Contribution ID: **76** Type: **Poster**

Thin film fabrication in a new laboratory

Wednesday 8 December 2021 10:30 (1h 30m)

Thin film samples for neutron investigation can be fabricated with a Molecular Beam Epitaxy (MBE) setup on site. The MBE setup is part of the additional facilities which can be booked in combination with a neutron instrument proposal at MLZ. Discuss your ideas with the thin film lab staff and then write a proposal. There are two options for access: In remote access the thin film staff fabricates the sample for you and in collaborative access: you fabricate the sample with support by the thin film laboratory staff. First option only works if the growth parameters are well identified.

The MBE setup is equipped with effusion cells, electron guns for electron beam evaporation and a plasma source for use with oxygen or nitrogen. A large variety of deposition materials can be used. Please express your ideas! Compounds may be produced either by codeposition or by shutter modulated growth of individual layers. For in-situ surface structure analysis reflection high and low energy electron diffraction is utilized while Auger electron spectroscopy is applied for in-situ chemical surface analysis.

Recently the MBE setup has been moved into the new laboratory in UYL and a new feature, i. e. the determination of the in situ flux rate of atoms using the principle of atomic absorption spectroscopy is about to be established. This method will enhance the precision in stoichometry drastically.

Thin film samples which are sensitive to ambient conditions are first fabricated in the MBE setup and then measured at the neutron reflectometer MARIA of JCNS utilizing a versatile small ultra high vacuum condition chamber (A. Syed Mohd et al. Rev. Sci. Instrum., 87, (2016) 123909)

In the poster various examples for thin film samples will be presented.

Author: PÜTTER, Sabine (Jülich Centre for Neutron Science JCNS, Outstation at MLZ, Forschungszentrum Jülich GmbH)

Presenter: PÜTTER, Sabine (Jülich Centre for Neutron Science JCNS, Outstation at MLZ, Forschungszentrum Jülich GmbH)

Session Classification: Poster Session II

Track Classification: Quantum Phenomena