UCL Faculté des sciences

SC

CHIM1173 Eléments de chimie inorganique et analytique

[30h+60h exercises] 7 credits

This course is taught in the 2nd semester

Teacher(s): Michel Devillers
Language: french
Level: 1st cycle course

Aims

The aim of this course is to give the student a theoretical and practical knowledge of the main properties of the various chemical elements and of their most important compounds.

Main themes

The lectures will cover the main group elements (s and p blocks), the transition elements (d block) and the f block elements (lanthanides and actinides). They will include an introduction to the metallurgical processes and to radioactivity. The first chapter deals with the periodicity of the chemical and physico-chemical properties. Chapter 2 is devoted to hydrogen and its binary compounds. The following chapters concern the various groups of the periodic table. In each of them, the characteristic properties, the obtention methods, properties and main uses of the elements and their main compounds are successively described. Attention is focused on the environmental and safety aspects of elements and compounds.
During the practical exercices, the students are trained to carry out the qualitative chemical analysis of cations and anions commonly used in aqueous solutions. About 50 different species are concerned. The analytical approach is based on the implementation of the chemical properties of the elements in relationship with their location in the periodic table. The student is asked to exercice his knowledge by using simultaneously the concepts related to acid-base properties, precipitation, complexation and redox reactions.

Content and teaching methods

The lectures will cover the following aspects : periodicity of the chemical properties, radioactivity, hydrogen and its binary compounds, alkaline and alkaline-earth metals, the elements of groups 13 to 18, the transition metals, the lanthanides and actinides.
The practical exercises in the laboratory are oriented towards the qualitative chemical analysis of the elements under their various oxidation states in aqueous solution.

Other credits in programs

CHIM12	Deuxième candidature en sciences chimiques	(7 credits)	Mandatory