



Fundamentals of Quantum Chemistry, Second Edition (Complimentary Science Series)

By J. E. House

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An introduction to the principles of quantum mechanics needed in physical chemistry. Mathematical tools are presented and developed as needed and only basic calculus, chemistry, and physics is assumed. Applications include atomic and molecular structure, spectroscopy, alpha decay, tunneling, and superconductivity. New edition includes sections on perturbation theory, orbital symmetry of diatomic molecules, the Huckel MO method and Woodward/Hoffman rules as well as a new chapter on SCF and Hartree-Fock methods.

- * This revised text clearly presents basic quantum mechanics for students in chemistry
- * Separate sections treat needed mathematical techniques. Presents complete mathematical details of derivations.
- * Contains applications of quantum mechanics to a broad range of problems in spectroscopy and molecular structure

New in this Edition:

- * A new chapter on molecular orbital calculations (extended Hückel and self-consistent field)
- * A significant number of additional figures and improvements to existing figures
- * New exercises, plus answers for selected problems
- * Now includes the photoelectric effect, the perturbation treatment of the helium atom, orbital symmetry and chemical reactions, and molecular term symbols
- * Careful and extensive edits throughout the text improve clarity and correct minor errors

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Editorial Review

Review

"This is an excellent book to use as an introduction to the techniques and concepts met in theoretical chemistry by undergraduate and beginning graduate students...The organization and style of the book are such that a student would find it easy to read and follow the physical, chemical, and mathematical principles."

- Jim McTavish, Liverpool John Moores University

"I wish to thank Professor J. E. House for [the first edition] which I found in the Chemistry library here at Columbia. His book is excellent. It states the basics clearly, and he teaches what a new student needs to know. When I read the author's text he seemed like my own professor because he was so generous."

-Alison Winfield, Columbia University

"[This is a] brief need to know introduction to some of the more important topics in elementary quantum mechanics. Over the years I have used two other books similar to this one, both of which were inferior to House's book."

-Kurt Christoffel, Augustana College

About the Author

J.E. House is Scholar in Residence, Illinois Wesleyan University, and Emeritus Professor of Chemistry, Illinois State University. He received BS and MA degrees from Southern Illinois University and the PhD from the University of Illinois, Urbana. In his 32 years at Illinois State, he taught a variety of courses in inorganic and physical chemistry. He has authored almost 150 publications in chemistry journals, many dealing with reactions in solid materials, as well as books on chemical kinetics, quantum mechanics, and inorganic chemistry. He was elected Professor of the Year in 2011 by the student body at Illinois Wesleyan University. He is the Series Editor for Elsevier's Developments in Physical & Theoretical Chemistry series, and a member of the editorial board of The Chemical Educator.

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