

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

### 1. BASIC DATA

|   |                                      |  |   |
|---|--------------------------------------|--|---|
| Mentor's name and surname   | <b>Rebeka Rudolf</b>                 | Mentor's register number at <a href="#">ARIS (SICRIS)</a> :    | <b>14335</b>                                  |
| Mentor's e-mail:  | rebeka.rudolf@um.si                  | Mentor's tel. no.:   | 02 220 7865                                   |
| Research programme (RP) leader's name and surname:                                      | Ivan Anžel                           | RP leader's register number at <a href="#">ARIS (SICRIS)</a> : | 10369   |
| Title of research programme:  | Technologies of metastable materials | RP's Register number at <a href="#">ARIS (SICRIS)</a> :        | P2-0120                                       |
| Research organisation (RO) of University of Maribor, where training shall be conducted: | UM FME                               | RO Register number at <a href="#">ARIS (SICRIS)</a> :          | 0795  |
| Research field according to <a href="#">ARIS classification</a> :                       | 2.04.02 Kovinski materiali           | Research field according to Ortelius classification (EURAXESS) | 37.0 Technology<br>37.21 Materials Technology |

### 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:

In the period 2024-2027, the research program P2-0120 is devoted to the understanding of metastable states and scientific findings in studies of metastability in selected noble metals. Research is thus being carried out on the development and reconstruction of a new pilot device for the synthesis of noble metals micro/nanoparticles, the study of metastable states and the development of the synthesis process of micro/nanoparticles by ultrasonic spray pyrolysis (USP). Working hypothesis: development and synthesis of Au-based nanocomposite. Research objectives: to find a suitable technology for the production of Au- based nanocomposite.

<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.

Expected results: to investigate the presence of a metastable state in the synthesized Au-based nanocomposite and to evaluate its influence on the properties. For this purpose, modified existing or developed new materialographic sample preparation methods and adapted analysis techniques will be used.

### 3. STUDY PROGRAMME

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

Study program Doctoral School of the Faculty of Mechanical Engineering Maribor

### 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

### 1. Year:

a. Methods of scientific research work

b. 3 × optional subject:

dr. Rebeka RUDOLF: FUNCTIONAL MATERIALS

dr. Franc ZUPANIČ: SUSTAINABLE TECHNOLOGIES OF METALLIC MATERIALS

dr. Lidija Fras Zemljič: Colloid systems, nanomaterials and nanotechnologies

### 2. Year:

c. Publication of scientific results

d. 1x optional subject

### 3. Year:

e. Preparation and management of research projects

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,

23. 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.