



Postdoctoral fellowship in the field of oxide electronics and memory devices

Uppsala University (UU) is an international research university focused on the development of science and education. The most important assets of the University are all the individuals who, with their curiosity and their dedication, make Uppsala University one of Sweden's most exciting work places.

The **Division of Solid State Physics** is part of the **Department of Materials Science and Engineering** and is located at Ångström laboratory in Uppsala. At the division, we perform both basic and application-oriented research related to energy and environmental aspects in different research areas. We investigate physical and chemical properties of nanomaterials and compounds, whether it be for smart windows, gas sensors, photocatalytic coatings, spintronics and biomagnetic applications or to create new magnetic materials for environmental applications.

Webpage: <https://materialvetenskap.uu.se/solid-state-physics+/>

Information about the project: The project deals with the fabrication and characterization of novel memory devices using composite materials. The aim is to design new material combinations and create hybrid structures that can be used in resistance random access memory applications. The materials of interest are combinations of ternary oxides and two-dimensional materials, and the project will involve an in-depth investigation of their resistive switching performances as well as magnetic behavior.

The work will be performed at the Solid State Physics Division, Department of Materials Science and Engineering, Uppsala University, in collaboration with partners from the Department of Physics and Astronomy, Uppsala University and the Quantum Device Physics Laboratory at the Department of Microtechnology and Nanoscience – MC2, Chalmers University of Technology, Gothenburg. The position will, therefore, necessarily involve regular travels between Uppsala and Gothenburg.

Major responsibilities: The postdoctoral fellow will be involved in the experimental work. S/he will be responsible for the fabrication of the devices and their in-depth electrical and magnetic characterization. In addition, the tasks within this research project involve planning, analyzing the results, and disseminating the new knowledge through scientific articles.

Position summary: Experimental research in the field of oxide electronics. Full-time, tax-free scholarship. The position is initially for a period of 2 years, with possibility of further extension.

Qualifications: This position requires highly motivated candidates with a doctoral degree in physics or a related field. Demonstrated experience in thin film growth using pulsed laser deposition, and experience in electrical transport and magnetic measurements is a must. Experience in solid state synthesis, thin film characterization, and Raman spectroscopy are also required. Knowledge of correlated electron oxide systems and two-dimensional materials will be considered a strong merit. The candidate should be willing to learn new techniques and develop new methods during the course of the project. Expertise in programming for analysis and/or instrumentation and presentation of scientific results should be outlined in the application. We require very good written and oral skills in English as well as very good skills in writing scientific publications.

When assessing the applications, special emphasis will be placed on the applicant's documented experience in thin film growth using pulsed laser deposition and electrical and magnetic measurements.

The application should be written in English and include:

1. A letter of motivation with a short description of your research interests, and why you feel you are a good match for the project (maximum two pages, ideally one).
2. CV, including a description of the relevant skills and experiences, as well as a full publication list.
3. A copy of your Ph.D. degree or date of thesis submission.
4. Contact information of a minimum of two (ideally three) individuals, who can provide letters of reference to support your application, with a brief mention of how these individuals are professionally related to you.

Please send your application to tapati.sarkar@angstrom.uu.se no later than **March 31, 2023**.

Starting date: September 01, 2023, or as mutually agreed upon.

For further information about the position and scientific aspects of the application, please contact Prof. Tapati Sarkar, Division of Solid State Physics, Department of Materials Science and Engineering, Uppsala University, Sweden (email: tapati.sarkar@angstrom.uu.se).