Friedrich-Alexander-Universität
Faculty of Engineering
Faculty of Sciences
Faculty of Medicine

SyMoCADS

Doctoral Researcher Position in Project P8 and P9 (m/f/d) - 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 program consists of **9 research projects and is** organized in **3 clusters (C1-C3)** and **a cross-cluster postdoctoral project.** A structured qualification program aims 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. **The first cohort of doctoral and postdoctoral researchers started in June 2024. Now, applications for the second cohort are invited.**

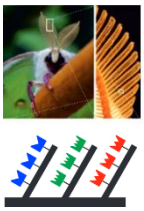
Cluster C3 focuses on the development of models, designs, and system architectures for airborne MC and invites applications for the doctoral positions in the following three projects:

Project P7: Transmitter Systems for Releasing and Sending Airborne MC Signals as "Odor Objects"

- **PA**: Prof. Andrea Büttner (Chair of Aroma and Smell Research)
- **Project aim**: In this project, combinations of microdosing systems, spray nozzles and orifices, either as single components spatially arranged, or as joint cluster and array systems, and olfactometer combinatory systems, will be used to study different release mechanisms. Physical testbeds will be first theoretically elaborated, in close collaboration with P9.

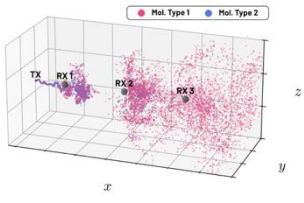
Project P8: Receiver Architectures for Information Recovery from Airborne MC Signals

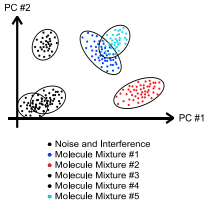
- **PA**: Dr. Helene Loos (Chair of Aroma and Smell Research)
- **Project aim**: The focus of the project is the reception of odor objects by employment of more sophisticated receiver architectures with multiple reception sites, including two main aspects: a) the presence of two or more receiver nodes related to the odor source; b) complex system architectures comprising two or more individual reception sites on a receiver system.
- **Qualification profile**: Master degree in Physics, Chemistry, Engineering or a related field



Project P9: Theoretical Modelling, Design, and Analysis of Olfaction-inspired Molecule-Mixture Communications

- **PA**: Prof. Vahid Jamali (Resilient Communication Systems)
- **Project aim**: In this, we will first investigate communication techniques and algorithms for efficient operation of the transmitter and receiver and optimize the system parameters for further performance improvement. Of particular interest is the optimization of the 3D arrangement of the release and sensing sites as well as investigation of the impact of turbulent odor plume on information exchange via molecular mixtures. The outputs of this project include communication-theoretical models and functional, optimized designs for airborne MC systems, which will be cross-validated with measurement data from the proof-of-concept testbeds in P7 and P8.
- **Qualification profile**: Master degree in Electrical Engineering with specialization in Communications or a related field





We offer

- 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**
- High quality interdisciplinary research in an emerging and fascinating field of research
- A structured supervision and qualification program
- Support through childcare services

Applicants for doctoral researcher positions are expected to have achieved outstanding grades in their Bachelor and Master programs. Prior publications are an asset but not required.

Application via e-mail

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 and the corresponding PA (Project P8 - PD Dr. habil. Helene Loos helene.loos@fau.de, Project P9 – Prof. Vahid Jamali vahid.jamali@rcs.tu-darmstadt.de) by **August 15, 2026**. Later applications might also be considered.

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.

For further information contact PD Dr. Anna Maria Becker (symocads-info@fau.de).