



Conducting research for a changing society: This is what drives us at Forschungszentrum Jülich. As a member of the Helmholtz Association, we aim to tackle the grand societal challenges of our time and conduct research into the possibilities of a digitized society, a climate-friendly energy system, and a resource-efficient economy. Work together with around 6,800 employees in one of Europe's biggest research centres and help us to shape change!

One of the major challenges in modern neuroscience is to investigate information processing of neuronal networks with high spatio-temporal resolution and high signal-to-noise ratio (SNR). While microelectrode arrays (MEAs) offer a range of advantages such as their non-invasive nature, the ability to interact with cellular networks over extended times and at multiple sites and excellent temporal resolution, they also exhibit the drawback of recording strongly attenuated signals. A possible approach for the improvement of the recording capabilities of MEA-based devices is to increase the cell-electrode contact via the introduction of additional dimensionality, either through protruding structures that enable phagocytosis-like events (2D+ structures) or via cavities allowing for cellular protrusion into the sensor (Nanocavities).

We are looking to recruit a

PhD Position - Neuroelectronic interfaces that exploit the unique properties of 2D+ nanostraw electrodes

Your Job:

The project will develop new neuroelectronic interfaces that exploit unique properties of 2D+ nanostructures with a high aspect ratio which are particularly suitable as interface between neurons and electronic devices, since the excellent mechanical coupling to the neuronal cell membrane and in some cases even direct access to the neural-intracellular space allows very high signal-to-noise ratios. The primary focus will be to design, fabricate, measure and optimize nanostraw material, which can be utilized either independently or combined by fabricating hybrid devices with multiple functional layers for electrical recordings.

Your tasks within framework in detail:

- Design, fabrication, application and optimization of nanostraw material for extracellular recordings.

The job will be advertised until the position has been successfully filled. You should therefore submit your application as soon as possible. We look forward to receiving your application via our **Online-Recruitment-System!**

Questions about the vacancy?

Get in touch with us by using **our contact form**. Please note that for technical reasons we cannot accept applications via email. www.fz-juelich.de

- Integration of nanostraw material in MEA technologies
- Characterization of the cell-electrode interface

Your Profile:

- Master's degree (or equivalent) in physics, electrical engineering, material science or a related field
- Proficiency in English
- Advantageous, yet not mandatory, are experiences in biology and/or neuroscience

Our Offer:

We work on the very latest issues that impact our society and are offering you the chance to actively help in shaping the change! We offer ideal conditions for you to complete your doctoral degree:

- A highly motivated working group as well as an international and interdisciplinary working environment at one of Europe's largest research establishments
- Outstanding scientific and technical infrastructure
- Opportunity to participate in (international) conferences and project meetings
- Continuous scientific mentoring by your scientific advisor
- Further development of your personal strengths, e.g. through an extensive range of training courses; a structured program of continuing education and networking opportunities specifically for doctoral researchers via JuDocS, the Jülich Center for Doctoral Researchers and Supervisors: <https://www.fz-juelich.de/judocs>
- Targeted services for international employees, e.g. through our International Advisory Service

The position is initially for a fixed term of 3 years. Pay in line with 50 - 65% of pay group 13 of the Collective Agreement for the Public Service (TVöD-Bund) and additionally 60 % of a monthly salary as special payment („Christmas bonus“). Further information on doctoral degrees at Forschungszentrum Jülich including our other locations is available at: www.fz-juelich.de/gp/Careers_Docs

Forschungszentrum Jülich promotes equal opportunities and diversity in its employment relations.

We also welcome applications from disabled persons.