15 PhD Positions – Thermoelectric Materials & Solid-State Cooling (Fully Funded, Europe)

We are recruiting 15 Doctoral Candidates (DCs) for the EU-funded Marie Skłodowska-Curie Doctoral Network (MSCA-DN). The project focuses on sustainable magnesium-based thermoelectric materials for next-generation solid-state cooling applications, combining materials science, device engineering, and system integration.

Applicants may apply for **one primary PhD project** from the list of 15 individual positions (DC1-DC15). In addition, they may indicate **up to two optional choices**, provided these are relevant to their academic background, skills, and research interests.

The positions are hosted at leading European institutions, including:

DC1: Development of Mg-Based Thermoelectric Materials for Solid-State Cooling
Host: University of Cyprus (UCY), Nicosia, Cyprus
Supervisor: Prof. Dr. Theodora Kyratsi
Focus: Thermoelectric materials synthesis & characterisation
Background: Physics, Materials Science or closely related
Apply: https://mgician.eu/research/doctoral-candidate-projects/dc1/

DC2: Synthesis and Transport Studies of Magnesium-Based Thermoelectric Materials
Host: Instituto Superior Técnico (IST), Lisbon, Portugal
Supervisor: Dr. Elsa Branco Lopes
Focus: Materials synthesis & transport properties
Background: Physics, Materials Science or closely related
Apply: https://mgician.eu/research/doctoral-candidate-projects/dc2/

DC3: Microstructure, Defect, and Interface Engineering of Magnesium-Based Thermoelectric Materials
Host: Max Planck Institute for Sustainable Materials (SUSMAT), Düsseldorf, Germany
Supervisor: Prof. Dr. Christina Scheu
Focus: Structural characterization (XRD, SEM, TEM, APT)
Background: Physics, Materials Science or closely related
Apply: https://mgician.eu/research/doctoral-candidate-projects/dc3/

DC4: Atomistic Modelling and Design of Thermoelectric Materials and Interfaces
Host: King's College London (KCL), London, United Kingdom
Supervisor: Dr. Ivana Savic
Focus: Computational materials modelling
Background: Physics, Computational Materials Science or closely related
Apply: https://mgician.eu/research/doctoral-candidate-projects/dc4/

DC5: Development of Interface Materials for Magnesium-Based Thermoelectric Devices
Host: University College Cork (UCC), Cork, Ireland
Supervisor: Dr. Kafil M. Razeeb
Focus: Interface materials & bonding
Background: Materials Science, Engineering or closely related
Apply: https://mgician.eu/research/doctoral-candidate-projects/dc5/

DC6: Diffusion Layers, Soldering Concepts, and Thermal Management Components for TE Devices
Host: Consejo Superior de Investigaciones Científicas (CSIC), Madrid, Spain
Supervisor: Dr. Marisol Martin-Gonzalez
Focus: Diffusion barriers & heat management
Background: Materials Science, Mechanical Engineering or closely related
Apply: https://mgician.eu/research/doctoral-candidate-projects/dc6/

DC7: High-Performance Magnesium-Based Thermoelectric Modules for Solid-State Cooling
Host: German Aerospace Center (DLR), Cologne, Germany
Supervisor: Prof. Dr. Johannes de Boor
Focus: Module fabrication & integration
Background: Materials Science, Engineering or closely related
Apply: https://mgician.eu/research/doctoral-candidate-projects/dc7/

DC8: Mechanically Robust Design of Magnesium-Based Thermoelectric Modules
Host: German Aerospace Center (DLR), Cologne, Germany
Supervisor: Prof. Dr. Johannes de Boor
Focus: Mechanical design, reliability & testing
Background: Mechanical Engineering, Materials Science or closely related
Apply: https://mgician.eu/research/doctoral-candidate-projects/dc8/

DC9: Fabrication of High-Performance Thermoelectric Modules for Cooling Applications
Host: IFW Dresden, Germany
Supervisor: Prof. Dr. Kornelius Nielsch
Focus: Module fabrication & testing
Background: Materials Science, Engineering or closely related
Apply: https://mgician.eu/research/doctoral-candidate-projects/dc9/

DC10: Scalable Fabrication and Advanced Coating of Thermoelectric Coolers
Host: IFW Dresden, Germany
Supervisor: Prof. Dr. Kornelius Nielsch
Focus: Coating technologies & durability
Background: Materials Science, Chemistry or closely related
Apply: https://mgician.eu/research/doctoral-candidate-projects/dc10/

DC11: Hybrid Refrigeration System with Precise Temperature Control Using Thermoelectric Cooling
Host: Public University of Navarra (UPNA), Pamplona, Spain
Supervisor: Prof. Dr. David Astrain
Focus: Thermoelectric-assisted refrigeration systems
Background: Mechanical Engineering, Energy Systems or closely related
Apply: https://mgician.eu/research/doctoral-candidate-projects/dc11/

DC12: Thermoelectric Sub-Cooling Systems for High-Efficiency Refrigeration
Host: Public University of Navarra (UPNA), Pamplona, Spain
Supervisor: Prof. Dr. David Astrain
Focus: Refrigeration efficiency optimization
Background: Mechanical Engineering, Energy Systems or closely related
Apply: https://mgician.eu/research/doctoral-candidate-projects/dc12/

DC13: Thermal Optimisation of Photonic Devices Using Thermoelectric Cooling
Host: III-V Lab, Palaiseau, France
Supervisor: Dr. Alexandre Shen
Focus: Thermal management for photonics
Background: Physics, Electrical Engineering, Photonics or closely related
Apply: https://mgician.eu/research/doctoral-candidate-projects/dc13/

DC14: Thermoelectric Cooling for Photonic Integrated Circuits (PICs)
Host: University College Cork (UCC), Cork, Ireland
Supervisor: Dr. Kafil M. Razeeb
Focus: Cooling solutions for PICs
Background: Physics, Electrical Engineering or closely related
Apply: https://mgician.eu/research/doctoral-candidate-projects/dc14/

DC15: Smart Design of Thermoelectric Coolers for On-Chip Applications
Host: University of Southampton (SOTON), Southampton, United Kingdom
Supervisor: Dr. Ruomeng Huang
Focus: On-chip cooling & system optimisation
Background: Electrical Engineering, Mechanical Engineering or closely related
Apply: https://mgician.eu/research/doctoral-candidate-projects/dc15/

Full project details: **https://mgician.eu**

Requirements

- Master's degree in: Materials Science, Physics, Engineering, or related fields
- Strong interest in research and innovation
- Good English communication skills

Eligibility conditions:

- Applicants must not already hold a PhD
- Comply with the MSCA mobility rule (must not have lived or worked in the recruiting country for more than 12 months within the past 36 months).

What we offer

- Excellent research environment in leading European research institutions
- Salary according to the MSCA Doctoral Network regulations, including: **i)** Living allowance: €4,010/month (before country correction coefficient), **ii)** Mobility allowance: €710/month, and **iii)** Family allowance: €660/month (if applicable). *The final gross and net salary will depend on the country's correction coefficient, national taxation, and social security contributions.*
- International mobility & secondments
- Industry + academic training
- Structured doctoral programme

How to apply

Apply online via:

https://mgician.eu

Please include:

- CV, motivation letter, and academic transcripts

Contact:

For questions regarding the administrative aspects of the recruitment process, please contact: Dr. Jamil Ur Rahman (info@mgician.eu)