Level: master

Course title: Chemistry of Free Radicals

Status: elective

ECTS: 5

Requirements: none

Learning objectives

In-depth knowledge and advanced study of the structural and chemical properties of the most reactive particles in organic chemistry, and modern methodology in interpreting the mechanisms of radical reactions. Qualifying to solve complex practical problems in the chemistry of free radicals and develop experimental skills necessary for successful work in the field.

Learning outcomes

Students should be able to demonstrate advanced knowledge of the structure and chemical behaviour of free radical particles and identify and investigate properties of radicals and planning and execution of organic synthesis; exhibit skills for planning research work independently or in a team based on data obtained through literature search; critically process and present the results; plan further professional development.

Syllabus

Theoretical instruction

The study of the structure, stereochemistry and chemical and physical characteristics of free radicals of the type: alkyl-, cycloalkyl-, allyl-, vinyl- and phenoxy radicals, radical ions, then the heteroradicals. Method of forming free radicals, radical ions, carbene and their stability. Classification of organic radical reactions: fragmentation, substitution, oxidation, addition and reduction. Stereochemistry of radical reactions. Antioxidant systems. Methods for the detection of free radicals.

Practical instruction

Experimental exercises of mono-phase laboratory synthesis according to free radical mechanisms.

Weekly teaching load				Other:
Lectures: 2	Exercises: 2	Other forms of teaching:	Student research:	