

delivery with the adeno-viruses for treating cystic fibrosis. The effects of carrier systems on gene delivery, for example liposomes, are also discussed. Part six contains alternative technologies in pulmonary delivery, addressing the problems of nonozone-depleting propellants and dry powder inhalation aerosols. Two interesting chapters in this section cover modulated-release aerosols and alternative aerosols delivery systems. To conclude the book, Part seven presents a review of general guidelines for introducing peptide or protein aerosols on to the market.

Although in places of strong medical bias, this is a very valuable book which presents a vast source of information for respiratory protein delivery. Its usefulness in pharmaceuticals would even justify the rather steep price.

Geoffrey Lee

Lehrstuhl für Pharmazeutische Technologie,
Cauerstrasse 4, 91058 Erlangen,
Germany

PII: S0939-6411(98)0035-6

Handbook of Pharmaceutical Granulation Technology (Drugs and the Pharmaceutical Sciences, Vol. 81)

D. Parikh (Editor), Marcel Dekker, New York, USA, 1997, 512 pp., ISBN 0-8247-9882-1

Clearly, the editor's intention with this book was to give a comprehensive account of granulation in the pharmaceutical industry. Despite the inevitable variation in standard in a multi-authored work the editor is to be congratulated for achieving his goal. This book contains everything of relevance to modern granulation technology, covering an appropriate amount of theory, as well as extensive descriptions of the industrial practice of producing granules. As far as teaching goes, this is an advanced text which is particu-

lar useful for the numerous diagrams of machines and apparatus in current use. It is also, however, useful for the researcher, who will find succinct descriptions of all the major granulation processes as well as the relevant granulation theory.

The book starts with a brief consideration on granulation theory, followed by a useful, if short, description of the major characterisation methods for actives and excipients. A brief discussion of the major binders and solvents used for granulation concludes this first part of the book, covering granulation theory. The following eight chapters make up the bulk of the book, and cover the major techniques of granulation. Thus we find here discussions of spray drying as an alternative granulation technique, roller compaction technology, high shear and low shear granulators, fluidized bed granulation, the inevitable single-pot processing, extrusion, and, not to be forgotten, the possibilities for continuous granulation. In all of these chapters I particularly like the extensive, accurate diagrams of the processing units, which are so often inadequately shown in other texts. The chapter on batch fluid bed granulation is particularly attractive in this regard.

The remainder of the book deals with characterisation techniques for the finished product bioavailability as well as regulatory issues.

This very good book can be recommended to all working in the research and development of solid dosage forms. It is an excellent source of reference and definitely belongs in every pharmaceuticals library.

Geoffrey Lee

Lehrstuhl für Pharmazeutische Technologie,
Cauerstrasse 4, 91058 Erlangen,
Germany

PII: S0939-6411(98)00036-8