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Diffractometer portfolio at FRM II neutron source: status and perspectives

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In the meantime the diffraction activities form the major portion of research at each large scale facility. Diffraction at neutron sources is exploring the full range of unique neutron properties (sensitivity to isotopes and magnetic subsystems, nuclear scattering form-factors independent on Q etc) and provides structural information complementary to X-ray or electron diffraction. Despite the different underlying physics supplementing the interaction of neutrons and photons with the matter, the ways of the data A wealth of neutron diffraction instrumentation as a probe of long-range atomic and magnetic orders from single crystal and powder samples at a variety of environmental conditions is available at MLZ, namely high-resolution and engineering diffractometers SPODI and STRESS-SPEC; hot, thermal and cold (macromolecular) single crystal diffractometers HEIDI, RESI and BioDIFF; diffuse instrument DNS and a pool of triple axis spectrometers. A number of new instrumental developments (POWTEX, SAPHIR, ERWIN) as well as new life project for FIREPOD (E9) are on their way to strengthen diffraction at MLZ even further.

There is a broad spectrum of structure-related scientific activities at MLZ e.g. (i) electrochemical energy storage systems and related materials; (ii) modern ferroelectrics; (iii) multiferroic materials and interrelation of the ferroic degrees of freedom; (iv) new generation engineering and shape memory alloys; (v) biological macromolecules; (vi) rock-forming minerals and glasses. In the current contribution an overview of the diffraction instrumentation at FRM II neutron source will be presented along with the future prospects and running developments.

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