

IFW Dresden e.V.



About the Host Institution The Leibniz Institute for Solid State and Materials Research Dresden (IFW Dresden) is a non-university research institute conducting fundamental and applied research in advanced functional materials for sustainable technologies. The institute employs approximately 500 staff members from more than 40 countries and offers a highly international and interdisciplinary research environment. Further information is available at: <https://www.ifw-dresden.de> About the MGICIAN Doctoral Network MGICIAN is a Horizon Europe MSCA Doctoral Network dedicated to developing sustainable magnesium-based thermoelectric materials and translating them into high-performance solid-state cooling technologies. The network brings together academic and industrial partners across Europe and trains 15 Doctoral Candidates (m/f/div) in materials development, interface engineering, module fabrication, and system integration.

15 Doctoral Candidates (m/f/div)

Fabrication of High-Performance Thermoelectric Modules for Solid-State Cooling

City: Dresden; Starting date (earliest): 01/07/26; Duration: 36 months; Remuneration: TV-L; Reference number: MGICIAN-IFW-DC10; Closing date: 30/04/26

Tasks

Project Overview

DC9 focuses on the fabrication, optimization, and validation of high-performance thermoelectric modules for solid-state cooling applications. Building on magnesium-based materials and advanced interface concepts developed within the consortium, DC9 will develop thermoelectric modules with optimized cooling performance and high durability. The project will involve the fabrication of modules, the simulation of thermoelectric devices and the testing of these devices under realistic operating conditions.

The Doctoral Candidate (m/f/div) will:

- Develop and fabricate thermoelectric module architectures based on Mg-based materials and advanced interface solutions
 - Characterise and evaluate electrical, thermal, and mechanical module performance under steady-state and cyclic conditions
 - Optimise module design through variation of geometry, processing parameters, and contacting strategies, supported by modelling and data analysis
 - Collaborate within the international MGICIAN network and disseminate research results through publications and conferences
 - Participate in intersectoral secondments and structured doctoral training activities
- The listed tasks are indicative and may evolve in accordance with project developments.

Secondments

To strengthen interdisciplinary and intersectoral training, DC9 will complete secondments at:

- TEGnology (Denmark) – 2 months
Focus: Industrial module assembly and fabrication optimization
- University College Cork (Ireland) – 3 months
Focus: Integration of advanced interface and joining concepts for module prototypes
- Public University of Navarra (UPNA, Spain) – 2 months
Focus: Advanced device testing and heat exchangers

Requirements

Education

Master's degree (or equivalent) in Materials Science, Physics, Engineering, or a closely related field

Technical Competences

- Strong background in thermoelectric devices, materials processing, or module fabrication
- Experience with experimental device characterisation or performance testing
- Understanding of electrical and thermal transport in thermoelectric systems
- Familiarity with numerical simulations or modelling tools is advantageous

Personal Skills

- Strong analytical and experimental problem-solving abilities
- Ability to work independently and within an international interdisciplinary research network
- Excellent written and spoken English

Documents Required

- Copies of Bachelor's and Master's diplomas and transcripts (with certified translations if applicable)
- Candidates may apply before obtaining their Master's degree by submitting a provisional certificate; however, employment cannot commence before the degree is formally awarded

Further details are provided in the online application system.

MSCA Doctoral Candidate Eligibility Criteria

- Must not hold a PhD degree
- Comply with the MSCA mobility rule (not resided or carried out their main activity in Germany for more than 12 months in the 36 months before recruitment)

What we offer

Employment Conditions

- Full-time employment contract for up to 36 months
- Salary according to the MSCA Doctoral Network regulations, including:
- Living allowance: €4,058/month
- Mobility allowance: €710/month
- Family allowance: €660/month (if applicable)
The final gross and net salary will depend on the national taxation and social security contributions
- Enrolment in a PhD Programme at Technische Universität Dresden in the department of Mechanical Engineering
- Participation in international training events and secondments

Application

Applications must be submitted exclusively through the official project website <https://mgician.eu>.

Applications submitted by email will not be considered.

Applicants should prepare:

- Curriculum Vitae (CV)
- Motivation letter
- Copies of academic transcripts and certificates

More information at <https://stellenticket.de/202725/BEUTH/>

Offer visible until 18/04/26

