INSTITUT NATIONAL DES SCIENCES APPLIQUÉES TOULOUSE

Chemistry

Introducing

Description

Electronic structure of atoms - atomic Orbitals - periodic table of the elements - Periodicity of the properties - Covalent bonds - Molecular orbitals - pH of aqueous solutions - Solubility, precipitation - Oxidation, reduction.
Laboratory work: Set of six experiments, introducing the implementation of basic laboratory equipment - Titration by acid-basic and oxidation-reduction reactions - Titration by precipitation reactions - Spectrophometric and potentiometric titrations (pH-metric, silver electrode) - Equilibrium of affinity per exchange of ions.

Objectives

1. Memorize the definitions and the chemistry-related vocabulary.
2. Determine the atom structure
3. Describe the structure of the periodic table of the elements.
4. Propose a structure for a molecule (Lewis and spatial) from its raw formula.
5. Describe the link within molecules.
6. Describe the structure of metallic and ionic solids.
7. Describe interactions between molecules.
8. Describe the liquid water structure and explain the main reactivities in solution (equation balance sheet reflecting a reaction of dissolution, precipitation, acid-basic or oxidation- reduction).
9. Analyse a problem to identify the ingredients likely to be present in solution. Deduce one or several equations showing the conservation of elements, the electro neutrality and the constant of balance.
10. Solve a problem about chemistry solutions coming up with as equation as there is unknowns in this problem in order to calculate the unknowns¿ concentration.
11. Describe the principle and be able to implement the basic experimental technics for the analysis
12. Carry out a lab experiment and analyse the result.

Necessary prerequisites

Basic knowledge in physical science (atoms structure, radiation) and in chemistry as describe in the program of the final year high school science.

Évaluation

L'évaluation des acquis d'apprentissage est réalisée en continu tout le long du semestre. En fonction des enseignements, elle peut prendre différentes formes : examen écrit, oral, compte-rendu, rapport écrit, évaluation par les pairs...

Practical info

Location(s)

Toulouse

Non-contractual information