

Applied Spectroscopy

Fall, 2026

Instructor: T.-S. Yang, Ph.D.

Department of Chemistry and Biochemistry, Rm. 410, ext: 66415

Office hours: Mon. 12:00-14:00

Main Text: Thomas Engel: Quantum Chemistry and Spectroscopy, 2nd Ed.

Course Outline:

1. General Features of Molecular Spectroscopy (Chap 8)
2. Molecular Rotational Spectroscopy (Chap 7, 8)
3. Molecular Vibrational Spectroscopy (Chap 7, 8)
4. Molecular Electronic Spectroscopy (Chap 4, 5, 9, 10, 13, 14)
5. Nuclear Magnetic Resonance (Chap 17)

References:

1. P. Atkins: Atkins' Physical Chemistry. Chap. Molecular Symmetry and Molecular Spectroscopy
2. P. F. Bernath: Spectra of Atoms and Molecules, 1995.
3. J. L. McHale: Molecular Spectroscopy, 1st ed., 1999.
4. Joseph R. Lakowicz: Principles of Fluorescence Spectroscopy, 3rd ed., 2006.
5. A. M. Kelley: Condensed-phase Molecular Spectroscopy and Photophysics, 1st ed., 2013.

Grading will be based on the midterm exam (50%, 10/27) and the final examination (50%, 12/22).

Commitment: > 8 hours/week