

KZ4011 Oorganisk kemi, 9.5 hp

Kurslitteratur:

“Inorganic Chemistry” 6th edition (by Mark Weller, Tina Overton, Jonathan Rourke, Fraser Armstrong) ISBN: 978-0-19-964182-6

Föreläsningar

F1: Introduction

F1: Repetition of concepts and methods, physical techniques in inorganic chemistry (chapters 1, 2, 8)

F2 – F3: acid-base chemistry (chapter 4)

F2: Arrhenius and Bronsted-Lowry concepts. Non-aqueous and non-protic solvents. Oxoacids and polyoxo compound formation (pp 116-130, pp142 - 150)

F3: Lewis concept, Lewis acid-base reactions (pp132-142)

F4 – F5: Redox chemistry (chapter 5)

F4: Reduction potentials and redox stability (pp 154 – 170)

F5: Application of redox stability, stability diagrams (pp 170-184)

F7 – F9: Main group chemistry

F7: Periodic trends and principles of main group chemistry (chapter 9).

F8: Group 1,2, and 13 elements (essentials from chapters 10 to 13)

F9: Group 14 and 15 elements (essentials from chapters 14 and 15) and group 16-18 elements (excerpts from chapters 16 to 18)

F10 – F12: Transition metal chemistry

F10: Introduction to coordination compounds (chapter 7, pp 209 – 232) and d-block elements (chapter 19, pp 488 – 514)

F11: d metal complexes: electronic and molecular structure, properties (chapter 20, pp 515 – 530)

F12: d metal chemistry: reactions, organometallic chemistry ...(a little from chapters 21 and 22)

F13 – F16: Clusters and solids

F13: Clusters

F14: Description of solids, structures of solids (chapter 3)

F15: Classification of solids (metals, alloys, semiconductors, insulators), bonding in solids (chapter 3 contd).

F16: Materials chemistry (excerpts from chapter 24)

Räkneövningar

RÖ1: Properties of atomic orbitals, construction of diatomic MOs, VSEPR,

RÖ2: Acid-base

RÖ3: Acid-base

RÖ4: Redox

RÖ5: Redox

RÖ6: Main group chemistry

RÖ7: Transition metal chemistry

RÖ7 (RÖ8): Clusters and solids

Laborationer

1. Acid base chemistry (metal ions in aqueous solution, hydroxide, oxides, HSAB principles).
2. Redox chemistry (Ag-NH₃ complexes and stability constants).
3. Synthesis and characterization of a hypervalent IBr₂⁻ species.
4. Ammonia complexes of Co(III) and thermochromic materials.
5. Synthesis and characterization of various Fe oxides, ferrofluids.