

Chemistry 542: **Advanced Physical Chemistry II**
 Quantum Mechanics of Molecules and Radiation

No texts are required. The most recommended single text is in bold.

Quantum mechanics textbooks:

G. Schatz and M. Ratner, *Quantum Mechanics in Chemistry* (Dover, 2002).

R. Shankar, *Principles of Quantum Mechanics* (Plenum, New York).

G.M. Baym, *Lectures on Quantum Mechanics* (Benjamin Cummings, London), paperback.

L.I. Schiff, *Quantum Mechanics* (McGraw-Hill, London), international student edition.

J.J. Sakurai, *Modern Quantum Mechanics* (Addison-Wesley, New York).

Cohen-Tanoudji *et al.*, *Quantum Mechanics*.

A. Messiah, *Quantum Mechanics* (Wiley, New York).

S. Flügge, *Practical Quantum Mechanics* (Springer, Heidelberg).

Specialized Texts:

Symmetry, Group Theory and Angular Momentum:

R.N. Zare, *Angular Momentum*. (Wiley, New York).

M. Tinkham, *Group Theory and Quantum Mechanics* (McGraw-Hill, New York); (see also books by E. Wigner and M. Hamermesh)

D.M. Brink and G.R. Satchler, *Angular Momentum* (Clarendon Press, Oxford).

Molecular Spectroscopy:

W.H. Flygare, *Molecular Structure and Dynamics* (Prentice-Hall, Englewood Cliffs, NJ).

M. Weissbluth, *Atoms and Molecules* (Academic Press, Orlando).

D. Papoušek and M.R. Aliev, *Molecular Vibrational-Rotational Spectra* (Elsevier, 1982).

P.R. Bunker, *Molecular Symmetry and Spectroscopy* (Academic Press, Orlando).

Density Matrices:

K. Blum, *Density Matrix Theory and Applications* (Plenum, New York).

E&M and optics: (see Baym and others for 2nd quantization)

J.D. Jackson, *Classical Electrodynamics* (Wiley, New York).

A. Zajac, *Optics* (Addison-Wesley, Reading, 1992).

Mathematical Physics:

Butkov, *Mathematical Physics* (Wiley).

Nonlinear Optics:

D.F. Walls and G.J. Milburn, *Quantum Optics* (Springer, New York, 1994).

Y. R. Shen, *The Principles of Nonlinear Optics* (Wiley, New York, 1986).

A. Yariv, *Quantum Electronics* (Wiley, New York, 1975).