"This admirable text provides a solid foundation in the fundamentals of physical chemistry including quantum mechanics and statistical mechanics/thermodynamics. The presentation assists the students in developing an intuitive understanding of the subjects as well as skill in quantitative manipulations. Particularly exciting is the treatment of larger molecular systems. With a firm but gentle hand, the student is led to several organized molecular assemblies including supramolecular systems and models of the origin of life. By learning of some of the most productive areas of current chemical research, the student may see the discipline as an active, young science in addition to its many accomplishments of earlier years. This text makes physical chemistry fun and demonstrates why so many find it a stimulating and rewarding profession."

Edel Wasserman, President (1999) of the American Chemical Society, regarding the first edition of this book.

_Takes readers from atoms to increasingly complex molecular assemblies to the emergence of life_

*Principles of Physical Chemistry* presents a novel approach to physical chemistry that emphasizes the use of a few fundamental principles to quantitatively describe the nature of molecules and their assemblies. It begins with atoms and molecules, using the electron-in-a-box model to illustrate the essential features of quantum mechanics and why atoms and molecules exist. Thermodynamics is not introduced in the classical manner, considering the first and second law as postulates, but approached by studying assemblies of molecules statistically. The authors proceed to molecular assemblies of increasing complexity, evolving from ideal gases to real gases and solutions, then to macromolecules and supramolecular machines, and ending with the search for the logical conditions and chemical requirements for physicochemical processes leading to life’s origin, the emergence of matter that carries information. This text is ideal for both undergraduate and graduate courses in physical chemistry, providing a basis for understanding the nature of chemical processes in biology, chemistry, and engineering.

Throughout the text, actual experimental data are used to help readers understand the practical implications of theoretical developments. Simple physical models and examples are used to explain molecular and supramolecular systems and processes. The CD-ROM packaged with the text offers problems, exercises, interactive Mathead exercises and data tables with search functions that enable readers to apply their newfound skills and knowledge to solving actual problems. In
addition, the CD contains Foundations and Justifications, in which mathematical proofs and derivations are presented.