Experimental opportunities, examples and equipment available for combined in-situ studies at SNBL

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The purpose of this workshop is two-fold:
On the one hand we intend to inform our Swiss and Norwegian user community about recent developments at SNBL. This concerns in particular the integration of a Raman spectrometer and subsequent in-situ equipment.
On the other hand an increasing number of groups is developing various combinations of Raman scattering and x-ray based techniques. However few beamlines are permanently equipped with Raman spectrometers. Similar efforts are also undertaken at homelabs. Therefore we believe the time is right to meet, exchange ideas and progress further.

SNBL has two independent end-stations working in parallel. The A-branch line caters for single crystal and powder diffraction studies whereas the B-branch line provides High-Resolution powder diffraction and XAFS. In periods where the spectrometer is not used for combined x-ray studies it can also operate in stand alone mode for ex- and in-situ Raman experiments.
I will explain the beamline setup and how we have integrated the Raman spectrometer into the existing equipment. Combining techniques only makes sense when the samples are exposed to some external stimuli. We are now capable of creating a wide range of experimental conditions:

- High, low temperature
- Specific gas atmospheres and mixtures
- Hydrothermal and
- High Pressure

Based on a few case studies I will try to give an overview on how these experimental conditions are created. I will also comment on the sometimes unexpected, added value of the combined approach.