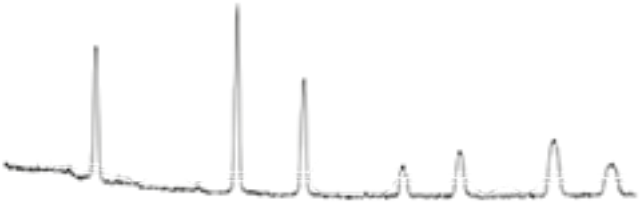

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Neutron Spin Echo Spectroscopy with the J-NSE "PHOENIX"

Wednesday, 1 June 2022 17:20 (20 minutes)

Neutron spin echo (NSE) spectroscopy provides a very high energy resolution, making slow diffusive processes accessible on molecular length- and time-scales. The J-NSE "PHOENIX" spectrometer at the MLZ has been modernized in the last years with superconducting main solenoids with optimized field shape which increases the resolution of the spectrometer by a factor of 2-3 [1]. Molecular motions of polymer chains or diffusion of hydrogen or hydrogen containing molecules can be studied with NSE, making it a valuable tool e.g. for diffusion studies in fuel cell membranes [2]. Besides a description of the new J-NSE "PHOENIX" we will present examples of typical applications in the area of soft matter studies with a focus on materials relevant to energy studies and show perspectives on future studies in this area by NSE.

[1] S. Pasini, et al., Rev. Sci. Instrum. 90, 043107 (2019)
[2] O. Holderer et al., Int. J. Hydrogen Energy 39(36), 21657–21662 (2014)

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