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Combined XAS-DRIFT cell for the analysis of functional materials

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A spectroscopic cell has been commissioned and tested on solid catalysts at beamline SuperXAS that enables combination of quickEXAFS and DRIFT measurements in a novel geometry in a single experiment. Pt/Al2O3, Pd/Al2O3 and Pd/CZ were tested under pulsed conditions, CO vs. O2. Beside obtaining high quality EXAFS data, IR spectra of adsorbed species both on the support and on the metal nano-particles were obtained in the synchronous measurements, this potentially allowing for the direct comparison with structural information from EXAFS analysis. Further combination with a modulated excitation approach that is achieved by the pulsed experimental conditions enabled to massively enhance the sensitivity of quickEXAFS. Contributions related to adsorbed species, such as Pt-CO, Pt-H and Pd-CO could be isolated in the time-resolved quickEXAFS data.

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