

Investigating coin cell processes in transmission geometry on a laboratory diffractometer

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The structural analysis of electrode materials during a charge/discharge cycle in battery cells using X-ray diffraction became more and more popular over the last years. Once starting at the synchrotrons, a wide variety of self-made battery cell holders in reflection or transmission geometry found their way into the laboratories. As commercially available solutions are only built for pouch cells and mostly for Bragg/Brentano goniometers, a commercial coin cell setup for transmission geometry still had to be developed.

Based on the studies of the Institute for Materials Science of Darmstadt University of Technology [1], the Institute for Applied Materials (IAM) at the Karlsruhe Institute of Technology (KIT) and the Leibniz Institute for Solid State and Materials Research (IFW) Dresden [2, 3], STOE & Cie GmbH in Darmstadt, Germany, now offers such a sample holder.

The new coin cell sample holder and data measured on a STOE STADI P in transmission geometry, equipped with a sealed Ag- or Mo-tube, a Ge(111)-monochromator for pure $K\alpha_1$ -radiation and the Dectris MYTHEN2 detector with 1mm chip thickness including an explanation of the measuring strategy will be presented.

[1] Baehtz, C., Buhrmester, Th., Bramnik, N.N., Nikolowski, K. and Ehrenberg, H., *Solid State Ionics, Volume 176*, **2005**, 1647-1652.

[2] Herklotz, M., Scheiba, F., Hinterstein, M., Nikolowski, K., Knapp, M., Dippel, A.-C., Giebeler, L., Eckert, J. and Ehrenberg, H., *Journal of Applied Crystallography, Volume 46*, **2013**, 1117-1127.

[3] Herklotz, M., Weiß, J., Giebeler, L. and Ahrens, E., *German Patent DE102015214177B3*, **2015**.