



[30h+15h exercises] 4 credits

This two-yearly course is taught in 2005-2006, 2007-2008,...

This course is taught in the 1st semester

Teacher(s): Patrick Wollants
Language: french
Level: 2nd cycle course

Aims

The course deals with special topics about phase equilibria in ternary and quaternary systems especially important in metallurgy and in the industries of technical ceramics, glasses, and refractories.

Content and teaching methods

Summary : content and methods

1. Reminders about thermodynamics of phase diagrams and the measurement of activity
2. Introduction to the methods of computation of phase diagrams
3. Applications : study of phase diagrams
 - Metallurgy : examples of applications to metallurgical processes, to nickel superalloys,
 - Glasses : examples of phase diagrams of glasses, methods of processing of glasses and vitrocereamics, enamels.
 - Clay-based and non-clay-based refractories (on the basis of MgO, Cr₂O₃, Al₂O₃, Fe₂O₃,)

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

Prerequisites:

MAPR2473 : Metallurgical physical-chemistry

MAPR2805 : Introduction to materials science

Practical work

Introduction to the softwares for the computation of phase diagrams (Thermocalc, Chemsage, ..)