

A laue diffractometer for ambient and non-ambient neutron structural analysis

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The FALCON Laue diffractometer at the Berlin neutron source BERII was developed in collaboration with the ILL, Grenoble. It is designed for fast neutron scattering data acquisition of single crystals and makes use of a white ("pink") neutron beam with wavelength band of 0.8-3.2 Å as was derived from TOF data. Pattern acquisition is performed by means of a backscattering and a transmission detector consisting of four iCDD cameras each (Photonic Science). The detectors cover a read active area of 400x400 mm² and can be moved to optimize sample-detector distance. Acquisition time already starts with 10s depending on sample size scattering strength. The sample is mounted on an Irelec cradle allowing sample positioning and orienting. By means of a video camera sample position can continuously be observed. A chamber for sample cooling was built and opens up Laue data acquisition in temperature range of ~80-600K. The instrument set-up as well as some worked examples will be presented.

Reference: [1] G. N. Iles and S. Schorr: The New Neutron LaueDiffractometer at HZB, Acta Cryst. (2012) A68, s134 [2] Clip: Cologne Laue Indexation Program, Vers. 4.0(2011), O. J. Schumann

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