

New primary optics for the ErwiN ‘Energy research with Neutrons’ option at MLZ

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The further development of the ErwiN –Energy research with Neutrons –neutron powder diffraction (NPD) beamline is presented with three distinctive events: Firstly, during the second funding period the primary beam optics will be replaced to bring this diffractometer to the same level as the high flux and high resolution instrument D20 at the ILL. The ErwiN instrument will be used for the investigation of energy storage materials, also integrated in complete components and under real operating conditions. Thus, it is possible to scan a large parameter space (e.g. temperature, state of charge, charge rate, fatigue degree) for the investigation of modern functional materials in kinetic and time-resolved experiments. Diffraction data will be obtained from the entire sample volume or in a spatially resolved mode from individual parts of the sample. ErwiN is designed for different scenarios: for very fast measurements at medium resolution, for medium fast measurements at higher resolution and for very high resolutions still at reasonable velocity. The final commissioning and integration of ErwiN is the second important objective during the next funding period, while thirdly, the integration of newly developed and strongly needed sample environment, e.g. high pressure H₂-gas system, will enhance the attractiveness for a wider community in energy research as well as materials science while furthermore developing novel methods for the neutron science community.

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