

Hier
entsteht
Zukunft!



UNIVERSITÄT
DES
SAARLANDES

Foto: Oliver Dietze

Saarland University is a campus university with an international reputation for research excellence, particularly in computer science and in the life sciences and nanosciences. The university is also distinguished by its close ties to France and its strong European focus. Around 17,000 students, studying over one hundred different academic disciplines, are currently enrolled at Saarland University. Saarland University is officially recognized as one of Germany's family-friendly higher-education institutions and with a combined workforce of more than 4000 it is one of the largest employers in the region.

The Saarland University is inviting applications for the following position commencing at the earliest opportunity

Academic research assistant (m/f/x)

Reference number W2749, salary in accordance with the German TV-L salary scale¹, pay grade: E13 TV- L, duration of employment: 3 years, volume of employment: 100 % of standard working time.

Workplace/Department:

Working group "Data-Driven Materials Design", Chair for Experimental Methodology of Materials Science, Department of Materials Science and Engineering

Job requirements and responsibilities:

This PhD position is part of the CircularSaar project, which is funded by the Saarland state government from its transformation fund and aims to support the energy- and material-intensive automotive, mechanical engineering, and steel industries in Saarland in their transition to a sustainable circular economy. Within CircularSaar, the task of the Data-Driven Materials Design working group is to link the large amount of information provided by modern characterization methods on the microstructure of materials and their properties with methods of data processing and artificial intelligence and to derive structure-property relationships from this. This makes it possible to identify previously unknown relationships and use them to develop completely new materials that either have new properties or, with the same properties, have a much simpler structure and can thus avoid the use of critical elements. A main focus of the working group is on the further development of AI-based analysis of microscopic microstructure images as a tool for data collection.

The central focus of this PhD project is the development of machine learning-based microstructural analysis workflows in low-data regimes. The tasks include:

¹ TV-L = collective agreement on remuneration of public sector employees in the German *Länder*

The pay grade assigned to an employee depends on their professional qualifications and the number of years of service. Each pay grade is further subdivided into levels. Entry-level employees with no previous experience will initially be assigned a level 1 rating. After one year at level 1 of the E10 pay grade, an employee will move up to level 2. After a further two years, the employee will move to level 3, etc.

- Synthetic microstructure data generation, using model-based and texture-based approaches as well as deep-learning based and generative AI approaches
- Use large unlabeled microstructural datasets to pretrain encoders that capture domain-specific features using self-supervised learning
- Design of hybrid machine learning models that take images and context in form of tabular metadata into account
- Exploration of transfer learning from foundation models trained in other domains
- Training and finetuning of downstream ML models using synthetic and real data, as well as domain-specific and non domain-specific encoders
- Collaboration with interdisciplinary teams within CircularSaar and other universities
- Publication of results in peer-reviewed journals and presentation at international conferences

Your academic qualifications:

- Completed scientific university studies in Materials Science and Engineering, Computer Science, or comparable
- Language skills (according to GER): English -C1

The successful candidate will also be expected to:

- Programming skills in Python
- Experience in computer vision and machine learning
- Strong interest in microscopy and microstructural analysis
- Self-motivated, results-oriented approach and strong teamwork skills
- Structured and precise working style
- Excellent written and verbal communication skills
- Language skills (according to GER): German -B2

What we can offer you:

- A flexible work schedule allowing you to balance work and family, among other things the possibility of teleworking
- Secure and future-oriented employment with attractive conditions
- A broad range of further education and professional development programmes (for example language courses)
- An occupational health management model with numerous attractive options, such as our university sports programme
- Supplementary pension scheme (RZVK)
- Discounted tickets on local public transport services ('Job-Ticket Plus' of the saarVV)

We look forward to receiving your **meaningful online application** (in a PDF file) by **05.12.2025** to **martin.mueller1@uni-saarland.de**. Please include the reference number **W2749** in the subject line of the e-mail.

If you have any **questions**, please contact us for assistance. Your contact:

Herr Dr.-Ing. Martin Müller

Group Leader Data-Driven Materials Design, Chair for Experimental Methodology of Materials Science

Tel.: +49 (0)681 302-70548

Pay grade classification is based on the particular details of the position held and the extent to which the applicant meets the requirements of the pay grade within the TV-L salary scale. Part-time employment is generally possible.

If you have obtained a foreign university degree, a proof of the equivalence of this degree with a German degree by the Zentralstelle für ausländisches Bildungswesen (ZAB) is needed before hiring. If necessary, please apply for this in time. You can find more information at <https://www.kmk.org/zeugnisbewertung>.

Unfortunately, neither costs for attending an interview at Saarland University nor costs for any certificate evaluation by the ZAB can be reimbursed in principle.

We welcome applications regardless of gender, nationality, ethnic and social origin, religion/belief, disability, age, and sexual orientation and identity. In accordance with its policy of increasing the proportion of women, the University actively encourages applications from women. Applications from severely disabled persons will be given preferential consideration in the event of equal suitability.

When you submit a job application to Saarland University you will be transmitting personal data. [Please refer to our privacy notice for information on how we collect and process personal data in accordance with Art. 13 of the Datenschutz-Grundverordnung.](#) By submitting your application you confirm that you have taken note of the information in the Saarland University privacy notice.