



Contribution ID: 4

Type: **Poster**

The optimized thermal beamport SR8 at the research neutron source Heinz Maier-Leibnitz

Friday 9 December 2022 14:00 (3 hours)

The neutron powder diffractometer SPODI is one of the most active instruments at the research neutron source Heinz Maier-Leibnitz. However, the demands of the user community far exceed the available beam time. Therefore, the thermal beamport SR8 will be optimized to allow the simultaneous operation of the three powder diffractometers SPODI, FIREPOD and ERWIN. Due to the unique characteristics of the three instruments, which will be presented in detail, they will be able to cater for a wide range of experimental demands.

SPODI is going to remain the high-resolution option in this suite of instruments. Due to neutron guides with optimized geometries, SPODI will feature a 20% increase of the neutron flux, while retaining its flat resolution curve with typical small FWHMs of below 0.35° . Careful Monte-Carlo simulations show that the neutrons transmitted through the SPODI monochromator can be efficiently re-utilized by the powder diffractometer FIREPOD in simultaneous operation.

With a planned neutron flux of $2 \cdot 10^7$ n/s cm² –one order of magnitude more than SPODI –and its eight large area detectors, FIREPOD will be a dedicated high throughput instrument, ideally suited for a broad range of fast parametric studies. Finally, ERWIN will complement the current single crystal option RESI. It is characterized by a large curved 2D detector with a virtually seamless coverage of $\sim 135^\circ$ and a choice of three different monochromators allowing for a broad range of usable wavelengths.

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Presenter: HAUF, Christoph

Session Classification: Poster Session

Track Classification: Structure Research