selection of commercially available ion-exchange material is presented in four tables. Chapter 6, *Isolation by Preparative HPLC*, by P. Stead, addresses the practical application of laboratory-scale preparative of HPLC to the isolation of natural products. It comprises a discussion on the practicalities of carrying out a preparative HPLC-base natural product isolation. Chapter 7, *Isolation by Planar Chromatography*, by S. Gibbons and A.I. Gray, describes the basic principles of planar liquid chromatography (PLC) of which thin-layer chromatography (TLC) is the most common form. Centrifugal preparative TLC and over-pressure TLC are also mentioned. Numerous examples of PTLC from plants are also presented. Chapter 8, *Separation by High-Speed Countercurrent Chromatography*, by J. McAlpine, is a short overview of the separation of natural products by high-speed countercurrent chromatography (HSCC), a modern separation technique since instruments became commercially available in 1980 only. Chapter 9, *Crystallization and Final Stages of Purification*, by N. Shankland, A.J. Florence and R.J.P. Cannell, describes the final stages of a purification process. The discussion is focused mainly on the crystallization of small organic molecules for X-ray and neutron diffraction experiments. Chapter 10, *Dereplication and Partial Identification of Natural Products*, by F. Van Middlesworth and R.J.P. Cannell, is a summary of different techniques allowing rapid identification of compounds to avoid duplication of earlier research. With the increasing number of new natural products discovered each year, there is no doubt that these techniques will play an ever-increasing role. Chapter 11, *Purification of Water-Soluble Natural Products*, by Y. Shimizu, deals with a general extraction procedure of small molecular weight water-soluble compounds. Two examples of application of water-soluble compounds are presented. Chapter 12, *Special Problems with the Extraction of Plants*, by G.L. Silva, I.-S. Lee and A.D. Kinghorn, is exclusively dedicated to the analysis of secondary metabolites of plant origin. A general procedure from the selection, collection and identification of the plant material to the extraction method to obtain a crude plant extract is presented. Particularly useful is a section describing general reagents for a few of the most common types of natural products found as plant secondary metabolites. Chapter 13, *Isolation of Marine Natural Products*, by A.E. Wright, provides an outline of the general approach used in the author's laboratory to collect, store and extract marine organisms, as well as to purify natural products derived from them. Chapter 14, *Scale-Up of Natural Products Isolation*, by M.S. Verrall and S.R.C. Warr, deals with two aspects of increasing the output of the product: increasing the scale of operation and increasing the concentration of product in the starting material. Chapter 15, *Follow-Up of Natural Product Isolation*, by R.J.P. Cannell, ends the book with a description on the most important approaches to obtain more of the compound of interest. The discussion is focused on further extraction on a larger scale, maximizing gene expression, alteration of the biosynthetic process, biotransformation, combinatorial biosynthesis and combinatorial synthesis.

Most chapters include a series of notes outlining valuable practical hints which are rarely found in conventional experimental manuals. Altogether this volume provides a broad overview of isolation techniques of natural products, and will be extremely useful as a reference tool to those involved in natural products chemistry: chemists, phytochemists, microbiologists and biotechnologists. Furthermore, it can be highly recommended for institutional library purchase.

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Novel Surfactants: Preparation, Applications and Biodegradability

K. Holmberg (Editor) Marcel Dekker Surfactant Science Series, New York, USA, 1988, 362 pp.

This is the latest volume in an extensive series of books dealing with all aspects of surfactant science and technology. Not surprisingly, with the current concern about the environmental effects of surfactants, this is a major theme throughout the chapters of this book. With the huge range of different surfactant systems under investigation in laboratories, this volume can only examine a small number of surfactant types, and the emphasis is on surfactants which are biodegradable and of low toxicity. As a result, many of the systems discussed, fall into the range of interest of the formulation pharmacist.

Initially the book concentrates on specific families of surfactants; *N*-dodecanoyl-*N*-methylglucamines; alkyl polyglycosides; arginine-based species; esterquats; sulfomonocarboxylic esters; sterol surfactants; silicone surfactants. Later chapters are more general in focus and cover gemini surfactants, enzymatic synthesis, and polymerizable and cleavable surfactants. In the earlier chapters, extensive information is supplied on the synthesis of the materials, and on their physical properties and applications. Naturally the surface properties, micelle formation, adsorption, etc. are presented in detail and one gets a very complete picture of the behaviour of the materials. In the later chapters so many systems are surveyed that it becomes impossible to present more than a brief summary of their properties, and here the emphasis is on providing a brief outline of the many systems under consideration (for example, the chapter on cleavable surfactants covers 15 different families of materials, and a complete coverage would require a separate volume).

If this book were to have one major fault, it must be the index. Although I fully appreciate the difficulty of indexing

technical material, it runs to only three and a half sides and is decidedly superficial. Fortunately, the individual chapters are well arranged and well referenced; the book contains over 850 references to original papers.

The majority of the materials discussed are sufficiently mild to be used, or at least considered, for cosmetic and personal care applications. Use in ethical pharmaceuticals is more limited because of the larger volume of toxicological information required for such products. As a result, the readership is likely to be mainly drawn from the cosmetic and toiletry section of the healthcare market, and less from the pharmaceutical sector. Despite this, it contains useful information for anyone working with surfactants, and provides a useful snapshot of the current state of surfactant science and technology.

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