A new laboratory diffractometer for fast PDF data collection

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The STOE STADI P powder diffractometer in Transmission mode, equipped with a sealed Ag-tube, a Ge(111)-monochromator for pure Ag $K\alpha_1$-radiation (λ = 0.5594Å) and the Dectris MYTHEN 1K detector with 1 mm chip thickness, gained a high reputation as a versatile platform for PDF data collection [1, 2].

With the upgrade from the MYTHEN 1K to the MYTHEN 2 1K Dectris offers the opportunity to have up to four MYTHEN2 1K modules on one DCS4 detector control system. Such a quadruple setup, the Multi-MYTHEN 2 4K, has been mounted on a STOE STADI P Essentials, a one circle goniometer in Debye-Scherrer geometry for fast data acquisition for PDF calculations. G(r) calculations from TiO_2 powder (6nm particle size) measured for only 6h on this goniometer yielded an evaluable Q(max) > 25 $Å^{-1}$ in a data quality as good as synchrotron data!

An introduction of the STOE STADI P in Debye-Scherrer geometry, the Multi-MYTHEN 2 4K including a closer explanation of the measuring strategies, necessary modifications for high quality data acquisition for PDF calculations and exemplary data will be shown.

[1] Hartmann, T., Fink, L. and Schrodt, N., *Advances in X-ray Analysis, Volume 59,* **2016**, 277-285.
[2] Teck, M., Murshed, M. M., Schowalter, M., Lefeld, N., Grossmann, H. K., Grieb, T., Hartmann, T., Robben, L., Rosenauer, A., Mädler, L. and Gesing, T. M., *Journal of Solid State Chemistry, Volume 254*, **2017**, 82-89.