

## STUDY GUIDE

### Qualifying Examination in Inorganic Chemistry

The examination consists of questions and problems from the areas of:

- (1.) Atomic theory (energy levels, orbitals, term symbols, quantum concepts)
- (2.) Structures of Inorganic Compounds; Point Group Symmetry
  - (a.) Use of VESPR to predict molecular structure, point groups
  - (b.) Solid state structures of inorganic compounds
- (2.) Use of thermodynamics in inorganic chemistry  
(examples include Born Haber cycle, proton affinity cycle, other thermodynamic cycles and concepts such as ionization energy, electron affinity, etc.)
- (3.) Bonding (valence bond, molecular orbitals, concept of electronegativity)
- (4.) Acid Base Chemistry
- (5.) Reactions of the main group elements
- (6.) Coordination chemistry
  - (a.) Bonding (valence bond, crystal field, molecular orbital)
  - (b.) Electronic spectroscopy
  - (c.) Isomerism and stereochemistry
  - (d.) Kinetics (basic reaction types)
- (7.) Organometallic chemistry

Some excellent texts to use to study for this exam are:

Huheey, J.E.; *Inorganic Chemistry*, Harper and Row, 3rd ed., 1983. or Huheey, Keiter and Keiter, the 4th ed, 1993.

Douglas, B. E.; McDaniel, D. H.; Alexander, J. J. *Concepts and Models of Inorganic Chemistry*, 2nd ed, John Wiley, 1983.

Shriver, D. F.; Atkins, P. W.; Lngford, C. H. *Inorganic Chemistry*, Freeman, 1990