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The Neutron Spin Echo Spectrometer @ SNS (NSE-SNS)

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The NSE-SNS instrument is the first spectrometer of its class and provides ultrahigh resolution spectroscopy with a daily basis Fourier time range from 5ps up to 150ns. Using a simultaneous wavelength frame of 3-3.6 Å high data collection efficiency is achieved, allowing nearly gapless coverage of a broad wavevector-time range with only a few scattering angle settings. The NSE-SNS instrument is particularly suitable to investigate slow dynamical processes and unravel molecular motions at nanoscopic and mesoscopic scale. Investigation of macromolecular assemblies of great importance to human health is one of the important applications of NSE-SNS, attracting users with interest in biophysics and medical science all over the world. NSE technique can be successfully applied to access the domain dynamics of proteins and enzyme's, domain dynamics that is strongly related with folding-unfolding processes within proteins [1,2] and enzymatic/catalytic reactions in enzymes so implicitly, with their biological functionality. Studies of lipid systems and biological membranes are also carried out at NSE-SNS to investigate how cell membranes organize proteins and lipids to accomplish vital physiological processes [3], and to observe the disruptive effects of various anti-inflammatory medication on membrane cell organization and the transport processes thru cell membranes [4]. [1]doi:10.1038/srep22148 [2]doi:10.1016/j.jmb.2017.03.003 [3]doi:10.1021/jacs.5b08894 [4]doi:10.1039/C6CP06202D

Primary author: Dr STINGACIU, Laura Roxana (FZJ-JCNS1@FRMII)

Co-authors: Dr WISCHNEWSKI, A. (FZJ-JCNS1); Dr OHL, M. (FZJ-JCNS1); COCHRAN, M.J. (FZJ-JCNS1@SNS); Dr MONKENBUSCH, Michael (FZJ-JCNS1); Dr ZOLNIERCZUK, P.A. (FZJ-JCNS1@SNS); Dr BIEHL, R. (FZJ-ICS1)

Presenter: Dr STINGACIU, Laura Roxana (FZJ-JCNS1@FRMII)

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