

Chemistry 631
Advanced Coordination Chemistry I - Structure and Bonding
Tuesday/Thursday 11:00 – 12:30
STH 440

Instructor: Prof. Linda H. Doerrer
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Office Hours: TW 3:30 – 5:00 pm; R 4:00 – 5:00 pm, and by appointment
Course web page: <http://courseinfo.bu.edu>
Required Text Book: “Molecular Symmetry and Group Theory” by Robert L. Carter, John Wiley & Sons

Other useful Texts:

“Chemical Applications of Group Theory”, F.A. Cotton, Wiley-Interscience
QD461.F71 1971

“Symmetry in Molecules”, J.M. Hollas, Chapman & Hall Ltd.
QD461.H597 1972

“Symmetry Through the Eyes of a Chemist”, I. Hargittai, M. Hargittai,
Plenum Press, QD461.H268 1995

“Group Theory & Symmetry in Chemistry”, L.H. Hall, McGraw Hill
QD461.F691 1969

“Orbitals, Terms & States” M. Gerloch, John Wiley & Sons
QD461.G37 1986

“Introduction to Molecular Symmetry”, J.S. Ogden, Oxford University Press
(not in BU library; see Amazon ~\$20.00)

“Physical Methods for Chemists”, R.S. Drago, Saunders HBJ
(excellent text; out-of-print)

Set of molecular models may be helpful e.g.

<http://www.darlingmodels.com>

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Grading Scheme:	Homework Problem Sets	30%
	Midterm Exam	30%
	Final exam	40%

Prerequisites: A working knowledge of basic inorganic chemistry and a fundamental understanding of the electronic structures of atoms is assumed. For a review during the semester, see Chapters 1, 2, 7, 8, 15 and 16 of the textbook “Concepts and Models of Inorganic Chemistry”, 3rd Edition, Bodie Douglas, Daryl McDaniel, John Alexander, Wiley, New York, 1994 ([QD475 .D65 1994](#)).

Course Objectives: This course will introduce students to the interdependence of chemical bonding, electronic structure, spectroscopic characteristics, and reactivity properties of coordination compounds and complexes using the fundamental concept of symmetry. A basic familiarity with symmetry will be formalized by an introduction to the elements of symmetry, followed by how symmetry concepts can be applied to the orbitals and energy states in atoms and molecules, and consequently to electronic (and vibrational) spectroscopy. The relationships between electron distributions in inorganic coordination complexes and their reactivity properties will then be discussed.