

MR: the multipurpose reflectometer at Chinese Spallation Neutron Source

Neutron reflectometry is a technique to probe the surface and interface structures of thin films, including magnetic thin films, semiconductor films, polymer films, and so on, due to the high penetration depth of neutrons. As one of three instruments in the phase I of CSNS, the multi-purpose reflectometer (MR) has been opened for user since 2018. Currently, the neutron flux of MR at sample position is about 1.18×10^8 n/cm²/s when the beam power reaches 100 kW. Now the polarized neutron reflectometry (PNR) measurement is also available. For the setup of PNR, high-quality FeSi/Si supermirror has been used. Then we can obtain the polarized neutron reflectivity, R_{++} and R_{--} , where the spin polarizations are the same for the incoming and reflected neutrons. Now both polarized and un-polarized reflectivity measurements continue to provide a great opportunity to investigate the structure inside the thin film, in particular, the depth profile of chemical and magnetic distribution [1-3].

References

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Primary author: 朱, 涛 (中科院物理研究所)

Presenter: 朱, 涛 (中科院物理研究所)

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