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Two for the price of one (proposal): MBE sample growth and polarised neutron reflectometry at MLZ

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Imagine you have an idea for a thin film system which you want to measure with polarised neutron reflectometry. But you do not have the expertise and/or the equipment for thin film fabrication. We can help you!

The JCNS thin film laboratory runs an oxide MBE system for the growth of various types of samples, i.e. “classical” magnetic thin films, transition metal oxide heterostructures or thin metal films for soft matter studies, acting as defined surfaces. Access to the thin film laboratory is provided through application for beam time at a neutron instrument, e.g. the polarised neutron reflectometer MARIA. Simply, the MBE system access application has to be added to the proposal. This form asks for the specifications of sample preparation (www.mlz-garching.de/mbe).

In the presentation, we will give an overview for high quality metal and complex oxide thin film systems all fabricated in the JCNS thin film laboratory, like SrCoO_x , $\text{La}_{1-x}\text{Sr}_x\text{MnO}_3$, Fe_4N or Co/Pt multilayers. The focus lies on stoichiometry, morphology and thickness precision. Detailed information about the possibilities of sample fabrication for users will be given.

For quasi in-situ neutron reflectometry of thin films, which are sensitive to ambient air, a small versatile transfer chamber is offered for sample transfer from the MBE laboratory to the neutron instrument MARIA and measurement under UHV conditions.

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