "Fat Crystal Structure in Cream and Butter") presents many electron micrographs of cream and butter, obtained using a freeze-fracturing technique. The micrographs are all of excellent quality, printed on paper suitable for reproduction. There is no discussion of nuclear magnetic resonance; broad line NMR shows promise as a rapid measure of the solid content of fats, and high resolution NMR should be of value in studying polymorphism.

The solid-solid transitions of triglycerides seem to be presented without much explanation of how one solid structure can be transformed into another without passing through a more amorphous (melt) intermediate phase. Some investigators dispute that such transformations can take place and if an intermediate exists and is very short-lived, it may not be detected by the conventional techniques used in polymorphism studies.

The chapters dealing with applications are well-written and timely. Chapter 7 ("Effects of Surfactants on Crystallization and Polymorphic Transformation of Fats and Fatty Acids") by Garti gives examples of the crystallization of triglycerides in the presence of emulsifiers. This is practical information since many food products (such as margarines) in which fat crystallization is important do include emulsifiers. Chapter 9 ("Purification and Polymorphism in Cocoa Butter and the Blooming Problems") by Schlichter-Aronhime and Garti and Chapter 10 ("Material Design for Hard Butter from Vegetable Fats") both contain material with obvious practical application.

Even in today's market, \$150 seems excessive for this book, but it is well-written by authorities in the field and will be a valuable reference for those working in this area.

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Fatty Acids in Industry, edited by Robert W. Johnson and Earle Fritz (Marcel Dekker Inc., 270 Madison Ave., New York, NY 10016, 1989, 667 pp., \$150).

This book is a fitting successor to *Fatty Acids and Their Industrial Applications* edited by E. Scott Pattison more than 20 years ago. This new book is a fairly large volume containing 23 chapters written by 25 contributors, including the editors. Most of the authors are quite well-known in the fats and oils industry. Each author has written a good comprehensive review of his assigned subject. The book format follows a rather logical and orderly progression. The subjects covered include sources of fatty acids, processes, derivatives and applications.

Chapters 1-5 deal with raw materials, fat splitting, distillation and hydrogenation of fatty acids. Chapters 6 through 10 describe reactions and derivatives of fatty acids. Chapters 11-13 cover the less common fatty acids including branched, synthetic and dibasic acids.

A broad range of applications of fatty acid is dealt with in almost half

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the book—chapters 14–21. The application part is quite thorough as it should be in a book on fatty acids in industry. This section of the book may be most practical for industrial fatty acid users. The application chapters cover the use of fatty acid derivatives in emulsifiers, synthetic lubricants, oil-field chemicals, metal-working fluids, flotation chemicals, textiles, paper and cosmetics. Finally, as is appropriate in our present environmentally protective climate, the last two chapters are concerned with pollution control and biological and toxicological properties of fatty acids and their derivatives.

The book is adequately illustrated and has many tables and figures. The publisher claims over 2,100 references. Some of the authors were quite meticulous in updating the citations; others were not. Chapter 15, on synthetic lubricants, has no references at all.

I believe this book should be useful to both the industrial and academic communities. There is much for both the specialist and the novice in the field. A great deal of information is covered in one text regarding the fatty acid industry, and it fills the need for more recent coverage of fatty acids and their applications. One of the editors—Earle

Fritz—died before the book was published. Earle was well-known to many of us in the fatty acid industry. Indeed, the book is a fitting memorial to him.

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New books

Proceedings of the World Congress on Vegetable Protein Utilization in Human Foods and Animal Feedstuffs, edited by T.H. Applewhite, American Oil Chemists' Society, PO Box 3489, Champaign, IL 61826-3489, 1989, 575 pp., \$95 for AOCS members, \$125 for nonmembers.

Complying with WHMIS: The U.S. Manufacturer's Guide to Canada's Chemical Labeling Regulations, by James T. O'Reilly, Roytech Publications Inc., PO Box 4367, Burlingame, CA 94011-4367, 1989, 280 pp., \$75.

Other publications

The International Castor Oil Association has published a pamphlet, **The Processing of Castor Meal**

for Detoxification and Dealler-generation. Toxicity and allergenicity are reviewed, and development work leading to a process for producing a meal suitable for animal feed use is discussed. Copies of the 75-page pamphlet are available from the association at 656 Linwood Ave., Ridgewood, NJ 07450, and cost \$17 for North American orders, \$22 overseas postpaid.

The Leatherhead Food R.A. has three new publications: **International Snack Foods Market, UK New Products Analysis 1988 and The Year in Perspective 1988**. The **Year in Perspective 1988** presents an overview of developments in the UK retail food and drink markets. It costs £100 for members, £250 for nonmembers. **UK New Products Analysis 1988** analyzes sectors by product type. Member price is £100; non-member price is £250. **International Snack Foods Market** focuses on salted, fried snacks. Member price is £145; non-member price is £295. Contact: The Leatherhead Food R.A., Randsalls Road, Leatherhead, Surrey KT227RY, England.

NEW PRODUCTS

M.O.S.T. CONCEPT

Herzog-Hart Corp. has introduced Multistep Organic Synthesis Technology (M.O.S.T.) for cost-effective design and construction of individually configured batch fine chemical and pilot plants. The concept uses proven technology and existing engineering designs from the company's database; Herzog-Hart claims this resource can result in substantial time and cost savings. Contact: Herzog-Hart Corp., 185 Dartmouth St., Boston, MA 02116.

LASER SAMPLER

Perkin-Elmer SCIEX Instruments' Model 320 laser sampler is design-

ed to permit direct elemental analysis of virtually any solid material without sample preparation. The system can be used with any Perkin-Elmer SCIEX ELAN inductively coupled plasma-mass spectrometer and offers high sensitivity, reduced interference and minimized sample contamination. The Model 320 laser sampler is controlled by a personal computer and is equipped with a sampling stage capable of three-dimensional positioning. Contact: The Perkin-Elmer Corp., 761 Main Ave., Norwalk, CT 06859-0012.

GAS FLOWMETERS

McMillan Co. offers a line of plastic

gas flowmeters, available in 10 ranges to cover gas flow rates from 10 ml/minute up to 100 liters/minute. The company claims readings are highly repeatable, with linearity better than 13% full scale. Measurements are displayed on an LCD digital display with numerals 0.39 inches tall. A 0-5 VDC recorder output signal and an AC-DC adapter plug are provided. Contact: McMillan Co., 1301 Sparrow Trail, Copperas Cove, TX 76522.

PESTICIDE ANALYZER

Carlo Erba's pesticide analyzer is a state-of-the-art automatic GC system for evaluating pesticide com-