

UE Physical chemistry of aqueous solutions - CHI431 -

 ECTS
6 crédits

 Crédits ECTS
Exchange
6.0

 Composante
Département
de la licence
sciences et
technologies
(DLST)

 Période de
l'année
Printemps (janv.
à avril/mai)

Diplômes intégrant cet élément

- Licence Chimie

- > Langue(s) d'enseignement: Anglais
- > Ouvert aux étudiants en échange: Oui
- > Crédits ECTS Exchange: 6.0

Présentation

Description

This class is dedicated to the presentation of the physical chemistry of aqueous solution. It contains three parts: the acid-base concept, the solubility concept, and the reactions that exchange electrons (redox reactions) with an opening towards electrochemical accumulators. The mutual influence between these three properties will also be studied. The description of the solution at equilibrium will be taken care of through systematic approaches or "the leading reaction" formalism. The diagram approach will only be considered in the framework of $E = f(\text{pH})$ diagrams.

Heures d'enseignement

TD	TD	22,5h
CM	CM	19,5h
TP	TP	14h

Pré-requis recommandés

Completion of a course in chemical thermodynamics and kinetics, such as CHI331, is absolutely necessary to follow this class. For labs, the Multidisciplinary Experimental Method course (MEP101) is an added value.

Période : Semestre 4

Compétences visées

- Identify the species likely to be present in aqueous solution. Write material balances and the electroneutrality relation. Calculate the concentration of species in aqueous solution.
- Find the acid-base reactions between species in aqueous solution. Calculate pH in aqueous solution using the predominant reactions.
- Calculate the solubility of a solid, liquid or gas in aqueous solution.
- Write redox balances. Describe the operation of a battery. Construct and use an E-pH diagram in aqueous solution.
- Write electrolysis balances.

Write complexation balances

Bibliographie

Atkins' Physical Chemistry, P. W. Atkins et al. (Oxford University Press)

Infos pratiques

Contacts

Responsable pédagogique

Yohann MOREAU

✉ yohann.moreau@cea.fr

Lieu(x) ville

➤ Grenoble



Campus

➤ Grenoble - Domaine universitaire