



Contribution ID: 67

Type: Poster

KWS-1 SANS instrument with polarization analysis

Tuesday, 18 September 2018 17:15 (15 minutes)

The KWS-1 small-angle neutron scattering (SANS) instrument is operated by the Jülich Centre for Neutron Science (JCNS) at the research reactor FRM II of the Heinz Maier-Leibnitz Zentrum in Garching near Munich [1].

Among the available options the most important concerns the studies of magnetic samples for which the instrument is equipped with transmission supermirror polarizer, adiabatic radio-frequency spin flipper and a recently obtained dedicated magnet and polarization analyzer. The three-channel V-cavity polarizer with Fe/Si coated supermirrors ($m=3.6$) has an average polarization $> 93\%$ and is positioned in a custom designed changer of revolver type. The flipper provides a high flipping efficiency of more than 99.9% for all neutron wavelengths. A custom designed hexapod allows heavy loads and precise sample positioning in beam (also for grazing incidence SANS under an applied magnetic field). For the experiments with the polarization analysis a ^3He analyzer is utilized. Due to space limitations in the sample area a special highly shielded sample magnet was ordered, which allowed close positioning of the ^3He cell to the magnet. The magnet has two orthogonal horizontal accesses. For the maximum field of 3 T (parallel to the beam) the decay time, T_1 , of the ^3He cell approximately 50 cm away from the center of the magnet constituted 90 hours. The maximum analyzed q is 0.06 \AA^{-1} .

All instrument components are running under a flexible instrument control system (NICOS).

[1] A. Feoktystov, H. Frielinghaus, Z. Di, et al., J. Appl. Cryst., 48, 61 (2015).

E-mail of the corresponding author: a.feoktystov@fz-juelich.de

Primary authors: FEOKTYSTOV, Artem; Dr BARNSELY, Lester (Forschungszentrum Jülich GmbH, Jülich Center for Neutron Science at MLZ); FRIELINGHAUS, Henrich (JCNS); APPAVOU, Marie-Sousai (Jülich Centre for Neutron Science (JCNS) at Heinz Maier-Leibnitz Zentrum (MLZ), Forschungszentrum Jülich GmbH); SALHI, zahir (JCNS); BABCOCK, Earl; IOFFE, Alexander (JCNS); MATTAUCH, Stefan (FZ-Juelich); BRÜCKEL, Thomas (Forschungszentrum Jülich GmbH); Prof. FÖRSTER, Stephan (Forschungszentrum Jülich GmbH, Jülich Centre for Neutron Science (JCNS-1) and Institute of Complex Systems (ICS-1))

Presenter: FEOKTYSTOV, Artem

Session Classification: Poster session 2

Track Classification: P1 Instrumentation and methods