



MAPR2141 Physical chemistry of hydrometallurgical processes

[30h+30h exercises] 5 credits

This course is taught in the 2nd semester

Teacher(s): Joris Proost
Language: French
Level: Second cycle

Aims

Study of the physico-chemical fundamentals and technological aspects of hydrometallurgical processes, and their application to the extraction and recycling of metals.

Main themes

2. Course description

Among the basic hydrometallurgical processes being considered are

- leaching
- purification of leach solutions (chemical precipitation, ion exchange, solvent extraction)
- metal extraction (cementation, precipitation by reductive gases, electrolysis)
- electrolytic metal refining.

These processes are treated both from a theoretical and technological point of view. The theoretical part is largely based on

- the study of thermodynamic equilibrium of ions, oxides, sulphides and metals in aqueous solutions (e.g. by E-pH diagrams)
- chemical and electrochemical kinetics and rate theory

From a technological point of view, these basic processes and principles are applied for the construction of a global flow-sheet describing the extraction and recycling of metals. Laboratory sessions are organized to actively demonstrate the different processes.

Content and teaching methods

Nil

Other information (prerequisite, evaluation (assessment methods), course materials recommended readings, ...)

Nil

Other credits in programs

INCH22	Deuxième année du programme conduisant au grade d'ingénieur civil chimiste	(5 credits)	Mandatory
MATR22	Deuxième année du programme conduisant au grade d'ingénieur civil en science des matériaux	(5 credits)	