Friedrich-Alexander-Universität
Erlangen-Nürnberg

9 Research Positions for Doctoral Researchers and 1 Research Position for Postdoctoral Researcher (m/f/d) - Research Training Group 2950 SyMoCADS

Friedrich-Alexander-Universität, Erlangen, TV-L E 13, Full or part time, Temporary employment, Bewerbungsschluss: 30.06.2026

Your Workplace

Research Training Group 2950 SyMoCADS

Research Training Group (RTG) 2950 - **Synthetic Molecular Communications Across Different Scales: From Theory to Experiments (SyMoCADS)** is a **research training program** funded by **the German Research Foundation (DFG)** with the aim to educate **scientists and engineers in this emerging interdisciplinary field** of research. The RTG comprises ten principal advisors (PAs) from the Faculty of Engineering, Faculty of Science, the Medical Faculty, and the University Hospital. Research takes place in an excellent scientific environment at FAU, with top-notch instrumentation in the laboratories of the participating principal advisors (PAs).

The research and the structured qualification program aim to equip the participating researchers with the knowledge and skill set needed to significantly advance the field of molecular communication (MC) and to bring it to the realm of practical applications.

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

Description

The RTG consists of **9 doctoral research projects (P1-P9)** organized in **3 clusters (C1-C3)** and **a cross-cluster postdoctoral project (P10)**.

Cluster C1 focuses on the use of MC for the **design, monitoring, and control of bioprocesses on a microliter scale** and includes:

- Project P1 (Prof. Kathrin Castiglione, Institute of Bioprocess Engineering): Nanodevices for MC-Based Sensing and Control in Microliter-scale Bioreactors
- Project P2 (Prof. Heinrich Sticht, Institute of Biochemistry): Design and Characterization of Protein Modules for MC-Based Sensing and Control in Microliter-scale Bioreactors
- Project P3 (Prof. Robert Schober, Institute for Digital Communication): MC-based Modelling, Monitoring,

and Control of Microliter-scale Bioreactors
Cluster C2 focuses on the MC-based modelling, analysis, and design of magnetic steering systems for superparamagnetic iron oxide nanoparticles (**SPIONs**) and includes:

- Project P4 (Prof. Georg Fischer, Institute for Electronics Engineering): Forces, Limitations, and Concepts for SPION Steering
- Project P5 (PA: Prof. Jens Kirchner, Institute for Electronics Engineering): Lumped-Parameter Models for and Optimization of SPION Steering in Highly Branched Vascular and Tissue Structures
- Project P6 (Prof. Dietmar Drummer, Institute of Polymer Technology): Development of Tumor Models for MC based on Additive Manufacturing Approaches
  Cluster C3 focuses on the development of models, designs, and system architectures for airborne MC and includes:
- Project P7 (Prof. Andrea Büttner, Chair of Aroma and Smell Research): Transmitter Systems for Releasing and Sending Airborne MC Signals as “Odor Objects”
- Project P8 (Dr. Helene Loos, Chair of Aroma and Smell Research): Receiver Architectures for Information Recovery from Airborne MC Signals
- Project P9 (Prof. Vahid Jamali, Resilient Communication Systems): Theoretical Modelling, Design, and Analysis of Olfaction-inspired Molecule-Mixture Communications
  Crossed-Cluster Postdoctoral Project:
- Project P10 (Prof. Robert Schober, Institute for Digital Communication): Task-oriented and Environment-dependent Modelling, Analysis, and Design of MC Systems

Qualifications

Outstanding grades in Bachelor’s and Master’s programs.

Master’s Degree (corresponding to the specific doctoral project P1-P9) in:

- Cluster 1: Biotechnology, Life Science Engineering (P1), Biochemistry (P2), Electrical Engineering with specialization in Communications (P3) or related fields
- Cluster 2: Electrical Engineering (P4, P5), Medical Engineering, Physics (P5), Medical Engineering (P5), Mechanical Engineering (P6), Chemical Engineering (P6) or related fields
- Cluster 3: Chemical Engineering (P7), Electrical Engineering (P7), Sensor Technology (P7), Physics (P7, P8), Chemistry (P7, P8), Engineering (P8), Electrical Engineering with specialization in Communications (P9)
  For project P6 experience with polymers is required.

  Postdoctoral researcher position:

- Doctoral degree (Ph.D.) in Electrical Engineering with specialization in Communications or a related field.
- Prior high-quality research in the field of MC, documented through journal publications and awards, is expected from applicant.

Supplementary description

- Prior publications are an asset but not required
- TV-L E13 position (doctoral researchers, according to the DFG discipline specific guidelines) / TV-L E14 position (postdoctoral researcher) for up to four years starting on **1. December 2026)**. The scope of employment varies depending on the department/institute and the rates typically charged there
- For further information, please visit https://www.symocads.research.fau.eu/
- Please submit a **single pdf file**, including a **motivation letter** (max. 1 page, specifying which project you would like to work on and why you feel you are well qualified for the project), **curriculum vitae** (max. 2 pages), and **copies of graduation certificates** and **transcript of records** to symocads-info@fau.de by **May 31, 2026**. Later applications might also be considered but some positions may not be available anymore.
- In its pursuit of academic excellence, FAU is committed to equality of opportunity and to a proactive and inclusive approach, which supports and encourages all under-represented groups, promotes an inclusive culture and values diversity. FAU promotes professional equality for women. Female applicants are therefore particularly encouraged to apply.

Interessiert?

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