Book Reviews

Natural Extracts Using Supercritical Carbon Dioxide. By Mamata Mukhopadhyay (Indian Institute of Technology, Bombay, India). CRC Press, Boca Raton, FL. 2000. xviii + 339 pp. 15.5 × 23.5 cm. $99.95. ISBN 0-8493-0819-4.

This book provides a complete presentation on the use of supercritical carbon dioxide extraction. The eleven chapters are entitled "Introduction", "Fundamentals of Supercritical Fluids and Phase Equilibria", "Fundamental Transport Processes in Supercritical Fluid Extraction", "Flavor and Fragrance Extracts", "Fruit Extracts", "Spice Extracts", Herbal Extracts", "Natural Antioxidants", "Natural Food Colors", "Plant and Animal Lipids", and "Natural Pesticides". There are also appendices that include the thermophysical properties of carbon dioxide, compositions and definitions of various oils, and miscellaneous information on major vegetable oils and oilseeds. In addition, the Subject Index is comprehensive. The book reads as if it were in two parts. The first segment, which provides an introduction to the fundamentals of supercritical fluids and transport processes, provides many useful facts, but falls short of being easy to read. The author appeared to encounter difficulties tying many complex and difficult thoughts together. Even so, if one successfully navigates through the poor use of the English language, there is a wealth of good information. The second part of the book deals with the application of supercritical fluid extractions as it pertains to natural flavors, fruits, spices, herbs, antioxidants, food colors, lipids, and pesticides. These chapters are far better written and are easier to read than those of the first section. For scientists interested in using supercritical fluids as a means of extracting natural products, these latter chapters will provide a wonderful introduction and exposure to separation methods. In addition, the treatise provides useful information collected from various peer-reviewed publications, international conferences, meetings, and symposia. This book will be of great value to those involved in the extraction of natural products for use as agrochemicals, pharmaceuticals, or food.

In summary, eleven chapters provide a complete presentation on the extraction of natural products through the use of supercritical carbon dioxide. *Natural Extracts Using Supercritical Carbon Dioxide* will be an essential resource for present and prospective researchers in the area of natural products. The author deserves great credit for this timely, interesting, and informative publication, which is accordingly highly recommended for both individual and institutional purchase with, of course, the caveat about reading difficulty. But, patience will be rewarded.

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Monographs in Supramolecular Chemistry: Self-Assembly in Supramolecular Systems. By L. F. Lindoy (University of Sydney, Australia) and I. M. Atkinson (James Cook University, Australia). Royal Society of Chemistry, Cambridge, UK. 2000. ix + 224 pp. 15.5 × 23 cm. £69.50. ISBN 0-85404-512-0.

This book consists of a total of seven chapters and a subject index; it is well illustrated with X-ray structures and cartoons, many in appealing and illustrative color, in addition to chemical structures. The literature coverage extends into 1998; the few (7) 1999 citations are to other books (5) and review articles (2).

Chapter 1 (6 pages) consists of definitions of self-assembly, molecular recognition, and other terms, and an overview of the intermolecular forces involved. Chapter 2 (12 pages) describes intermolecular interactions in some detail; these include electrostatic, H-bonding, van der Waals, $\pi-\pi$, charge transfer, and hydrophobic interactions. Chapter 3 (28 pages) describes hydrogen-bonded and π-stacked systems; included are a variety of amides, N-heterocycles, glycourils and calixarenes in the form of rosettes, molecular tweezers, molecular boxes, and cyclic and sperical assemblies. Chapter 4 (40 pages) deals with rotaxanes based on crown ether−paraquat, crown ether−secondary ammonium ion, cyclic amide−linear amide, and cyclodextrin−amphiphile motifs. The topic of Chapter 5 (32 pages) is catenanes formed from the types of systems discussed in Chapter 4. Chapter 6 (66 pages) is centered on metal-templated production of rotaxanes, catenanes, knots, and helicates; the primary building blocks described here are copper complexes of 1,10-phenanthrolines and bi-, ter-, tetra-, quinque-, and sexipyridines, though other metal ions are included. In Chapter 7 (35 pages) metal complexes, predominantly based on Pd and Pt, but also from Ag, Cu, Co, Ru, Ni, Rh, etc., that produce rings, squares, and polygonal and polyhedral assemblies are discussed along with cages, catenanes, and one-, two-, and three-dimensional arrays.

The chosen topics are well treated, and the reference list is extensive. The authors have chosen to treat only "discrete" assemblies, and thus systems derived from synthetic and natural macromolecules are only briefly mentioned. Nonetheless, this volume will serve as a valuable introduction to the field for students and new investigators as well as a concise resource for practitioners of self-assembly.

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