

Polymer dynamics and the new J-NSE Phoenix at MLZ

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In 2017 the Neutron Spin Echo (NSE) Spectrometer went through a refurbishment of the secondary spectrometer. A set of superconducting precession coils was realized following the results obtained for the design of ESSENSE, the proposed high-resolution NSE spectrometer at the ESS. One of the most innovative characteristics of the coils is their optimized geometry that maximises the intrinsic field-integral homogeneity along the flight-path of the neutrons. The installation of the new magnets was finalized in September 2017 and since 2018 the J-NSE has been back in user program. The new configuration yields an improved resolution that may be exploited to reach larger Fourier-times (t) and/or to benefit from significant intensity gains if shorter neutron wavelengths are used at a given t . Thus the refurbished J-NSE meets the needs to look into the microscopic dynamics of soft- or biological-matter with enhanced and new quality. The results of the first experiments have confirmed this and here we present some selected examples from the realm of polymer dynamics that largely rely on the enhanced properties of the new J-NSE.

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