



PhD student in Plasma / Thin Films / Surface Science interactions for magnetic nuclear fusion devices

The PhD work concerns experimental studies of plasma cleaning of so-called first mirrors for future fusion facilities, such as ITER (International Thermonuclear Experimental Reactor). First mirrors will play a crucial role in numerous ITER optical diagnostic systems. Deposition of material eroded from the wall of ITER can degrade the reflectivity of the first mirrors severely. Plasma cleaning using radio-frequency capacitively coupled plasmas is currently being considered as the most promising in-situ cleaning technique. The PhD work will mainly be focused on three different aspects of plasma cleaning for ITER first mirrors:

- Investigation on plasma cleaning in magnetic fields, benchmarked with simulations.
- Development of End of Cleaning Indicator (monitoring of the process).
- Research on driven grounded electrode plasma discharges.

Your tasks

In collaboration with colleagues and partners, you will be immersed in plasma physics for a specific fusion application. Plasma parameters measurements (Langmuir probe, Retarding Field Analyzer) and plasma simulations will be performed through the four years of the PhD work. Vacuum coating technique will be used to deposit thin films, samples will be characterized by photoelectron spectroscopy (XPS), Energy Dispersive X-Ray Analysis (EDXA), scanning electron microscopy (SEM) and optical characterization.

Your profile

We seek for a highly motivated individual who enjoys working in a small interdisciplinary team of scientists with different backgrounds. A diploma or master's degree in materials science, physics, nanoscale science or related field is expected. Experience in one of the above-mentioned methods is highly desirable but could be compensated by an extra effort and a high level of motivation of the candidate.

The work will focus on plasma physics, thin film deposition by physical vapor deposition (PVD) and their characterizations using various techniques (XPS, EDX, SEM). In cooperation with other institutes, additional analytical resources are available.

Please submit your CV, publication list (if applicable) and a brief motivational statement why you feel you qualify for this position.

You will be registered as a PhD student at the University of Basel.

For further information, please contact

Dr Laurent Marot, Tel. +41 (61) 267 37 20, laurent.marot@unibas.ch or

Prof. Dr. Ernst Meyer, Tel. +41 (61) 267 37 24, ernst.meyer@unibas.ch head of the Nanolino Group

The position is immediately available with a planned duration of 4 years. Please send your application by email to Dr Laurent Marot, laurent.marot@unibas.ch