

## Open Postdoctoral Researcher position in the Neuroengineering Materials Lab

We are looking for a postdoctoral fellow to join the Neuroengineering Materials (NEN) Lab at TUM. This project is funded by the ERC Starting Grant project “NANeurO,” which focuses on the development of injectable nanoelectrodes for wireless and minimally invasive neural stimulation.

### About us

The NEN Lab works with new materials for wireless communication with the brain and nervous system. Our goal is to contribute to neurotechnologies that are minimally invasive, and possibly implanted with no surgical intervention. Specifically, we develop wireless nanoelectrodes made from magnetoelectric materials, which transduce wireless magnetic powering signals into local electric signals that can be used to stimulate neurons. Our multidisciplinary group works in materials science & physics, biomaterials, nanotechnology, electrical engineering, and neurobiology. To learn more about our group's recent work in this field, please check out some of our recent publications, [here](#), [here](#), and [here](#).



### About the project

Neural devices used in the brain and spinal cord have yielded medical breakthroughs to improve the lives of people with spinal cord injury, Parkinson's disease, and hearing loss. However, current neural devices are large, complex, and invasive, and are therefore used by only a fraction of people who could benefit from them. The goal of NANeurO is to design new materials that can electrically communicate with the nervous system, but can do so wirelessly and minimally invasively. Our work aims to study magnetoelectric materials as nanoelectrodes, and through this knowledge, develop them as minimally invasive neural devices. Specifically, we aim to develop a toolbox of nanomaterials to study and learn from, looking at e.g. how nanoelectrode size and shape affects signal/response and neurostimulation. While the field of nanoscale and wireless nanoelectrodes is very new, the work within NANeurO could one day enable minimally invasive, wireless neural modulation.

### Your role

Your role will be to develop our nanoelectrode platform as a wireless bioelectronic. This may involve several approaches, including synthesis and characterization of new magnetoelectric nanoparticle formulations, surface modification of nanoparticles, testing wireless power transfer, and/or integration of nanoparticles into chip-scale bioelectronic devices. You are encouraged to bring development strategies based on your own background and expertise. You will also be responsible for serving as a teaching assistant for our courses in neuroengineering materials, biomaterials, and probability and statistics, as well as an advanced seminar course that covers recent research in

neuroengineering materials (all taught exclusively in English). If you are interested in developing your teaching skills further, there is also the opportunity to aid in the planning, organization, and running of lectures.

### **Required training, skills, and background**

- PhD degree in bio/medical engineering, materials science and engineering, chemical engineering, or similar; (a degree from other fields such as electrical engineering are also acceptable, given the candidate has research experience with the above fields)
- Experience working in a wet lab environment.
- Fluency in oral and written English
- Interest in working in a multidisciplinary and international team
- Experience with experimental techniques including nanoparticle synthesis and characterization, electrochemistry, materials characterization, cell culture, and/or *in vivo* testing of materials or electronics are preferred.
- Familiarity with the field of bioelectronics and/or neuroengineering is preferred.

### **What we offer**

We offer a postdoctoral researcher position as scientific and teaching staff in the NEN Lab in the Electrical Engineering Department, which is part of the School of Computation, Information and Technology (CIT) of TUM. The position is for 2 years and follows state regulations in accordance with the Collective Agreement for the Public Service of the States at 100% E13 rate (*Tarifvertrag für den öffentlichen Dienst der Länder, TV-L*). Our lab is located in Munich city, approximately 15 minutes walking distance from the central train station. Components of the project may also require work at the TUM Campus in Garching, as well as the TUM Klinikum Rechts der Isar. The position is available to be filled immediately, with a preferred starting date of September 1<sup>st</sup>, 2025 or earlier. You will have continuous support from fellow team members and access to all necessary infrastructure and lab equipment to conduct your research. TUM aims to increase the representation of women in science. Accordingly, we strongly encourage applications from qualified female candidates.

### **How to apply**

Please send your application materials to [office.nen@xcit.tum.de](mailto:office.nen@xcit.tum.de), with email subject “Postdoc Application – [First and last name].” In your email, please include a short motivation letter less than 1 page, your CV including list of publications, a reference letter from your PhD advisor, and transcript records for your undergraduate and graduate degrees. Applications will be accepted until a suitable candidate is found.

### **Neuroengineering Materials Lab**

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