

Research assistant (praedoc) (m/w/d) as part of the European Marie Skłodowska-Curie Doctoral Network FLUXIONIC, full-time with non-tariff salary grade for 36 months, reference code: Fluxionic-Netz-2024

FLUXIONIC is a Marie Skłodowska-Curie Doctoral Network aiming to provide integrated training for early career researchers, enabling them to achieve scientific excellence and set the foundations of their future careers in the rapidly growing field of nanotechnology. Controlling transport of liquid matter through channels with dimensions from Ångströms to nanometers is a great challenge bridging fundamental science and nanoscale technology. Explaining the anomalous transport behavior at the sub-nano scale, where the conventional macroscopic description of transport breaks down, necessitates close integration of experiments, theory, and atomistic simulations. This European network involves academic nodes and industrial partners in Barcelona, Paris, Berlin, Mainz, Bochum, Delft, Trondheim, Cambridge, Oxford, Manchester and Lausanne.

The doctoral network FLUXIONIX offers

- positions for research assistants with the possibility of a doctorate,
- structured academic training in an international research environment, including participation in a variety of research-specific and career-enhancing training courses and events,
- integration into an interdisciplinary international research network
- and the opportunity for research stays in the laboratories of the partners.

Job description:

The project in the Netz group is dedicated to a theoretical understanding of the spectroscopic and frictional properties of confined fluids. For this, ab initio and force-field molecular dynamics simulations of confined fluids will be combined with analytical models. One goal is to calculate spectra that can be directly compared with experimental linear and non-linear surface-sensitive vibrational spectroscopy data. Non-linear spectra will be predicted based on novel formulations that include quadrupolar and third-order electric-field response. Another goal is to extract frequency-dependent friction between liquids and confining surfaces from simulations and to predict flow and reactions in confinement. Further project information can be found at <https://www.fluxionic.org>.

Requirements:

Applicants should have a M.Sc. degree in physics, biophysics, theoretical chemistry or related subjects and must meet the requirements for admission to the doctoral program of the Department of Physics at Freie Universität Berlin. To qualify for the position, applicants must fulfil the mobility requirement: they cannot have resided or carried out their main activity (work, studies, etc.) in Germany for more than 12 months in the 36 months preceding the recruitment start date.

Desirable:

- Experience with force-field and ab initio MD simulations of liquids
- Experience with non-equilibrium statistical mechanics, stochastics and quantum chemistry
- High motivation to work independently and scientifically
- Very good written and spoken English skills
- Good communication skills and willingness to work in collaborations and teams

We look forward to receiving your application, which should include the following documents:

- A one-page letter of motivation why you want to work in the project, together with details of previous research experience and future goals
- Your CV (including a list of publications if applicable)

- Evidence of your academic achievements including transcripts of record and copies of your Bachelor's and Master's degrees
- At least two letters of support

Please send applications together with all documents, stating the reference code, by e-mail in PDF format (preferably as one document) to Prof. Roland Netz (rnetz@physik.fu-berlin.de), from whom further information can be obtained if needed.