

## PUBLICATIONS

### Book review

**Flavor Encapsulation (ACS Symposium Series 370)**, edited by Sara J. Risch and Gary A. Reineccius (American Chemical Society, Distribution Office, Dept. 281, PO Box 57136, West End Station, Washington, DC 20037, 1988, 202 pp., \$54.95 US and Canada, \$64.95 elsewhere).

This book was developed from a symposium sponsored by the American Chemical Society's (ACS) Division of Agricultural and Food Chemistry at the 194th meeting of ACS, held in New Orleans, Louisiana, Aug. 27-Sept. 4, 1987. The first chapter presents an overview of the subject and terminology for such terms as microcapsules (1-1000 $\mu$ ), nanocapsules (<1 $\mu$ ), and capsules (approximately 1mm). Several important characteristics of microcapsules are described. These include: reaction reduction of core material with the outside environment (oxidation, hydrolysis); decrease in evaporation loss of the core material; ease of handling; regulation and control of the release of the core material; and taste masking the material. General methods of forming capsules also are given.

It is interesting to note that the National Cash Register Company (NCR) obtained many of the early patents on microencapsulation to make carbon paper that would not transfer the ink to a person's hands during handling yet would transfer the ink to paper when struck by a sharp blow. Later, 3M used this technology to encapsulate some of the early flavors that were used. Although early work in pharmaceuticals and agricultural materials is referred to in this opening chapter, there is no mention of the NCR patents, which are important historically in the development of microencapsulation.

At least eight of the 18 chapters cover materials used for encapsulation. These include maltodextrins; corn starch; modified starches of maize, rice, cassava and potato; acacia gums; alginates; gelatin; and cyclodextrins. Processing techniques that have been used—spray-drying, extrusion, coacervation and molecular inclusion—are covered throughout the book. There also are several chapters on the physical characteristics of an encapsulated flavor, such as flavor retention, controlled release of core material and protection against oxidation.

Chapter 7, written by one of the editors, covers the subject of spray-drying food flavors very well. Several process parameters are reviewed, showing how each affects volatile retention. For example, the solids content of the infeed to the spray drier is the primary factor that determines volatile retention. Other factors having an effect are air velocity, inlet/outlet temperatures, molecular weight and viscosity. The shelf life of spray-dried flavorings is only briefly covered in this chapter as it is a topic presented by several other contributors to this monograph. For instance, in Chapter 4, orange oil stability is shown to be dependent upon the oligosaccharide used in the wall of the capsule. Similarly, Chapter 6 points out

that various starches, when used for the capsule wall, had an effect upon orange terpene oxidation rates.

Chapters 8, 9 and 12 are directed exclusively to factors that affect flavor retention and shelf stability of encapsulated materials. For instance, cyclodextrins have been shown to encapsulate flavors to achieve good retention and stability. Chapter 16 covers this aspect of encapsulation in a brief, concise manner.

Much research has been directed toward the release properties of capsules. Chapters 17 and 18 cover how release aspects can be controlled.

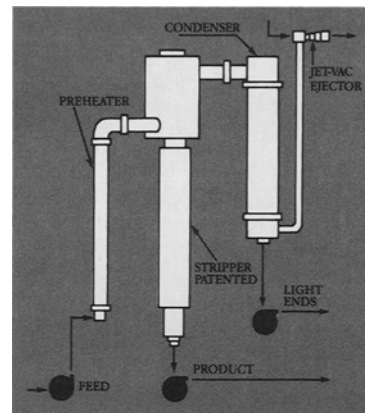
This book will be of interest to anyone working in the food and flavor industries. This reviewer is not aware of any other recent book that covers the subject so thoroughly.

Thomas H. Smouse  
Archer Daniels Midland Co.  
Decatur, Illinois

### New books

**Surfactants and Interfacial Phenomena, 2nd edition**, by Milton J. Rosen, John Wiley & Sons Inc., 1

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Wiley Dr., Somerset, NJ 08875-1272, 1989, 431 pp., \$49.95.

**Troubleshooting LC Systems: A Comprehensive Approach to Troubleshooting LC Equipment and Separations**, by John W. Dolan and Lloyd R. Snyder, The Humana Press, Crescent Manor, PO Box 2148, Clifton, NJ 07015, 1989, 524 pp., \$65 US, \$75 elsewhere.

**Engineering Thermodynamics with Heat Transfer, 2nd edition**, by William L. Haberman and James E.A. John, 1989, Allyn & Bacon, 160 Gould St., Needham Heights, MA 02194, 705 pp., \$50.

**Annali dell' Istituto Sperimentale per la Elaiotecnica**, by Angelo Cucurachi, Via Cesare Battisti, 198, 65123 Pescara, Italy, 1988, 280 pp. Contact publisher for price.

**Enzyme Assays for Food Scientists**, by Clyde E. Stauffer, Van Nostrand Reinhold, 115 Fifth Ave., New York, NY 10003, 1989, 317 pp., \$62.95.

**Pesticide Residues in Food**, by the Office of Technology Assessment, U.S. Government Printing Office, Dept. SSMC, Washington, DC 20401, 1988, 244 pp., \$10.

**The Logic of Chemical Synthesis**, by E.J. Corey and Xue-Min Cheng, John Wiley & Sons Inc., 605 Third Ave., New York, NY 10158, 1989, 436 pp., \$29.95.

### Other publications

The American Chemical Society's Committee on Chemical Safety has written the **Chemical Safety Manual for Small Businesses**. The first four copies cost \$5 each; each additional copy costs \$2. Contact: The American Chemical Society, Distribution Office, Dept. 259, PO Box 57136, West End Station, Washington, DC 20037. Also, free, single copies of **Chemical Risk Communication—Preparing for Community Interest in Chemical Release Data** are avail-

able by sending a self-addressed mailing label to Tanja Lewis, Department of Government Relations & Science Policy, American Chemical Society, 1155 16th St. NW, Washington, DC 20036.

**AgBiotech News and Information**, a bi-monthly publication by CAB International, will include biotechnology application methods, review articles and news. Subscriptions are \$375 in the US, £ 198 elsewhere. Contact: CAB International, Wallingford, Oxon OX10 8DE, United Kingdom, or CAB International, 845 North Park Ave., Tucson, AZ 85719, USA.

The Alliance of American Insurers has updated its **Handbook of Hazardous Materials** to contain information about more than 450 chemicals. The price is \$16. Contact: Alliance of America Insurers, Order Dept., 1501 Woodfield Rd., Suite 400 W., Schaumburg, IL 60173.

Hopkins Technology, a CD-ROM (Compact Disc-Read Only Memory) publisher, has available the **Food/Analyst CD-ROM**. The database lists more than 80 nutrients in nearly 5,000 foods. It costs \$65. Contact: Hopkins Technology, 421 Hazel Ln., Suite 100, Hopkins, MN 55343-7117.

The 1989/90 edition of the "Blue Book," the **Food Processing Machinery and Supplies Association's Membership Directory and Buyer's Guide**, is available at no cost to food and beverage processors. For others, it costs \$20 per copy. Contact: FPM&SA, 200 Daingerfield Rd., Alexandria, VA 22314.

**Novel Products in '88**, a 158-page report published by Leatherhead Food R.A., lists novel products developed throughout the world, including the launching in Japan of a cooking oil with half the calories of salad oil. Price is £100 for Leatherhead members, £200 for nonmembers. Contact: Leatherhead Food R.A., Publications Department, Randalls Road, Leatherhead, Surrey KT22 7RY, England.

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