Module Description, available in: EN

Polymer Degradation and Stabilisation

General Information

Number of ECTS Credits

3

Module code

TSM_PolyDegr

Valid for academic year

2019-2020

Last modification

2018-11-08

Responsible of module

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Explanations regarding the language definitions for each location:

- Instruction is given in the language defined below for each location/each time the module is held.
- Documentation is available in the languages defined below. Where documents are in several languages, the percentage distribution is shown (100% = all the documentation).
- The examination is available 100% in the languages shown for each location/each time it is held.

	Berne	Lausanne			Lugano	Zurich		
Instruction					**X** E 100%			
Documentation					**X** E 100%			
Examination					**X** E 100%			

Module Category

TSM Technical/scientific specialization module

Lessons

2 lecture periods and 1 tutorial period per week

Entry level competences

Prerequisites, previous knowledge

Fundamentals of Inorganic and Organic chemistry.
Fundamental of polymeric materials

Brief course description of module objectives and content

The module analysis the mechanisms of polymers degradation, the approaches to protect polymeric materials from uncontrolled degradation and how to engineer degradation for technological applications. The final objective of the course is to provide the students with the know-how to design polymeric materials taking into due account the degradation issue.
Polymer degradation occur during processing and service life, induced by a combination of factors, e.g. heat, light, oxygen, high-energy radiation, ozone, atmospheric pollutants, mechanical stress, biological action, hydrolysis, etc. All degradation mechanisms have in common certain basic chemical reactions, which are analysed.

Aims, content, methods

Learning objectives and acquired competencies

Understand the chemical-physical processes of degradation of polymeric materials.
Master the possible approaches to protect polymeric materials from uncontrolled degradation.
Study the technological exploitation of polymer degradation (e.g. biodegradation, composting, etc.)

Contents of module with emphasis on teaching content

The course content are:

- Specific degradation factors (Thermal degradation, Mechanical degradation, Oxidation, Photo-degradation, Biodegradation)
- Degradation of polymer during processing
- Aging/Weathering of polymers
- Strategies to protect polymeric materials form Aging/Weathering
- Combustion of Polymeric materials and Flame Retardancy

Teaching and learning methods

Teaching: Ex cathedra teaching (theory) and Presentation of case studies
Learing methods: Self study

Literature

Assessment

Certification requirements

Module does not use certification requirements

Basic principle for exams

As a rule, all the standard final exams for modules and also all repetition exams are to be in written form

Standard final exam for a module and written repetition exam

Kind of exam

written

Duration of exam

120 minutes

Permissible aids

No aids permitted

Special case: Repetition exam as oral exam

Kind of exam

oral

Duration of exam

30 minutes

Permissible aids

No aids permitted