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KWS-2 the high Intensity / wide Q-range SANS diffractometer

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KWS-2 is a classical SANS diffractometer using a combination of pinholes with different neutron-wavelengths and detector distances as well as a focusing mode with MGF2 lenses to reach a large q-range between 0.0002 and 0.5 1/Å. A wide-angle detection option is currently planned to allow for measurements up to 2 1/Å, by combining SANS and WANS methods.
The instrument is designed for high intensity studies with a broad q-range, covering mesoscopic structures and their changes due to kinetic processes in the fields of soft condensed matter, chemistry, and biology.
The high neutron flux and the possibility to measure samples with large diameter (up to 5 cm), employing lenses, allow for high intensity and time-resolved studies.
In special cases, the resolution can be improved by using a double-disc chopper with adjustable openings reaching a wavelength spread between 2 and 20 %. In this way, the instrument can be flexibly adjusted to the needs of different experiments. Furthermore, the effects of chromatic aberration of the lenses and gravitation effects can be minimized. By using a secondary single-disc compact chopper, the use of the TOF mode achieves a good separation of the elastically, quasi-elastically and inelastically scattered neutrons from the sample. When only the quasi-elastic scattered neutrons are considered for the data analysis, a lower background level is obtained at high q, which makes the measurement of weak coherent signals more reliable.

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