Principal Component Analysis to reveal camouflaged information in Spectromicroscopy

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Supplementary information

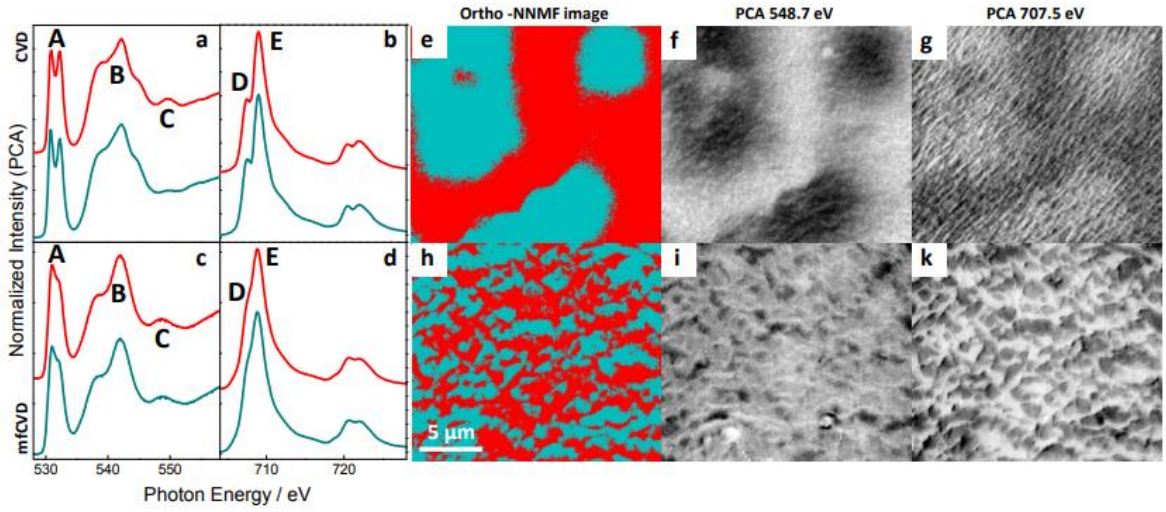

Figure 1 (CVD deposited FeO_x thin films): Reconstructed spectra from PCA averaged over the red and cyan cluster areas found through ortho-non-negative-matrix-factorization for the zero-field (a), (b) and the field-assisted (c), (d) deposited FeO_x samples. Spatial distribution of the clusters (e and h). Intensity contrasts at fingerprint energies of the O-K (f and i) and Fe-$L_{3,2}$ edges (g and k)

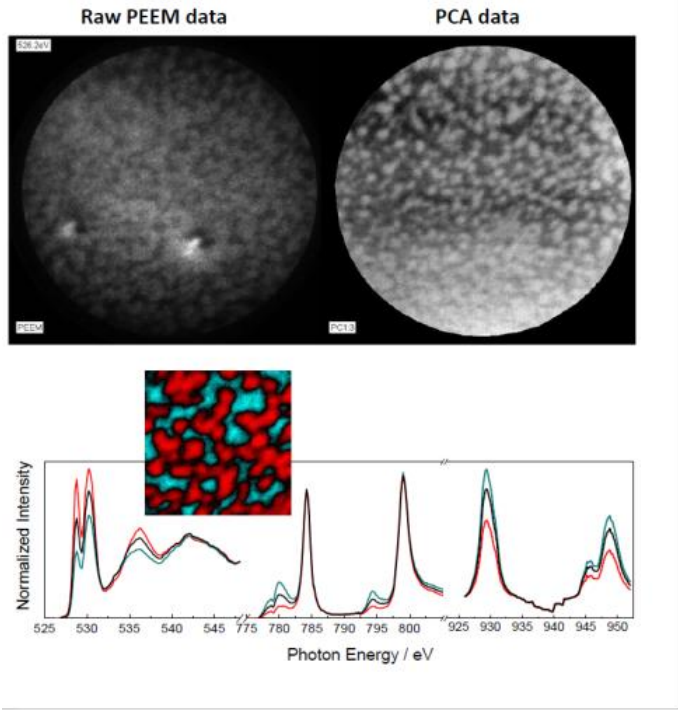

Figure 2 (decomposition of PBCO, surface after 12h in 20 mbar O_2 at 1073 K): Raw PEEM image at 528.2 eV (O-K-Edge, top left) and reconstructed image from the first three principal components (top right). O-K-, Co-L-/Ba-M- and Pr-M-Edge XAS (bottom) as reconstructed from the three different principal components, showing three distinct, spatially defined occurrences.