

Perspectives On Applied Catalyst Characterization

8 March 2016, Burlington House (RSC), Piccadilly, London, W1J 0BA, UK

Detailed Abstracts for Invited Speakers:

Chris Mitchell (SABIC): *“First Catch Your Rabbit” (How to get useful knowledge from post-mortem catalyst characterization)*

The presentation will cover a number of aspects relating to the post-mortem characterization of catalyst samples obtained from production plants. These will include the importance of catalyst sampling, understanding plant operation, as well as the relevance of different analyses to be performed. These will be illustrated using examples from several different industrial catalytic processes.

Paul Webb (Sasol Technology UK): *Advanced Spectroscopic Techniques Applied to the Study of FTS Catalysts*

Manfred Schuster (Johnson Matthey): *Aberration Corrected TEM in Industry*

Simon Duckett (University of York): *Using hyperpolarization and NMR to follow catalytic transformations*

Parahydrogen derived hyperpolarization is shown to improve NMR detection limits by three orders of magnitude such that the detection, and subsequent probing, of reaction intermediates becomes feasible.

Karen Wilson (EBRI, Aston University) *Active site elucidation and rational design*

The application of advanced spectroscopic techniques for elucidating the active site and aiding the rationale design of catalysts for biomass conversion will be discussed.

Damien Murphy (Cardiff University): *Applications of EPR spectroscopy for characterizing paramagnetic centres in catalysis*

In this Talk, results will be presented to demonstrate the utility of EPR and ENDOR spectroscopy to i) investigate the nature of surface stabilized radicals on oxide surfaces, ii) identify the structural changes accompanying the reactivity of low valent transition metal ions, and iii) detection of transient reactive oxygen species in oxidation reactions.

Andrew Beale (UCL): *Chemical imaging of catalytic materials and beyond...*

James McGregor (University of Sheffield): *Applications of optical tweezers in heterogeneous catalysis*

Optical tweezers, or optical levitation, offers the possibility to conduct catalyst characterization on the single-particle scale. This presentation will present initial developments in this area focusing on Raman spectroscopic studies of individual catalyst particles.