

## High Pressure Diffraction Experiments on Single Crystals with Hot Neutrons on HEiDi

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The single crystal diffractometer HEiDi at the research neutron source at the Heinz Maier-Leibnitz Zentrum (MLZ) offers high flux, high resolution and large  $q$  range, low absorption and high sensitivity for light elements.

In 2016 a BMBF funded project (05K16PA3) was launched in order to allow studies on tiny samples  $< 1 \text{ mm}^3$  and with high pressure cells for isotropic pressure on single crystals, for instance in order to study structural properties down to low temperatures on  $\text{MgFe}_4\text{Si}_3$  compounds and their magnetic features [A. Grzechnik et al.; J. Appl. Cryst. 51 (2018)].

Within this project the optimizations on the instrument focus on optimized optical components (new Cu220 monochromator, soller collimators and guides) as well as in the development of various high-pressure diamond anvil cells (DAC) (panoramic and transmission cells) for which first data collections could be performed. The panoramic DAC offer a large opening angle and can be placed in the modified cryostat with an optical window. Pressure changes with temperature are followed with ruby luminescence. The new low-temperature set up allows temperatures down to 3 K. Transmission DAC are suitable for both neutron and X-ray diffraction. The membrane version can be operated remotely changing its pressure via a He gas filled membrane.

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