

## **Postdoctoral Researcher for CoSAXS, Lund University, MAX IV Laboratory, Diffraction & Scattering Group**

<https://lu.mynetworkglobal.com/en/what:login/jobID:160206/type:job/where:4/apply:1/>

Lund University was founded in 1666 and is repeatedly ranked among the world's top 100 universities. The University has 42 000 students and 7 400 staff based in Lund, Helsingborg and Malmö. We are united in our efforts to understand, explain and improve our world and the human condition. MAX IV is a national large-scale research laboratory providing scientists from Sweden and the rest of the world with instruments for research in areas such as materials science, structural biology, chemistry and nanotechnology. Fully developed it will receive more than 2 000 scientists annually. 200 people are currently employed at the MAX IV Laboratory.

The CoSAXS beamline is a state-of-the-art multipurpose Small Angle X-ray Scattering (SAXS) instrument at MAX IV which is currently under construction. It will offer high brilliance, monochromatic and tuneable X-rays, with outstanding performance in low beam divergence, high X-ray flux, and variable beam size in both directions in the full range of the sample-detector distances provided by the beamline (up to 18 m). Several techniques will be available through modular operation: time resolved SAXS, SAXS/WAXS, protein solution SAXS, microfocusing SAXS and XPCS. It is due to commence full user operation in 2019.

The CoSAXS beamline offers a postdoctoral position within the Röntgen-Ångström-Cluster funded project "Non-equilibrium thermodynamics of biology studied by time-resolved small-angle X-ray and neutron scattering". This is a collaborative project between Gergely Katona, University of Gothenburg, Manfred Rössle, University of Lubeck, EMBL, PETRA III and FLASH at the Deutsches Elektronen-Synchrotron DESY, Hamburg, MAX IV Laboratory, Lund and the European Spallation Source ESS, Lund.

This project aims firstly to follow fast biochemical reactions at millisecond time scales. A laser-induced temperature jump will trigger the conversion of the biochemical species and the changes in protein function, for example, will be followed. A secondly goal of the research is to examine the non-thermal effects of terahertz radiation on such reactions. For both projects, we will use small angle X-ray scattering to follow the large scale structural dynamics of macromolecular complexes changes.

### Tasks:

You will be responsible for the development of the fast triggering and synchronization of SAXS measurements with the laser or terahertz radiation source. You will work in collaboration with the CoSAXS team for the development of suitable sample environments for TT-SAS experiments. You will develop strategies for data collection, reduction and interpretation at the millisecond timescales.

You will present results at meetings, conferences and through publications. You will play an active role in experiments at other (international) facilities as part of the RÅC project, through proposal writing, experiment protocol planning, preparation of equipment, data collection and interpretation. You will share responsibilities for operation, maintenance and further development of the beamline in close collaboration with the CoSAXS team.

Qualifications:

- You must hold a PhD in physics, chemistry, materials science, electronics, engineering or a related discipline.
- You must have experience of (at least some of the following): the planning, design/construction/purchase, installation, operation and maintenance of complex scientific equipment.
- You should have experience in instrumentation controls hardware and software.
- You have a demonstrated ability to work independently.
- You have excellent command of spoken and written English, well-developed communication skills and team working skills.
- You must have experience of synchrotron-based SAXS experiments and data collection strategies.

The following qualifications are considered an asset:

- Experience of IR, terahertz or Raman spectroscopy in biophysics is an advantage.
- Experience of laser heating systems or terahertz radiation sources is considered an advantage.
- Experience of time-resolved measurements, including triggering and synchronization of data acquisition, is considered an advantage.
- Experience with molecular dynamics simulations is an advantage

This is a 2 year employment.

Lund University welcomes applicants with diverse backgrounds and experiences. We regard gender equality and diversity as a strength and an asset.

We kindly decline all sales and marketing contacts.

Type of employment: Temporary position longer than 6 months

Contract type: Full time

First day of employment: As agreed

Number of positions: 1

Working hours: 100%

City: Lund

County: Skåne län

Country : Sweden

Reference number: PA2017/2360

Contacts:

Ann Terry , +46 703264498

Tomás Plivelic , +46 733879817

Union representatives:

OFR/ST:Fackförbundet ST:s kansli, 046-222 93 62, st@st.lu.se <<mailto:st@st.lu.se>>

SACO:Saco-s-rådet vid Lunds universitet, 046-222 93 64, kansli@saco-s.lu.se <<mailto:kansli@saco-s.lu.se>>

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Ann Terry

CoSAXS beamline

MAX IV Laboratory

Lund University

P.O. Box 118, SE-221 00 Lund, Sweden

Visiting address: Fotongatan 2, 225 94 Lund

Mobile: +46 703 26 44 98

[www.maxlab.lu.se](http://www.maxlab.lu.se) <<http://www.maxlab.lu.se>>