Inorganic Chemistry

Chemistry 230

Section: D100

Term: 2001 Summer

Instructor: Dr.R. K. Pomeroy. Office: C-8045. Phone: 291-3347.

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Discussion Topics: An introduction to the chemistry of the elements and the current theories employed to explain the chemistry.

3 lecture hours/week; 1 tutorial hour/week; 0 lab hours.

Topics:

Introduction: (1 lecture) The various chemical forces.

The Solid State: (7 lectures). Close packing of spheres; radii of ions; structures of common ionic lattices; radius ratio; theoretical lattice energy; Born-Haber cycle; physical properties and lattice energy; solubility of ionic solids, and hydration of ions.

Molecular Bonding: (12 lectures). Atomic orbitals; periodic trends; LCAO description of bonding: homonuclear and heteronuclear diatomic molecules; simple molecules with extended pi systems; metallic bonding; semiconductors; classical coordination complexes; organometallic complexes: pi-bonding ligands; the 18-electron rule.

Molecular Structure: (6 lectures). Review of VSEPR theory and its exceptions. Common coordination numbers and isomerism in metal complexes. Visible spectra and paramagnetism.

Kinetics and Mechanism: (5 lectures). Classical complexes: The chelate effect; trans effect; redox reactions. Organometallic complexes: common mechanisms, catalysis.

Some Special Topics: (3 lectures). TBA.

Grading: Assignments 10%. Interm Examinations 30%. Final Examination 60%.

Required Texts: None.

Inorganic Chemistry

Recommended Texts: Shriver & Atkins, "Inorganic Chemistry", 3rd Edition 1999. Publishers: Freeman & Co.

Materials/Supplies: None.

Prerequisite/Corequisite: Chem 122 (or Chem 103).

Notes: None