

A new edition with complete, up-to-date and expanded material for a working knowledge of physical chemistry for the biological sciences

The second edition of *Physical Chemistry for the Biological Sciences* builds on the success of the first edition with important updates and new material to provide a state-of-the-art introduction to physical chemistry for both professionals and students. The topics discussed include thermodynamics, kinetics, quantum mechanics, spectroscopy, statistical mechanics, and hydrodynamics. As in the first edition, most of the subjects can be understood without advanced mathematics. However, because modern day students often have a strong background in mathematics, more advanced treatments are also presented. Some of the additions are:

- Multivariable calculus, which students can have the option of utilizing if desired.
- Maxwell relationships, formulation of equilibria in terms of the chemical potential, and extensive discussion of activity coefficients.
- Extended treatment of quantum mechanics, including molecular vibrations and tunneling.
- Electronic structure of molecules utilizing molecular orbitals as well as Hartree-Fock and density functional theory.
- Statistical mechanics, including the Boltzmann distribution, partition functions, and statistical ensembles, with applications to biology.
- Computer simulations utilizing molecular dynamics and Monte Carlo methods, as well as hybrid quantum/classical approaches, and applications to enzyme reactions.

Carefully designed illustrations (some in color) and problems and examples from the biological sciences reinforce the concepts presented. Suitable for both two semester and one semester undergraduate and graduate courses in physical chemistry. This monograph can be used as a textbook, reference volume, and supplementary guide for teachers, students, and science professionals in all fields of chemistry and biology.

GORDON G. HAMMES, Ph.D., is the Distinguished Service Professor of Biochemistry Emeritus at Duke University. He is a member of the National Academy of Sciences and the American Academy of Arts and Sciences, and has received several national awards, including the American Chemical Society Award in Biological Chemistry and the American Society for Biochemistry and Molecular Biology William C. Coker Award. He was the Editor of the journal *Biochemistry* from 1992–2000.

SHARON HAMMES-SCHIFFER, Ph.D., is the University of Illinois at Urbana-Champaign. She is a member of the American Chemical Society, the Biophysical Society, the American Society for the Advancement of Science. She is a member of the American Physical Sciences, the National Academy of Sciences, and the International Academy of Quantum Molecular Science. Dr. Hammes-Schiffer has served as the Deputy Editor of *The Journal of Physical Chemistry B* and is currently the Editor-in-Chief of *Chemical Reviews*.

9781118859001 生物科学
分类码: Q5
A
1 库 C0603

www.wiley.com

WILEY

 Also available
as an e-book

Cover Image: Courtesy of the authors

