

Doctoral Researcher (f/m/d) in Scale-Bridging Correlative Tomography

Technische Fakultät, Erlangen, TV-L E 13, Teilzeit, Befristete Anstellung, Bewerbungsschluss:
30.09.2025

Your Workplace

The [CENEM](#), a well-established expertise center and user facility for electron microscopy and nanoanalysis at FAU, runs a number of state-of-the-art microscopes in the field of transmission electron microscopy, scanning electron microscopy and X-ray microscopy, as well as a well-equipped laboratory for sample preparation. The [IMN](#), a research institute of the Materials Science Department, explores the advanced capabilities of CENEM's instrumentation for cutting edge research on new materials, a major research focus of the university.

The position is embedded in the [Collaborative Research Center \(CRC\) 1411](#), which is an initiative funded since 2020 by DFG focused on predictive model based design and practical process realisation of particulate products. These range from single nanoparticles with controlled shape and composition, through hierarchically organised assemblies of particles, up to particle packings with optimised optical properties. Such particles are produced by continuous syntheses directly coupled to classification by chromatography. The research is carried out at FAU Erlangen-Nürnberg and involves the Departments of Chemical and Biological Engineering, Materials Science and Engineering, Mathematics, Chemistry, and Physics. One project is located at the NanoEnergieTechnikZentrum of the University of Duisburg-Essen.

Job Benefits

- Regular promotion to the next level and increase in salary pursuant to the collective bargaining agreement for the public service of the German Länder (TV-L) or remuneration pursuant to the Bavarian Public Servants Remuneration Act (BayBesG) plus an additional annual bonus
- 30 days annual leave at five working days per week with additional free days on December 24 and 31
- Occupational pension scheme and asset accumulation savings scheme

What We Offer:

- A dynamic research environment with access to cutting-edge microscopy and tomography facilities.
- Opportunities for interdisciplinary collaboration and networking within the scientific community.
- A comprehensive training program and mentorship from leading experts in the field.
- Excellent support during the academic qualification phase
- Structured doctoral degree programs
- Systematic career development in collaboration with the Graduate Center

- Thorough onboarding process with a dedicated team
- Joint team activities
- Subsidized food and drinks in our student restaurants
- Place of work within comfortable walking distance of public transport
- Family-friendly environment with childcare options, also during school holidays
- Flexible working hours
- A wide range of training courses and opportunities for professional development
- Active health management

Description

Position Overview:

We invite applications for a motivated doctoral researcher to join our interdisciplinary team specializing in scale-bridging correlative tomography to investigate hierarchical porous structures. The successful candidate will focus on characterizing stationary phase materials (SPMs) used in chromatography, as well as other porous materials, utilizing state-of-the-art imaging techniques such as electron tomography (ET), nano X-ray computed tomography (nano-CT), and micro-computed tomography (micro-CT).

Key Responsibilities:

- Conduct detailed 3D characterization of porous and particulate materials on different scales with the overarching goal of understanding irregularities and designing optimized porous structures.
- Develop tailored sample preparation workflows, including laser ablation and focused ion beam (FIB), for correlative imaging experiments.
- Refine workflows and algorithms for data acquisition, reconstruction, and registration to enhance correlative 3D reconstructions.
- Implement advanced machine and deep learning segmentation strategies to improve quantitative analysis of hierarchical pore networks.
- Collaborate with material synthesis teams to optimize SPM structures based on imaging feedback.
- Analyze 3D pore data to support simulations of diffusion, transport, and particle self-assembly.

Qualifications

Your Qualifications:

- Master's degree or equivalent in Materials Science, Physics, Chemical Engineering, or a closely related field with competitive grades.
- Strong interest in tomographic imaging techniques and data analysis.
- Good communication skills and the ability to work both independently and collaboratively.
- Able to work in an interdisciplinary team, high level of independence and diligence.
- Able to present ideas and results to a broad audience.

- Proficient in the English language; proficiency in the German language is beneficial though not essential.

Desirable Qualifications:

- Prior experience with SEM/FIB, TEM or X-ray microscopy methods is a plus but not required.
- Experience with tomographic imaging techniques and data analysis.
- Programming skills and familiarity with image processing and analysis software.
- A keen interest in advancing methodological developments in tomography and materials characterization.

Supplementary description

[FAU](#) is a member of “The Family in Higher Education Institutions” best practice club and aims to increase the number of women in scientific positions. Female candidates are therefore particularly encouraged to apply.

Your Online Application Should Include:

- Letter of motivation including justification of your suitability for the described project (max. 4000 characters).
- CV listing: educational and vocational history, key skills and academic achievements, publications and oral presentations (max. 2 page).
- Copy of your Master degree certificate (if not yet available, please send Bachelor certificate instead) along with full academic transcripts.
- Two academic letters of recommendation.

Interessiert?

Die vollständige Stellenausschreibung sowie alle Infos zum Bewerbungsverfahren finden Sie hier:

