Supplementary Material (ESI) for *PCCP*

Electronic Support Information "Operando X-ray absorption spectroscopy studies on Pd-SnO_2 based sensors"

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The electronic support information gives additional information on the setup (cross sections, Figure ESI-1), transmission electron microscopy images of the SnO_2 particles (Figure ESI-2) and additional EXAFS spectra of 2 wt % Pd:SnO_2 sensors (Figures ESI-3 to ESI-6).

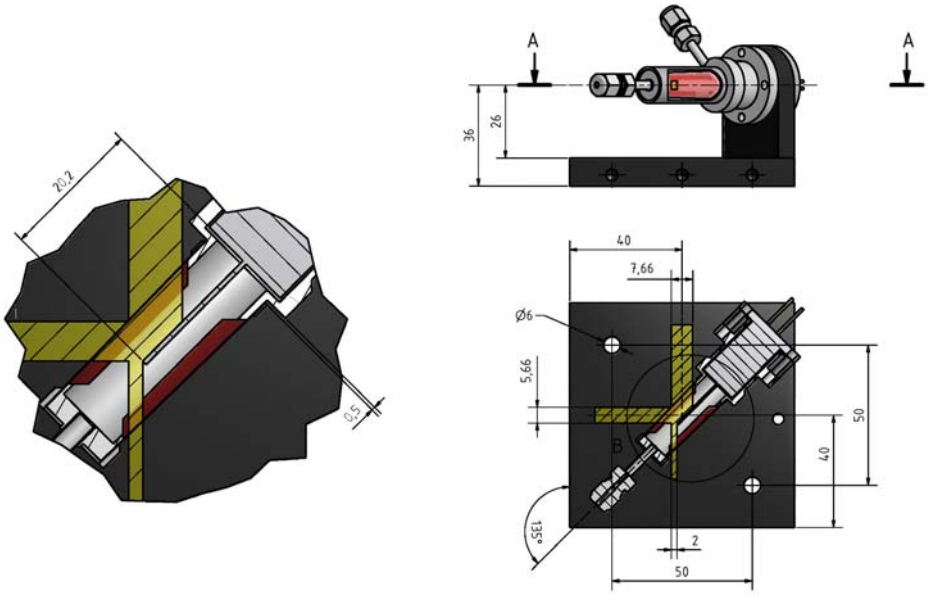

Figure ESI-1: Cross sections of the environmental XAS cell for structure-function relationships.

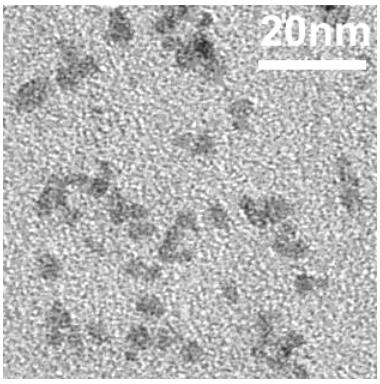

Figure ESI-2: TEM image of 0.2 wt % Pd:SnO_2 powders; here only an overview is shown since no metallic Pd-particles were found.

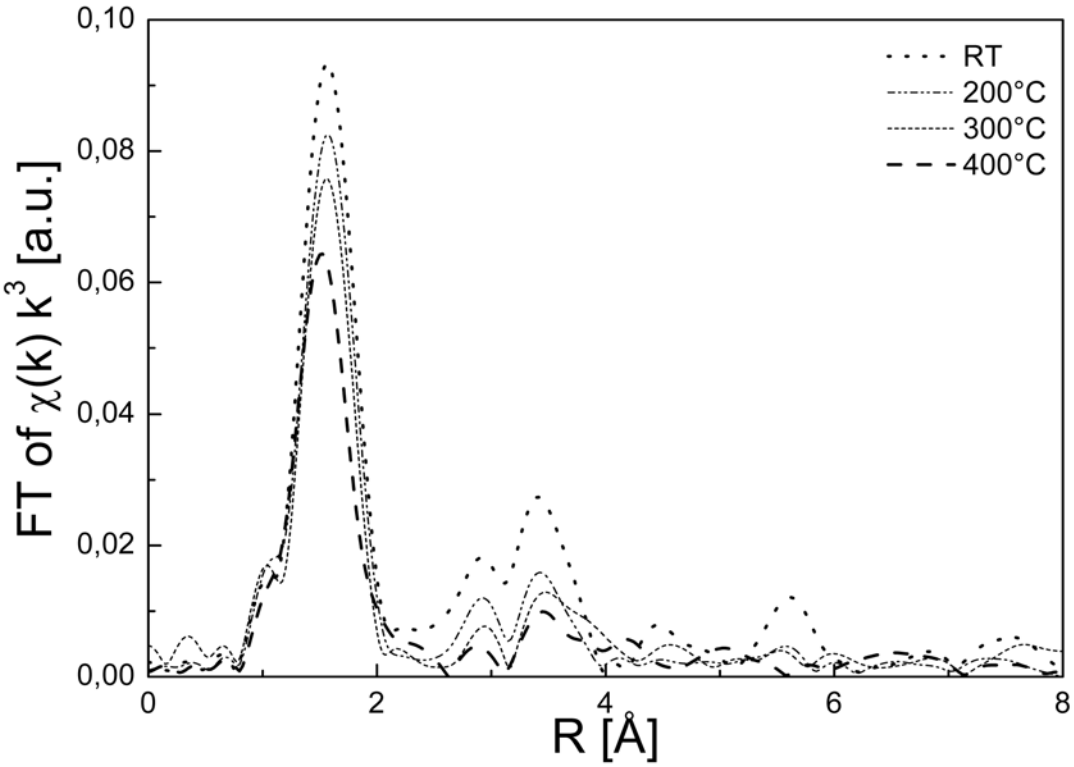

Figure ESI-3: Fourier transformed EXAFS spectra at the Pd K-edge of a 2wt % Pd:SnO_2 sensor in dry air at RT, 200 ^{0}C, 300 ^{0}C, 400 ^{0}C.

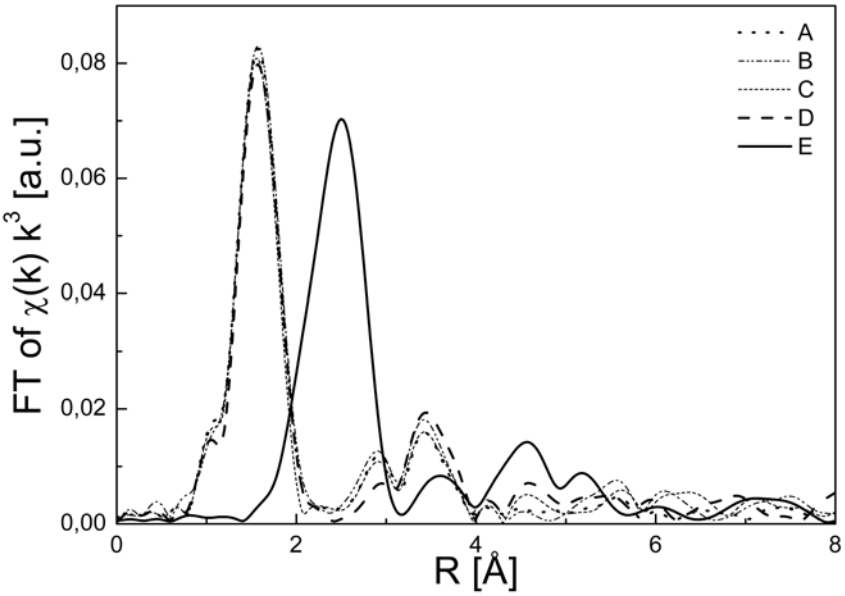

Figure ESI-4: Fourier transformed EXAFS spectra at the Pd K-edge of a 2wt % Pd:SnO_2 sensor under *operando* conditions in dry air (A), exposure to 50 ppm CO in dry air (B) and at 50% relative humidity (D), exposure to 30 ppm H_2 in dry air (C); all data taken at 200 ^{0}C; for comparison a palladium foil (E, downscaled by factor of 4) is shown.

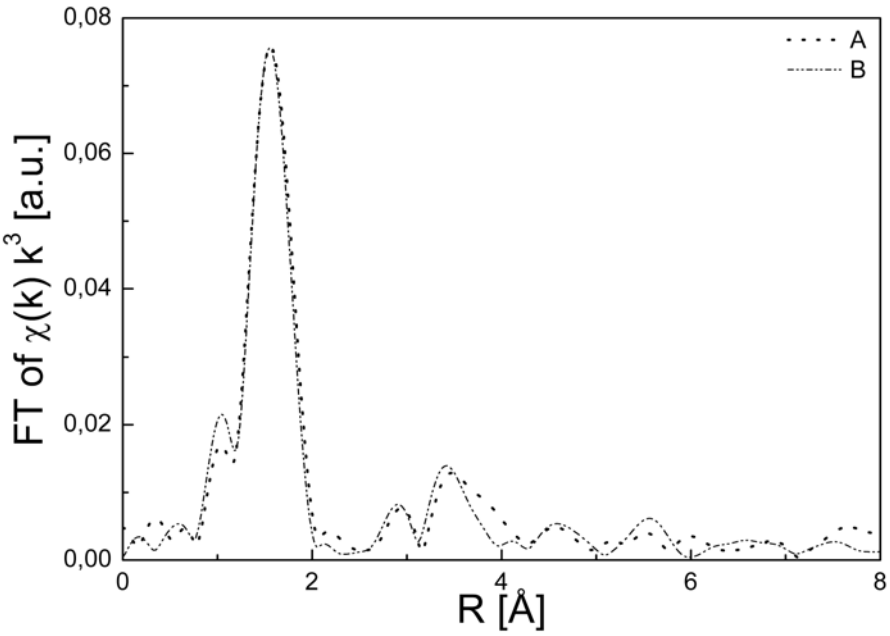

Figure ESI-5: Fourier transformed EXAFS spectra at the Pd K-edge of a 2wt % Pd:SnO_2 sensor in dry air (A) and 50 ppm CO in dry air (B) at 300°C.

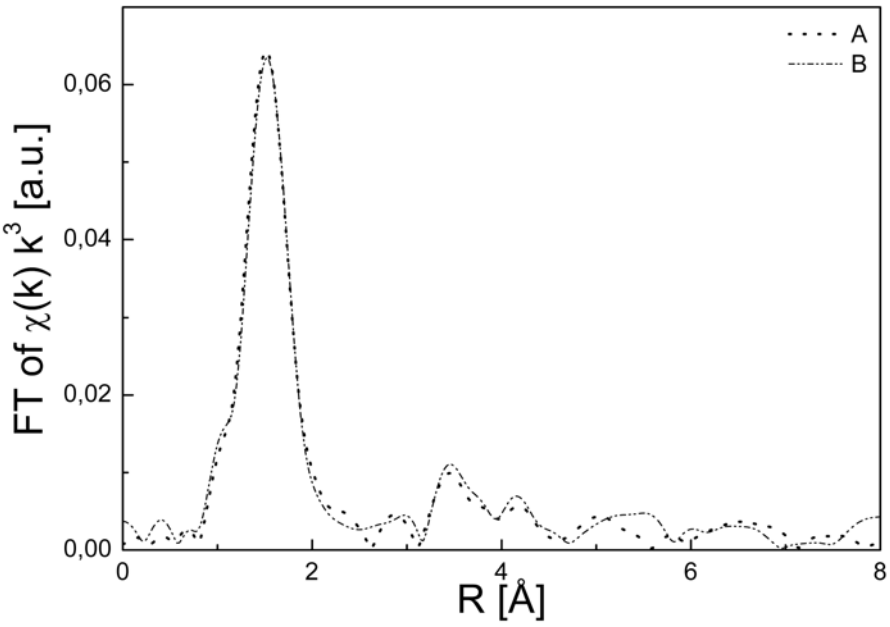

Figure ESI-6: Fourier transformed EXAFS spectra at the Pd K-edge of a 2wt % Pd:SnO_2 sensor in dry air (A) and 50 ppm CO in dry air (B) at 400°C.