

# **Nano-Scale Characterizations of Catalytic Materials by High Resolution Transmission Electron Microscopy**

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High resolution transmission electron microscopy (HTREM) and a family of related analytical techniques grouped around it provide a very powerful way of studying catalyst materials down to nanometer and atomic scales. Information on the texture, morphology, phase composition, chemical composition and bonding state of the active sites of a catalyst can be obtained with these techniques. Examples on the investigation of metal-support interaction of supported catalysts, on the synergetic effects of bi-metallic system, on the dynamic behaviors of transition metal oxides in the catalytic reaction, and on the newest development of HRTEM and its application in heterogenous catalysis will be illustrated in the presentation.