One of the research topics at the Institute of Biological Information Processing (IBI-3) of the Forschungszentrum Jülich is the development of neuroelectronic implants, whose potential applications include, among many, the study and treatment of neurodegenerative diseases. As a question of fundamental research, we’re studying biocompatible materials and coatings that optimize the long term stability of such implants.

Surface Plasmon Resonance Microscopy (SPRM) and Refractive Index Microscopy (RIM) are two label-free methods that can be used to probe optical and structural properties of cell-chip interfaces. At our subinstitute we have developed a combined SPRM and RIM setup that can measure layer thicknesses in the axial direction with a sensitivity in the sub-nanometer range and refractive indices (RI) with a sensitivity of 0.001 RIU.

We offer you to the next possible date a

**Master Thesis - Physics / Further Development of an SPRM Setup to Investigate Biocompatible Coatings**

**Your Job:**
Due to the immense sensitivity of the SPRM, its measurements are also prone to all sorts of artifacts and aberrations. And in some places, the prototype nature of the setup gets in the way of rapid sample examination. While the current state of the project dictates some modifications to the optics, hardware, and software of the experiment, its subsequent applications are virtually unlimited.

To be more specific: Modifying the scanning routine of the piezoelectric sample stage and modifying the illumination light path are two developmental tasks you would need to undertake. In your subsequent employment of the microscope, a possible application would be in the studying of lipid bilayers of various compositions and formation protocols.
But, and this is probably the biggest appeal of this position: as part of the project, you get to have a say in all decisions. Both in the development of the setup and in setting your research goals. Your input will not only be considered, but is also explicitly encouraged.

In an overview, your tasks will be:

- Rewriting the scanning & image acquisition routine of the microscope’s software
- Readjustment of the minimum coherence laser illumination pathway of the setup
- Learning and applying sample preparation, SLB formation & cell culture protocols
- Designing, conducting, and analyzing SPRM experiments to carry out a quantitative study, the content of which you will participate in defining

Your Profile:
Scientific expertise and soft skills the applicant should have:

- Bachelor’s degree (or equivalent) in the field of physics or a comparable course of study
- Basic programming skills
- Interests in the field of Bioelectronics and Neuroscience
- Willingness to familiarise yourself with new methods
- Fluent / good knowledge of written and spoken English

Further desirable qualifications:

- High degree of independence, motivation and reliability / independent and analytical working style
- Very reliable and conscientious style of working
- Excellent ability to cooperate and work in a team

Desirable additional qualifications:

- Experiences of using LabView, Python and Gitlab
- Experiences with electronic hardware handling
- Experiences with sterile cell culture work

Please feel free to apply for the position even if you do not have all the required skills and knowledge. We may be able to teach you missing skills during your induction.

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 support you in your work with:

- An interesting and interdisciplinary project with many different aspects like software development, the work at an optical prototype setup and cell culture work
- A pleasant working environment within a highly motivated and competent working group as well as an international and interdisciplinary team
- Support by an outstanding scientific and technical infrastructure as well as a close scientific mentoring
- The chance to independently prepare and work on your tasks
- Flexible working hours as well as a reasonable remuneration

Further information on the project is available at:

Forschungszentrum Jülich promotes equal opportunities and diversity in its employment relations.
We also welcome applications from disabled persons.