

FRAMEWORK PROGRAMME OF EARLY STAGE RESEARCHER TRAINING¹

1. BASIC DATA

Mentor's name and surname	Peter Krajnc	Mentor's register number at ARIS (SICRIS) :	15501
Mentor's e-mail:	Peter.krajnc@um.si	Mentor's tel. no.:	02 2294 422
Research programme (RP) leader's name and surname:	Peter Krajnc	RP leader's register number at ARIS (SICRIS) :	15501
Title of research programme:	Physical – chemical phenomena at surafaces and use of nanoparticles	RP's Register number at ARIS (SICRIS) :	P2-0006
Research organisation (RO) of University of Maribor, where training shall be conducted:	Faculty of Chemistry and Chemical Engineering	RO Register number at ARIS (SICRIS) :	794
Research field according to ARIS classification :	1.04 Chemistry	Research field according to Ortelius classification (EURAXESS)	Chemistry

2. DEFINITION OF RESEARCH PROBLEM AND GOALS OF DOCTORAL RESEARCH²

Starting point of research task of the early stage researcher and its position in the research programme, where the mentor is included, work hypothesis, research goals and foreseen result with emphasis on an original contribution to science:

Work hypothesis:

Application of concentrated emulsions with monomeric molecules in the continuous phase typically leads to open-cellular porous morphology of the yielding polymer. However, preliminary results show that, especially in the case of photo initiated polymerisation, a phase inversion can take place. In combination with gelation, this phenomenon can lead to a particular morphology when the gelation process takes place during the meta stable state. It is the hypothesis that within the thiol-ene click photopolymerisation this process can be controllable and lead to the desired morphology

¹ Term early stage researcher (ESR) is written in male form and used as neutral for women and men.

² Research and study programme of training have to harmonise with contents of the research programme, where the mentor is a member.

of the macromolecular product. This phenomenon in combination with macroporous polymers has been only very sparsely described (one publication by our research group exists) and it can be potentially very applicable, especially in the field of flow through solid supported chemistry.

Research goals:

The most important goal is to establish the dependency of macromolecular morphology on the polymerisation factors. Factors investigated will be the polymerisation reaction mechanism, initiator structure and concentration, media stabilization, temperature, monomer structure and crosslinking degree.

Foreseen results and original contribution to science:

Results of the proposed investigations will be very important in the synthesis of macroporous crosslinked macromolecules and will bring new insights in the field of heterogenous media polymerisation reactions. Results will be important with regards to science while a new class of macroporous polymeric materials could be developed with applications in solid supported chemistry and separations.

3. STUDY PROGRAMME

Foreseen study programme, to which early stage researcher shall be enrolled in academic year 2024/2025:

Chemistry and chemical engineering, 3rd cycle (PhD)

4. DESCRIPTION OF WORK AND TASKS

The work will consist of both synthesis and characterization with the inclusion of experimental design. The ESR will systematically investigate the correlation between the polymerisation conditions and the architecture and morphology of resulting macromolecules. Investigations will include characterization processes (scanning electron microscopy, cryoSEM, porosimetry, FTIR, NMR, DMA, UV VIS) as well as experimental design.

5. REQUESTED LEVEL OF EDUCATION

MSc or related.

6. REQUESTED FIELD OF EDUCATION

Chemistry, biochemistry, chemical engineering, pharmacy or related.

7. KLASIUS SRV

17003

8. KLASIUS P

442

9. REQUESTED KNOWLEDGE

Solid knowledge of organic chemistry is requested. Knowledge of materials science is advantageous.

10. REQUESTED SPECIAL REQUIREMENTS

Team work adaptability and good communication skills.

11. REQUESTED LANGUAGES

High level of English (oral and written communication) is requested.

12. REQUESTED WORK EXPERIENCE

Chemistry laboratory work experience is requested.

13. FORESEEN POSTDOCTORAL TRAINING

Kliknite ali tapnite tukaj, če želite vnesti besedilo.

Mentor's signature:

Research programme leader's signature:

Name and surname of Dean or
authorised person³:

Kliknite ali tapnite tukaj, če želite vnesti
besedilo.

³ The training program is signed by the dean of the member where the ESR's employment and training will take place.

Signature of dean or authorised person:

Place and date:

Kliknite ali tapnite tukaj, če želite
vnesti besedilo.

Kliknite ali
tapnite
tukaj, če
želite vnesti
datum.

Stamp: