Course: Circular Polymers — credits: 5

Course code	CCVH24CIRCUPOLYM
Name	Circular Polymers
Study year	2026-2027
ECTS credits	5
Language	Dutch, with parts in English
Coordinator	E.W. Dijk

Modes of delivery	Lecture Practical / Training Project-based learning
Assessments	Polymeerchemie - Written, organised by STAD examinations Project Circulaire Polymeren - Other assessment

Learning outcomes

With your (interdisciplinary and/or international) project group, you will go through the empirical cycle for a research project on the synthesis of a polymer, effectively collaborating, formulating an objective, searching and using scientific literature, choosing and justifying an approach for the research project, performing the experiments, collecting and interpreting the research data, and formulating a conclusion, final discussion and recommendations.

You choose a strategy for the chemical synthesis and/or recycling of a polyester from literature you have found or provided yourself, select relevant analytical methods and translate them into a practical approach, which you then implement in the laboratory.

With a proactive, open attitude, you ensure a pleasant and successful course of the project, meet agreements, communicate about progress, identify any bottlenecks and make them negotiable.

You report on your project through work meetings, logbooks and a group final interview (assessment).

You describe the basic principles of polymer synthesis, analysis and properties, and explain the relationship between the chemical and physical structure of polymers and their properties.

You study in groups a chosen polymer, and present the application of the basic principles to the chosen polymer during the theory lessons.

You know various aspects of intercultural communication and cooperation, and apply these during seminars, (online) group meetings, and reflect on your contribution to this by means of an individual report.

Content

In the Circular Polymers module, you will learn about the basic principles of Polymer Chemistry in the theory part (2 EC). You also apply some of these basic principles to a polymer of your own choice, about which you make a presentation in a group in one of the classes (“Adopt a Polymer!”). The theory part concludes with a written exam.

In the practical and project part, you perform a polymer synthesis (PLA or another polymer) on the basis of provided literature, in which you, in an interdisciplinary and/or internationally oriented project group, make your own proposal for a variation in the synthesis, to investigate its effect on the properties of the polymer.

Furthermore, you will immerse yourself in a project group on the circular application of polymers: you will choose an approach for the depolymerization of a polymer, select a number of variables and analysis techniques, after which you will search for the right conditions to rebuild the monomers into the same (or even a higher-quality!) polymer. You then implement the chosen approach for this yourself in the lab.

You will be assessed for your project work on your active participation, and the project will be concluded with a final substantive interview (group assessment).

Included in programme(s)

Chemistry
Chemical Engineering

School(s)

Engineering, Life Sciences & ICT

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