SRI2024

Contribution ID: **350** Type: **Contributed talk**

In Operando Observation for Dynamic Evolution of Pt Nanocatalysts in Pulsed Electrolysis

Wednesday 28 August 2024 12:30 (15 minutes)

Pulsed electrochemical method has emerged as a simple and responsive knob to increase catalyst durability and improve product selectivity. However, mechanistic understandings mostly come from traditional experimental techniques or theoretical calculations, only providing ex situ information and preventing accurate analysis of electrode processes. Herein, we developed a novel pulsed modulation XAS (EM-XAS) acquisition system for operando observation of dynamic evolution of Pt nanocatalysts in pulsed electrolysis at molecular level. The near-surface layers of the Pt catalyst are oxidized and reduced periodically with maintained metallic core structure in pulse chemistry. Besides, the oxidation state could be tuned by varying parameters, containing pulse potential and during times. The present study provides a new mechanism of the pulse electrochemistry reaction, and the strategy developed in this work offers a promising approach to unravel the reaction mechanisms of diverse and complex pulsed process.

I plan to submit also conference proceedings

No

Primary authors: Mr YU, Can (Institute of High Energy Physics); HUANG, Huan (Institute of High Energy Physics); Ms ZHANG, Jing (Institute of High Energy Physics); Mr LIU, Wenchao (Institute of High Energy Physics)

Presenter: HUANG, Huan (Institute of High Energy Physics)

Session Classification: Mikrosymposium MS 12/1: Time Resolved Techniques

Track Classification: 12. Time resolved techniques