

Position Description

Group of research topics: Design and application of additive manufactured shape-memory alloys

Position is funded by	<ul style="list-style-type: none"> - COFUND, Marie Skłodowska-Curie Actions (MSCA), Horizon 2020, European Union - University of Twente (UT), Netherlands - RMIT University (RMIT), Australia
Research Host	University of Twente (UT), Netherlands
PhD awarding institution/s:	Dual PhD awarded by UT and RMIT
Locations	<ul style="list-style-type: none"> - Primary: [Enschede, Netherlands] - Secondary: Melbourne, Australia - Annual workshops in Barcelona, Spain
Contract	Full time, fixed term (48 months)
Gross annual salary	€ 53.750 (average of 4 years)
Preferred start date	01/09/2022
Deadline for applications	30/04/2022 (Reference: UT-DC1)

Your choice of research topics (only one of these projects will be funded):

Project 1: Additive manufacture (AM) of shape memory alloy lattice structures	Project 2: Design of shape memory alloys for laser powder-bed fusion	Project 3: Design and application of additive manufactured shape-memory alloys
Additive manufacture (AM) of shape memory alloy lattice structures using laser powder-bed fusion of metal nitinol powders. Effective build parameters and part performance evaluation. This study will build on already existing knowledge in this field. <i>Further information may be obtained from the Supervisors.</i>	Investigation into novel shape memory alloys and how they can be made suitable and implemented using laser powder-bed fusion (LPBF): a comparative study. This will look at different candidates for shape memory effect and how those effects can be obtained using LPBF. <i>Further information may be obtained from the Supervisors.</i>	Design of novel applications using shape memory alloys processed using laser powder-bed fusion. Applications may be in various areas, including automotive, aerospace and medicine. <i>Further information may be obtained from the Supervisors.</i>
Supervisors: Ian Gibson, Mehrshad Mehrpouya, Tom Vaneker (UT) and: Andrey Molotnikov (RMIT)		
Research Fields: Additive manufacturing, shape memory alloys, design for additive manufacture, materials engineering		



REDI

The REDI (RMIT European Doctoral Innovators) program is a unique opportunity offering excellent PhD conditions including enviable international experience, top-class research discipline and transversal skills training as well as networking with academic and industry leaders across 60+ supporting partners and 11 countries.

As a REDI researcher you will be:

- enrolled by two entities, with the chance to be awarded dual doctorates and gain alumni status from multiple institutions, including the Marie Curie Alumni Association.
- seeing the world and spending a year at RMIT University in Melbourne, Australia (ranked in the top 20 of universities under 50 years old in the world).
- part of a rich multidisciplinary network of researchers and supervisors who come together in annual, week-long training events in Barcelona.
- working closely with industry and gaining experience with the 40+ leading companies supporting the program.
- earning a salary above national standards for doctoral positions with full social security benefits (with further support available for eligible researchers with additional needs).
- receiving support and guidance from two highest-calibre, experienced supervisors with high PhD completion rates.
- enhancing your career prospects through comprehensive technical and transversal skills training from leading institutions, intersectoral and international experience and mentoring.
- working on innovative and exciting projects of high commercial and societal value with up to four years to complete your research.

For more information visit: rediprogram.eu

Are you REDI? (Expected Profile)

Project 1

Your background and skills: Bachelor and Masters degree in topics related to materials science, materials engineering, mechanical engineering or manufacturing/production engineering. Experience in additive manufacturing beyond base-level melt-extrusion methods, preferably metal powder-bed fusion. Numerical modelling of solids, experimental methods for material testing. Good understanding of nitinol shape memory alloy a benefit.

Your work experience: n/a

Your research experience: n/a

Project 2

Your background and skills: Bachelor and Master`s degree in topics related to materials science, materials engineering, mechanical engineering or manufacturing/production engineering. Experience in additive manufacturing beyond base-level melt-extrusion methods, preferably metal powder-bed fusion. Numerical modelling of solids, experimental methods for material testing. A broad understanding of shape memory alloys a benefit

Your work experience: n/a

Your research experience: n/a

Project 3

Your background and skills: Bachelor and Master`s degree in topics related to materials science, materials engineering, mechanical engineering or manufacturing/production engineering. Experience in additive manufacturing beyond base-level melt-extrusion methods, preferably metal powder-bed fusion. Numerical modelling of solids, experimental methods for material testing. Product design and testing knowledge a benefit.



Your work experience: n/a

Your research experience: n/a

Employment Benefits and Conditions

UT offers a 48-months full-time work contract, indicatively starting on 01/09/2022. The position will be based in Enschede (Netherlands). International travel is foreseen, including to Australia (up to 12 months) and Spain (one week per year). At UT, there is a probation period of twelve (12) months and there are 40 working hours per week.

The remuneration, in line with the European Commission rules for Marie Skłodowska-Curie grant holders, will consist of a gross annual salary of 53.750 EUR gross per year. Of this amount, the estimated net salary to be perceived by the Researcher is 2.500 EUR per month. However, the definite amount to be received by the Researcher is subject to national tax legislation.

Benefits include:

- Sickness/parental leave
- Membership of UT sports facilities
- 1,000€ yearly travel allowance to cover flights and accommodation to participate in the annual workshop at RMIT Europe in Barcelona (Spain).
- 10,000€ allowance to cover flights and living expenses for up to 12 months in Australia.

For more details, please see: <https://utwentecareers.nl/en/ut-as-employer/employment-conditions/>

REDI to apply? First a little more about us...

UT

The University of Twente offers comprehensive and contemporary degree courses. The UT is a leader in implementing educational reforms, designed, of course, in accordance with the new Bachelor's/Master's degree structure. Students have ample opportunity to combine a variety of educational pursuits. The state-of-the-art ICT facilities for distance and interactive learning enable everyone to determine their own learning path as much as possible.

The University of Twente is one of Europe's finest educational resources encouraging research and entrepreneurship in both technology and social sciences. A young and innovative institute, UT is internationally respected in areas ranging from public policy studies and applied physics to biomedical technology. Surveys among professors and students demonstrate that the quality of research and education are unparalleled.

With one of the fastest networks in the world, the entire campus offers wireless Internet connectivity and access to the largest communications network in Europe. And because there is more to life than studying, the Netherlands only campus university (140 hectares) has many sports and cultural facilities. In addition to study facilities and accommodation the campus of the University of Twente offers a variety of services, psychologists, a medical centre, counsellors, religious services, a hotel, restaurants, bars, and much more.



UT university offers to its Doctoral Students a wide range of benefits, including:

- **Courses and training opportunities:** All candidates must complete a range of related courses and credit-earning activities (like student supervision, presentation of conference papers, etc.)
- **Language courses: All courses are conducted in English, but Dutch language courses are freely available**
- **Cultural and social activities:** UT is a campus-based university, with a vast range of social, cultural and sporting activities
- **Engagement with industry:** The candidate will be associated with the Fraunhofer Innovation Platform at UT, which will provide opportunity for industrial engagement and project activity

For more information, visit: <https://www.utwente.nl/en/education/tgs/prospective-candidates/phd/>

RMIT

RMIT is a global university of technology, design and enterprise, ranked in the top 20 of universities under 50 years old in the world. World-class people, leading edge resources, collaboration with industry partners and multi-disciplinary approaches are just a few of the trademarks of research at RMIT, which boasts almost 90,000 students and campuses in Australia, Vietnam, a centre in Barcelona, Spain and research and industry partners on every continent.

As Doctoral Student at RMIT you will be able to benefit from a wide range of training and mentoring opportunities including:

- **The PhD Up** program offering a huge range of workshops, seminars and short courses to build research knowledge and skills, including research writing, publishing, research methods, ethics, project management and careers (see more at: <https://www.rmit.edu.au/students/student-essentials/information-for/research-candidates/enriching-your-candidature/phd-up-program>)
- **RMIT PhD Online Modules**, designed specifically for PhD students, including *Researching your literature review*, *Writing a research proposal*, *Choosing where to publish*, *Writing for Publication*, *Research Integrity*, etc.
- **RMIT Creds**, RMIT's Digital Credentials Platform, which includes over 80 credentials covering a wide range of topics such as *Understanding Responsible Research and Innovation*, *Academic Integrity Awareness*, *Emotional Intelligence*, *Diversity Matters*, *Agile Ways of Working*, *Why Gender Matters*, *Cross Cultural Communications*, etc. (see more at: <https://www.rmit.edu.au/study-with-us/levels-of-study/short-courses/>);
- **The e-Grad School**, the online learning modules of the Australian Technology Network (ATN) of Universities' covering a multitude of transferrable skills such as *Critical and Creative Thinking*, *Leadership and Communication*, *Entrepreneurship*, *Research Commercialisation*, *Public Policy*, etc.
- **The RMIT Mentoring platform also** gives you access to mentoring from trained professionals and experts, including:
 - o *Career Mentoring* - career guidance from industry professionals from all disciplines and global locations.
 - o *Women@RMIT Mentoring* - career guidance from industry professionals who are committed to gender diversity and equality in the workplace (especially for female students in male dominated industries)
 - o *Pride Mentoring* - a chance for students who identify as LGBTIQ+ to receive professional and social guidance from industry professionals who also identify as LGBTIQ+ or are familiar with the additional challenges these groups face in the workforce.

Find out more: [rmit.edu.au](https://www.rmit.edu.au)

A little more about you...

Eligibility

You need to fulfil criteria of the REDI program and both universities to be recruited.

To apply for REDI, you must comply with the MSCA-COFUND general eligibility criteria:



- Be in the **first four years** (Full-Time Equivalent (FTE) research experience) **of your research career** and not yet have been awarded a doctoral degree. FTE Research Experience is measured from the date when a researcher obtained the degree entitling him/her to embark on a doctorate, **AND**
- **Not have resided or carried out your main activity** (work, studies, etc.) in the country of your research host for more than 12 months in the 3 years immediately before this call's deadline. Time spent as part of a procedure for obtaining refugee status under the Geneva Convention (1951 Refugee Convention and 1967 Protocol), compulsory national service and/or short stays such as holidays is not taken into account.

AND the following criteria:

- **Hold a bachelor's degree requiring at least 4 years of full-time study** in a relevant discipline awarded with honours and including a research component; **OR**
- **Hold a master's degree that includes a research component** or a master's degree without a research component with at least a high distinction average; **OR**
- **Have evidence of appropriate academic qualifications and/or professional experience** demonstrating that the applicant has developed knowledge of the field of study or cognate field and the potential for research sufficient to undertake the chosen project.

AND

- Have **English level C1 language proficiency**.

In addition to the above, if your application is successful, you will be required to:

- Apply for a working visa in Netherlands (<https://www.netherlandsworldwide.nl/travel/visas-for-the-netherlands/>);
- Apply for a student visa in Australia (More information: <https://www.rmit.edu.au/study-with-us/international-students/apply-to-rmit-international-students/student-visas/apply-for-a-visa>)

In addition to meeting the eligibility criteria for the REDI Program, you will also need to meet the admission criteria of both institutions:

Admission at UT

You will be enrolled as Doctoral Student at UT for the entire duration of the assignment. At admission, you will need to supply:

- CV
- Cover Letter, showing your motivation for studying the specified topic at UT
- Education certificates
- A list of up to 2 referees

More information: <https://www.utwente.nl/en/education/tgs/prospective-candidates/phd/application-admission/admission-requirements/>



Admission at RMIT University

You will also be enrolled as Doctoral Student at RMIT for the entire duration of the assignment. At admission, you will need to supply:

- CV
- Complete transcripts for all academic qualifications
- Research proposal or statement of interest in an available research project
- Language certificates
- List of referees

More information: <https://www.rmit.edu.au/research/research-degrees/how-to-apply>

Apply now (<https://www.rediprogram.eu>)

