Marie Curie PhD vacancy (DC7) for PhD research titled "Laser Power Bed Fusion of novel high temperature-resistant multi-metal combinations for small-scale turbomachinery"

Ref. BAP-2026-594

This proposed PhD research will be carried out in the Additive Manufacturing (AM) team at the Department of Mechanical Engineering from KU Leuven.

KU Leuven (University of Leuven) has been a center of learning for nearly six centuries since 1425, making it one of the oldest and most renowned universities in Europe. Today, it is Belgium's highest ranked university (QS 2025 : 60), ranked among the top 4% universities in the world and consistently ranked in the top 10 most innovative universities in Europe. The university caters to over 60,000 students from more than 140 countries. KU Leuven's three doctoral schools provide internationally oriented PhD tracks for more than 4,000 doctoral students. KU Leuven and affiliated knowledge institutes provide fertile ground for innovation and high-tech entrepreneurship in the Leuven region. This favourable climate for knowledge-driven innovation makes the Leuven region an attractive location for many high-tech companies.

KU Leuven website: https://www.kuleuven.be/english/kuleuven/
AM team linkedIn: https://www.linkedin.com/company/amkul
AM team website:

https://www.mech.kuleuven.be/en/research/am/

Project

KU Leuven seeks a highly motivated PhD candidate for a fully funded, four-year international doctoral position within the Marie Sklodowska-Curie Doctoral Networks (MSCA-DN) project TURBO-IMPACT (TURBOmachinery Innovative Manufacturing, Processing, Analysis, Characterization, and Topology ; Website: https://cordis.europa.eu/project/id/101311350).

The TurboImpact project, funded by Horizon Europe – MSCA-DN, tackles challenges in designing, optimizing, selecting materials, and manufacturing small-scale turbomachinery for applications in heat pumps, fuel cells, organic Rankine cycles, or gas turbines. This project develops robust system and component design methods, an integrated manufacturing platform, and multi-material joining techniques to efficiently produce small-scale turbomachinery.

In that large EU project, This PhD researcher (DC7) will work at KU Leuven and focus on increasing the fundamental understanding of multi-metal Laser Powder Bed Fusion (LPBF) additive manufacturing for small-scale turbomachinery. Metals with high temperature-resistance will be targeted with special focus on the relation between material characteristics, LPBF process parameters, and resulting mechanical performance.

The doctoral candidate will:

1. Use and extend beyond state-of-the-art equipment available in Leuven and investigate 1D and 3D powder deposition strategies inside LPBF equipment
2. Design and validate a multi-physical digital model to predict ideal LPBF parameters and scanning strategies with focus on the interface regions
3. Study the influence of local laser remelting on surface properties, porosity and general interface quality
4. Investigate the relationship between material, process, and final properties

The project includes potential international secondments at DTU (Prof. G. Bissacco, Denmark) and Amnovis (Dr. R. Wauthle, Belgium).

The researcher is supervised by Prof. Brecht Van Hooreweder (www.kuleuven.be/wieiswie/en/person/00059721), director of Leuven.AM and head of the AM team. The AM team currently counts >25 researchers and is pioneering in metal AM since 1990. More information on the website (www.mech.kuleuven.be/en/research/am/) or linkedIn (www.linkedin.com/company/amkul).

Profile

• I have a master degree in engineering, physics or mathematics and performed above average in comparison to my peers. I am not in possession of a doctoral degree at the date of recruitment.
• I am proficient in written and spoken English.
• During my courses or prior professional activities, I have gathered some basic experience with the basic physical principles of additive manufacturing and/or with the basic principles of manufacturing and mechanical behavior of materials or I have a profound interest in these topics.
• I demonstrate a strong sense of initiative and responsibility, while also being an effective and collaborative team player.
• Based on interactions and discussions with my supervisors and the colleagues in my team, I set up and update a plan of approach for the upcoming 1 to 3 months to work towards my research goals. I work with a sufficient degree of independence to follow my plan and achieve the goals. I indicate timely when deviations of the plan are required, if goals cannot be met or if I want to discuss intermediate results or issues.
• In frequent reporting, varying between weekly to monthly, I show the results that I have obtained and I give a well-founded interpretation of those results. I iterate on my work and my approach based on the feedback of my supervisors who steer the direction of my research.
• I feel comfortable to work as a team member and I am eager to share my results to inspire and be inspired by my colleagues.

Special requirements:
In accordance with the Marie Skłodowska-Curie Actions Doctoral Network regulations:

- Applicants must comply with the MSCA Mobility Rule. At the time of recruitment, candidates must not have resided or carried out their main activity (work, studies, etc.) in the hiring Country for more than 12 months during the 36 months immediately preceding recruitment.
- Applicants must be doctoral candidates (i.e., not already hold a doctoral degree) and be eligible under the MSCA Doctoral Network rules at the time of recruitment.
- Short stays such as holidays, compulsory national service, or time spent as part of a refugee procedure are not considered.

Applicants must have a two-year master's degree in Mechanical Engineering, Manufacturing Engineering, Computer Science, Data Science, Software Engineering, or a similar degree with an academic level equivalent to a two-year master's degree.

Offer

Successful candidates will:

- be enrolled in the KU Leuven PhD programme,
- conduct research in a stimulating international environment with access to state-of-the-art facilities and supervision by recognised experts,
- participate in local and network-wide training activities aimed at advancing scientific knowledge and transferable skills,
- attend workshops and international conferences relevant to their research topic,
- undertake secondments of approximately 4–6 months at other network or associated partner institutions.
- receive further doctoral training for PhD candidates in the framework of the KU Leuven Arenberg Doctoral School (https://set.kuleuven.be/phd), known for its strong focus on both future scientists and scientifically trained professionals who will valorise their doctoral expertise and competences in a non-academic context.

Assessment:
Recruitment will be carried out and monitored in full accordance with the principles of the European Charter for Researchers, the Code of Conduct for the Recruitment of Researchers, and the Doctoral Network mobility rules. The process will follow an open, transparent, merit-based, impartial, and equitable procedure, tailored to each individual DC position. Promising candidates will undergo a series of interviews with the PI, the Supervisory Team, and the Recruitment Committee.

Please note that this position is part of a consortium involving several partner universities. By submitting your application, you consent to your personal data, CV and motivation letter being shared with and accessible to the relevant members of the consortium for the purposes of the recruitment and selection process

Salary and appointment terms:
Successful candidates will receive a comprehensive financial package in line with the rules for Doctoral Candidates (DCs) in a Marie Skłodowska-Curie Actions (MSCA) Doctoral Network. Employment will be provided by the recruiting organisation and will include mobility and family allowances (where applicable), together with full social security coverage.

Doctoral Candidates will benefit from a competitive salary, paid leave (in accordance with institutional regulations), and access to national social security schemes. The employment starts on 1 February 2027 or according to mutual agreement. The position is a full-time position.

Interested?

Follow the KU Leuven job application tool and enclose:
1. full CV – mandatory
2. motivation letter – mandatory
3. full list of credits and grades of both BSc and MSc degrees (as well as their transcription to English if possible) – mandatory(when you haven’t finished your degree yet, just provide us with the partial list of already available credits and grades)
4. proof of English proficiency (TOEFL, IELTS, …) -if available
5. two reference letters - if available
6. an English version of your MSc or PhD thesis, or of a recent publication or assignment - if available

For more information please contact Prof. dr. Brecht Van Hooreweder, mail: brecht.vanhooreweder@kuleuven.be.

You can apply for this job no later than November 30, 2026 via the online application tool :

http://www.kuleuven.be/eapplyingforjobs/light/60756261

KU Leuven strives for an inclusive, respectful and socially safe environment. We embrace diversity among individuals and groups as an asset. Open dialogue and differences in perspective are essential for an ambitious research and educational environment. In our commitment to equal opportunity, we recognize the consequences of historical inequalities. We do not accept any form of discrimination based on, but not limited to, gender identity and expression, sexual orientation, age, ethnic or national background, skin colour, religious and philosophical diversity, neurodivergence, employment disability, health, or socioeconomic status. For questions about accessibility or support offered, we are happy to assist you at <a href="https://www.kuleuven.be/wieiswie/en/person/g0003537" >this email address.