

**PHYSICOCHEMICAL PRINCIPLES
OF PHARMACY**

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SECOND EDITION

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Preface to Second Edition

The text of the first edition has been updated and new material added, but we have endeavoured to make the book no longer than before. Some material has been discarded and some of the sections rearranged to provide a more coherent flow to the text. However, our aim has remained the same: to provide the physicochemical background to drug formulation and delivery. Some of the basic physical chemistry has been removed from the text, not because it has diminished in importance but perhaps because it gave an undue emphasis, for example to thermodynamics, which could not be justified in pharmaceutical applications. The purists might query this decision, but there are two defences. First, there is available an abundance of good straight physical chemistry textbooks. Second, there is a limit to the depth and rigour of the basic sciences to which pharmacy undergraduates can be exposed, without deflecting them from the main goal, namely applying their knowledge to pharmacy.

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Preface to First Edition

This book sets out to provide the physicochemical background to the design and use of pharmaceutical products. It does not cover processing technology as such as this is dealt with adequately elsewhere. Rather an attempt is made to relate the physical chemistry of the drug or drug system to clinical usage. The book deals with the basic situations encountered in the progress of a drug from the dosage form to its site of action and how this can be controlled. Adhesion, deaggregation, solution, rates of solution, stability, diffusion, partition, aggregation, ionisation, interaction with water, and interaction with other molecules are topics which have been tackled. The special problems of the various routes of administration of particular dosage forms are considered from a physicochemical viewpoint, bearing in mind the physiological constraints. Where relevant, the physical chemistry of adjuvant substances such as surface active agents and polymers has been included as these substances are becoming more widely used to effect changes in the extent or duration of drug activity; often the basic mechanism of their effect is a physical and not a biological one.

Above all, however, an effort is made to unite the physical and biological aspects of pharmaceutics. Students sometimes forget that the same forces operate in inanimate and animate systems and early on in their training cannot see the relevance of the physical chemistry that is taught. It is hoped that this book will go some way towards bridging the gap between the fundamental and applied aspects of physical chemistry, pharmaceutical chemistry and biopharmaceutics. It does not purport to be a complete physical chemistry textbook but should be useful as a textbook which follows on from the standard physical chemistry texts, for use in all years of the undergraduate course. As it is aimed at undergraduates the reference lists at the end of each chapter have been kept to a minimum size. It has frequently been difficult to decide which facts to reference and which not to, but we feel that our approach has been correct. We hope that the book will be of use to undergraduate students of pharmacy and other life sciences and to postgraduate students and practising pharmacists wishing to refresh their memories.

We would be pleased to hear from readers of any errors in our treatment of subjects. It has not been possible to acknowledge by citation of references the contribution of many pharmaceutical scientists who have made this book possible but we nevertheless would have found it impossible to write without recourse to the literature. This is, indeed, one of the reasons why we felt the book was necessary — undergraduate students in pharmacy have had to rely too much on seeking out facts in the original literature. Perhaps this book will ease the way somewhat.

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