



30th April 2018 - 15:00 h

CFEL – building 99, seminar room IV, 1st floor

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Applications of X-ray Spectroscopic Methods in Homogeneous and Heterogeneous Catalysis Research

In depth understanding of the electronic and geometric structure of catalysts is crucial to understanding their reactivity and chart out rational pathways to their refinement. X-ray based spectroscopic methods including X-ray absorption spectroscopy (XAS) and X-ray emission spectroscopy (XES) provide such information. Results will be presented informing the limitations of valence to core X-ray emission spectroscopy, which can be sensitive to local structure but not diagnostic. Additionally, the pre-edge region of XAS spectra will be thoroughly investigated including evidence of metal to ligand charge transfer type transitions in Cu bipyridine complexes. Resonant inelastic X-ray scattering data (RIXS) will be presented which confirms the identification of the controversial $[\text{Cu}(\text{CF}_3)_4]^-$ anion as a Cu^{1+} species. Finally, the possible applications of multi-pore optics for spatially resolved measurements will be discussed.