

J-NSE „PHOENIX“: High Resolution Neutron Spin Echo Spectroscopy

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Neutron spin echo spectroscopy provides the highest energy resolution in neutron scattering. The covered energy range (or Fourier time range) matches excellently thermally driven motions in soft matter systems such as polymer chains in solution, in the melt, domain motions of proteins, phospholipid membrane fluctuations to mention just a few. This experiment aims to study the dynamics of a polymer chain in solution. Poly(ethylene propylene) (PEP) with a molecular weight of 100 kg/mol is dissolved in deuterated decane with a concentration of 3%. The dynamics of PEP polymer in solution will be studied at room temperature. The results will be interpreted in terms of the Zimm model, which allows to draw conclusions about the internal motions of the polymer chains.

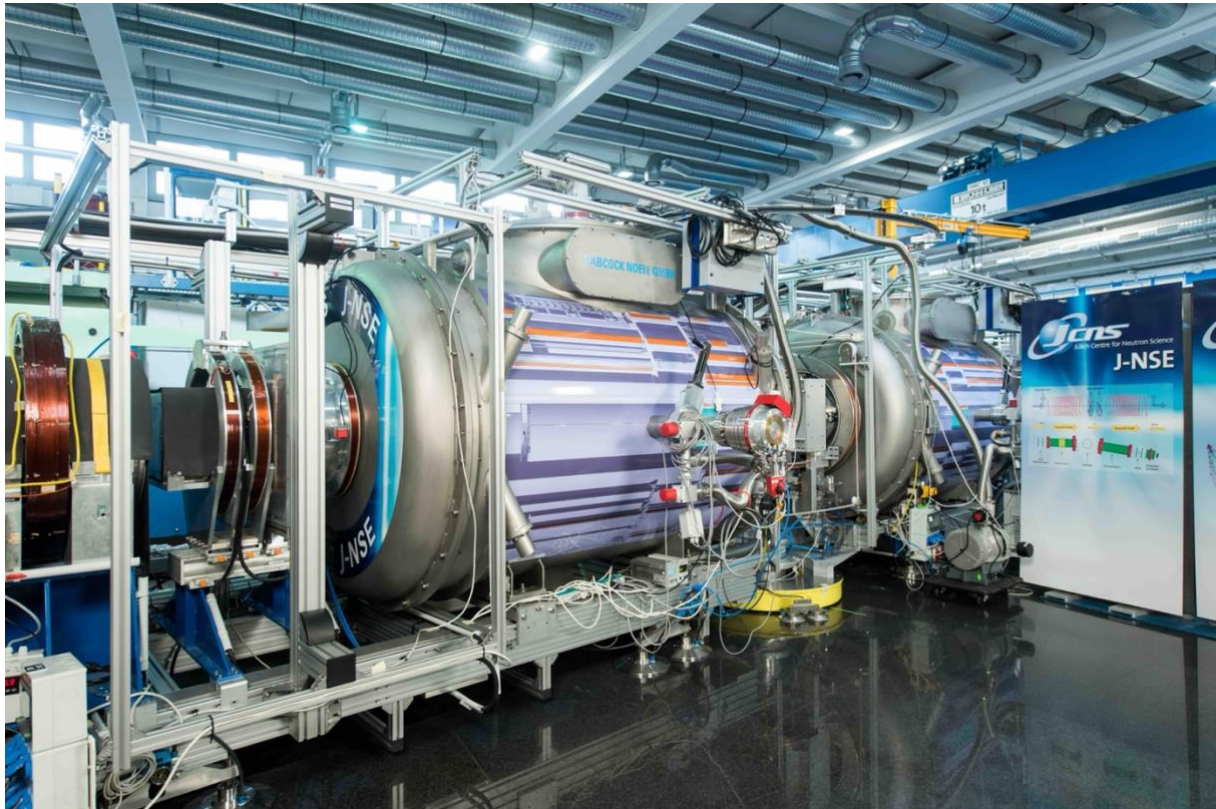


Figure 1: The neutron spin echo spectrometer J-NSE "PHOENIX" which serves to study slow dynamics on molecular length scales