

## FRAMEWORK PROGRAMME OF EARLY STAGE RESEARCHER TRAINING<sup>1</sup>

### 1. BASIC DATA

Mentor's name and surname	<b>Srečko Glodež</b>	Mentor's register number at <a href="#">ARIS (SICRIS)</a> :	<b>13068</b>
Mentor's e-mail:	srecko.glodez@um.si	Mentor's tel. no.:	031 608 739
Research programme (RP) leader's name and surname:	Zoran Ren	RP leader's register number at <a href="#">ARIS (SICRIS)</a> :	08779
Title of research programme:	Design of cellular structures	RP's Register number at <a href="#">ARIS (SICRIS)</a> :	P2-0063
Research organisation (RO) of University of Maribor, where training shall be conducted:	Faculty of Mechanical Engineering	RO Register number at <a href="#">ARIS (SICRIS)</a> :	0552-0795
Research field according to <a href="#">ARIS classification</a> :	2.11.03 Engineering sciences and technologies, Mechanical Design, Special development know-how	Research field according to Ortelius classification (EURAXESS)	15.18 Mechanical Engineering

### 2. DEFINITION OF RESEARCH PROBLEM AND GOALS OF DOCTORAL RESEARCH<sup>2</sup>

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:

Fatigue analyses of advanced metamaterials for lightweight design

The rising cost of raw materials, the shortage of resources, and more stringent sustainable development policies have led to an ever-increasing demand for lightweight and multifunctional materials with improved properties in engineering and other applications. One of the most promising materials for such applications are cellular materials, i.e., materials with internal cellular structure either at nano-, micro-, meso-, or macro-level. Cellular (meta-)materials (engineered or

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

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

architected materials with specific properties) and structures have received increasing attention from the engineering and scientific community over the last decade due to their low relative density and their particular multifunctional properties that make them ideal for advanced lightweight engineering and medical applications.

The proposed research “***Fatigue analyses of advanced metamaterials for lightweight design***” is crucial for the development of science in the field of advanced metamaterials, which are increasingly being used in lightweight design. This research outcome will contribute significantly to the advancement of science in geometric and mechanical characterisation and fatigue behaviour of advanced metamaterials.

The proposed research will focus on the mechanical and fatigue testing and subsequent computational simulations of the selected advanced metamaterials to define the appropriate computational models, which could then be used to study the fatigue behaviour of lightweight engineering components made of such materials.

### 3. STUDY PROGRAMME

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

Doctoral School of the Faculty of Mechanical Engineering (Mechanical Engineering)

### 4. DESCRIPTION OF WORK AND TASKS

Implementing projects of scientific research.  
Taking part in the design of research programmes.  
Cooperating with research sponsors.  
Drawing up research and other reports.  
Monitoring and coordinating research work according to the grant agreement.  
Ensuring safety and health at work.  
Organising and instructing employees and students on using personal safety equipment and other safety measures.  
Performing other tasks at the behest of the superiors.  
Participating in ad-hoc and permanent committees of university or faculty bodies.  
Acting on behalf of colleagues and superiors during their absence (upon authorisation).  
Participating in annual and other inventories.  
Performing other related tasks delegated by superiors.

### 5. REQUESTED LEVEL OF EDUCATION

VII/2. tariff group

### 6. REQUESTED FIELD OF EDUCATION

Technical, Natural sciences

7. KLASIUS SRV

Seventh level: Second cycle of higher and similar education/Second cycle of higher and similar education

8. KLASIUS P

145 – Education of teachers of individual subjects  
4 - Natural science, mathematics and computing  
5 - Engineering, manufacturing and construction

9. REQUESTED KNOWLEDGE

Computer skills: MS Windows, Word, Excel, Internet, e-mail, e-commerce

10. REQUESTED SPECIAL REQUIREMENTS

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11. REQUESTED LANGUAGES

Active knowledge of one world language

12. REQUESTED WORK EXPERIENCE

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13. FORESEEN POSTDOCTORAL TRAINING

Kliknite ali tapnite tukaj, če želite vnesti besedilo.

Mentor's signature:

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Research programme leader's signature:

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Name and surname of Dean or  
authorised person<sup>3</sup>:  
red. prof. dr. Matej Vesenjak

Signature of dean or authorised person:

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Place and date:

Maribor,

22. 02.  
2024

Stamp:

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