

Physical Chemistry

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This book focuses on the fundamental principles of physical chemistry, most of which are presented in Parts I to IV—"States of Matter" (including kinetic molecular theory), "Classical Thermodynamics," "Quantum Mechanics," and "Statistical Thermodynamics." The last two parts—"Chemical Kinetics" and "Electrochemistry"—apply the principles introduced earlier (supplemented with additional ones) to two very important and currently active areas of chemistry not covered in the first four parts. These two parts approach the frontiers of physical chemistry more closely than the first four parts. The macroscopic and especially the microscopic descriptions that are necessary to apply the fundamental principles to particular systems, for example, solids or liquids, are introduced where necessary. However, in order to keep the text to a reasonable size we have generally deemphasized broad coverage of particular systems.

Worked-out sample problems are provided in the body of the text. About 80 percent of the end-of-chapter exercises which illustrate the fundamental principles are provided with answers.

The following advice is intended for the student in difficulty or in need of information not found in this text. Besides consulting other texts in physical chemistry, the student should keep texts in general physics and in differential plus integral calculus at his fingertips while using this book. In addition it may be necessary to consult the specialized topical references given at the end of each chapter, as well as the following:

Collections of Problems

A. W. Adamson: *Understanding Physical Chemistry*. W. A. Benjamin, Inc., New York, 1964, 2 vols.

J. Bareš, Č. Černý, V. Fried, and J. Pick: *Collection of Problems in Physical Chemistry*. Pergamon Press, Oxford, 1962.

L. C. Labowitz and J. S. Arents: *Physical Chemistry*. Academic Press, New York, 1969.

Experimental Physical Chemistry

F. Daniels, J. W. Williams, P. Bender, C. D. Cornwell, J. E. Harriman, and R. A. Alberty: *Experimental Physical Chemistry*, 7th ed. McGraw-Hill, New York, 1969.

D. P. Shoemaker, C. W. Garland, and J. Steinfeld: *Experiments in Physical Chemistry*, 3rd ed. McGraw-Hill, New York 1974.

J. M. White: *Physical Chemistry Laboratory Experiments*. Prentice-Hall, Englewood Cliffs, N.J., 1975.

Advanced and Comprehensive Text

H. Eyring, D. Henderson, and W. Jost (eds.): *Physical Chemistry*. Academic Press, New York, 1967–?, 11 volumes.

Reviews

Accounts of Chemical Research, Advances in Chemical Physics, Annual Review of Physical Chemistry, MTP International Review—Physical Chemistry (A. D. Buckingham, consultant ed., Butterworths, London, Series One in 1971, 13 vols. (From 1974 on to be published biannually.)

Articles

Journal of Physical Chemistry, Journal of Chemical Physics;

Data: See D. R. Lide, Jr., and S. A. Rossmassler: *Ann. Rev. Phys. Chem.*, **24**: 135 (1973).

At present the physical sciences are in transition toward a single system of units—the International System (SI, see Appendix IX). This text is in “transition” as well: in each area of physical chemistry we have tried to use the units most prevalent at the time of writing. In fast-developing areas where clear preferences for units are not apparent, we have used SI units.

We are very grateful to everyone who has helped with this book. However, we would like to single out the following colleagues who have been especially instrumental in the preparation of this text. Sincere thanks go to Professor Ira Levine for constructive suggestions made about the manuscript, and to Professor Orest Popovych (both of Brooklyn College) who was very helpful in writing the part on electrochemistry. We thank Professors Richard Pizer, Avigdor Ronn, Grace Wieder, and Mrs. Arlene Pollin (all of Brooklyn College) and Dr. Paul Solomon (Hunter College) who helped with chemical kinetics. One of us (U. B.) is grateful to Professor N. W. Gregory, Chairman of the Chemistry Department, for permission to use the chemistry library at the University of Washington.

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