

The capabilities of the cold-neutron triple-axis spectrometer SIKA at ANSTO

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SIKA, the new cold-neutron triple-axis spectrometer was built on the CG4 beam port at the OPAL reactor, ANSTO. We report the capabilities and current status of SIKA in this users meeting. A versatile instrument, SIKA provides sample environments with temperature capacities from dilution temperatures below 50 mK up to 750 K, and magnetic fields of up to 12 T, using the well-developed control and analysis software based on SPICE. Several scientific examples demonstrating the proficiency of SIKA are reported such as; observation of higher harmonics of the helical magnetic phase of MnP as an example of elastic magnetic scattering; measurement of the phonon-dispersion in Al with the estimated slope of the transverse acoustic phonon at 32.4 meV; the spin-wave dispersion in MnF₂ along the c-axis enabling determination of exchange parameters $J_1 = 0.0305$ meV, $J_2 = -0.1534$ meV and, $D = 0.1427$ meV; and observation of one of the crystal field excitations from Pr³⁺ in PrFeO₃ powder. These results can help you to estimate beam time of experiments for your proposals.

Finally, we discuss recent development of SIKA. A ³He polarization analysis system will be ready for SIKA to perform polarized neutron scattering experiments in 2020. SIKA will also be able to accommodate a RITA-type multiple-analyzer system to perform experiments more efficiently by 2020.

Level of Expertise

Experienced Researcher

Do you wish to take part in the poster slam

No

Travel Funding

No

Speakers Gender

Male

Primary author: YANO, Shinichiro (NSRRC)

Co-authors: DENG, Guochu (Australian Nuclear Science and Technology Organization); RULE, Kirrily (ANSTO); Mr HANZ, Peng (NSRRC); WU, Chun-Ming (NSRRC)

Presenter: YANO, Shinichiro (NSRRC)

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