

Ceramics

Titulaire

Hubert RAHIER (Coordonnateur)

Mnémonique du cours

CHIM-H415

Crédits ECTS

4 crédits

Langue(s) d'enseignement

Anglais

Période du cours

Deuxième quadrimestre

Campus

Solbosch et Plaine

Contenu du cours

This is a class in common between ULB and VUB. The theoretical class is given by prof. H. Rahier at VUB and the practicals are taking place at ULB with Prof. M.P. Delplancke.

The most important goal of the course is to make the link between the microstructure of ceramics and their properties (structural and functional).

This course aims at linking chemistry to material science.

Further more characterization methods will be used in practice.

The course starts with the synthesis routes for ceramics.

The most common crystallographic structures are discussed.

Some properties of inorganic materials are discussed in combination with their microstructure.

The different subjects that are illustrated are:

- > synthesis : methods, use of phase diagrams
- > general properties: melting point, density, solubility, hardness
- > electronic, magnetic and optical properties
- > thermal properties
- > glass: order, glassy ceramics, controlled crystallization.

Objectifs (et/ou acquis d'apprentissages spécifiques)

Introduce the ceramics, their synthesis methods and their properties, linking the properties to the microstructure.

Méthodes d'enseignement et activités d'apprentissages

Ex-cathedra class and in laboratory practicals

The practicals are illustrating the different chapters of the theoretical class: synthesis, processing and characterization of ceramic materials. They are realized by group of students.

Contribution au profil d'enseignement

This teaching unit contributes to the following competences:

- > In-depth knowledge and understanding of exact sciences with the specificity of their application to engineering
- > The flexibility and adaptability to work in an international and/or intercultural context
- > An integrated insight in chemical process and materials' technology
- > Insight in chemistry as a link between process and materials technology

Références, bibliographie et lectures recommandées

Ceramic Materials: Science and Engineering, C. Barry Carter and M. Grant Norton, Springer 2007

Autres renseignements

Lieu(x) d'enseignement

Plaine et Solbosch

Contact(s)

Marie-Paule Delplancke, 4MAT, phone: 02/6502902, email: mpdelpla@ulb.ac.be, UD2-116

Méthode(s) d'évaluation

Autre

Méthode(s) d'évaluation (complément)

Oral presentation of a subject chosen by the students and discussion on this presentation. Evaluation of the practicals reports

Construction de la note (en ce compris, la pondération des notes partielles)

oral presentation = 2/3 of the final note

practicals reports = 1/3 of the final note

Langue(s) d'évaluation principale(s)

Anglais

Programmes

Programmes proposant ce cours à l'école
polytechnique de Bruxelles

MA-IRMA | Master : ingénieur civil en chimie et science des
matériaux | finalité Spécialisée/bloc 1 et finalité Spécialisée/bloc 2

