

Time and Matter: The Material Science Beamline at the SLS

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The Material Science beamline is specialized in advanced diffraction experiments and measurements, for a wide community ranging from Geo to Pharma, Physics to Metallurgy, Chemistry to Materials. The X-ray beam provided by the in vacuum undulator is monochromatized, and if needed focused, through a double crystal monochromator and two mirrors, with an available energy range between 5 and 38 keV. The large flux delivered to the sample is then coupled with advanced automatization, modern detectors and a range of conditioning devices, in order to answer the needs of the large community we serve.

The Powder Diffraction station has two separate experimental tables: the first equipped with a 120° position sensitive detector, the Mythen-II. It serves mainly capillary powder samples in Debye-Scherrer geometry, delivering high resolution data. The time needed for acquisition is reduced by the lack of detector scanning, with intrinsic advantages for radiation damage, *in situ* studies etc.. The second table is equipped with a Pilatus 6M detector, at variable distance and position from the sample. It serves transmission experiments on oriented or otherwise statistically problematic powder samples, as well as for single crystal studies. Acquisition time is typically faster for comparable signal/noise making it ideal for high throughput. At last, very fast experiments can be served with an Eiger detector, a special development of the PSI detector group capable of reaching in excess of 22 kHz frame rate.