LU2Ci012: Inorganic chemistry

Person in charge

P1 and P2
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1. Prospectus

Teaching hours: lectures 24 h, tutorial classes 24 h, laboratory experiments 12 h
Number of credits: 6 ECTS
Grading /100: in-class exam /70 (integral in-class exam), laboratory /30 (no practical exam)
Paths: mono-disciplinary / bi-disciplinary / minor
Period of teaching in English: semester 2 (period P2) of the 2nd-year Bachelor in Chemistry

2. Pedagogic aims of the course

a. Objectives

Following the introductory courses of the 1st-year of the Bachelor in Chemistry of the Faculté des Sciences et Ingénierie de Sorbonne Université, the LU2CI012 course focuses on an introduction to the general principles of inorganic chemistry. The notions (concepts and know-how) seen during the first year will have to be reinvested in order to acquire more autonomy in the different covered areas. The basic laboratory techniques acquired in L1 will have to be reused and applied in practical work, on themes illustrating the course of L2.

b. Topics covered

Generalities in inorganic chemistry (overview of the chemical bond, intrinsic properties of the periodic table, etc.).
Properties and reactivity in *s* and *p* blocks.
Introduction to transition element chemistry (block *d*) and coordination chemistry.
Introduction to structural chemistry and solid-state chemistry (metals, covalent and ionic compounds).

3. Pre-requisites

Courses of chemistry of the 1st-year of the Bachelor in Chemistry of the Faculté des Sciences et Ingénierie de Sorbonne Université:
Notions of atomistic (hydrogenoid and polyelectronic atom, wave functions, radial and angular functions, atomic orbitals, construction of electronic configurations.
Evolution of the properties in the periodic table (atomic radii, ionization energy, electronic affinity, electronegativity, etc.) .
<u>Chemical bonding</u>: Lewis model; geometry of molecules by the VSEPR method. Model of molecular orbitals (MO) for homo / hetero-nuclear diatomic molecules. Non-covalent bonds: dipole-dipole interactions, van der Waals, hydrogen- bonds. Oxidation number.
<u>Thermochemistry</u>: thermodynamic quantities of reaction, chemical equilibrium, equilibrium constant, Le Châtelier's law, etc.
Chemical equilibria in solution (acid-base, oxidation-reduction, precipitation and complexation).