

In situ X-ray Absorption Spectroscopy and its application in Nanocatalysts

JING ZHANG*, LONG ZHANG, SHENGQI CHU, LIRONGZHENG

Beijing Synchrotron Radiation Facility, Institute of High Energy Physics, Chinese Academy of Science, P.R.China , * jzhang@ihep.ac.cn

X-ray absorption spectroscopy (XAS, also known as X-ray absorption fine-structure, XAFS), in both near (XANES) and post (EXAFS) edge regions, has become a powerful characterization technique in all the fields of nanocatalysts science. Nanocatalysts are complex materials that usually operate at elevated pressures and temperatures. The acquisition of information about how Nanocatalysts work and how to rationally design new nanocatalysts, still remains challenging. Here, in situ XAS techniques such as quick scanning XAS and in situ cell are developed. Using several representative examples, we illustrate the role of in situ XAS techniques in the characterization of nanocatalysts. New insights into the catalyst active phase and catalytic mechanism and nanocatalyst synthesis are gained via in situ x-ray absorption spectroscopy (XAS).