Contribution ID : **282** Type : **Oral**

Mechanistic insights into functional Electrocatalysis from XAS: the story from Experimental Design to Insights into Electron Transfer Timescales important for Selectivity.

Thursday, 19 November 2020 14:50 (30)

1Department of Chemistry and Biotechnology and Centre for Translational Atomaterials, Faculty of Science, Engineering and Technology, Swinburne University of Technology

One of the greatest challenges of the 21st century will be securing cheap and renewable sources of energy. One of the most promising approaches to this challenge is to design catalysts from earth abundant materials capable of implementing key chemical reactions including splitting water into hydrogen and oxygen ($H_2O \longrightarrow 2H^+ + O_2$); and both the oxidation ($H_2 \longrightarrow 2H^+$) and reduction ($2H^+ \longrightarrow H_2$) of hydrogen among many others. Structural type and disorder have become important questions in catalyst design- it is often noted in studies of functional materials that the most active catalysts are “disordered” or “amorphous” in nature. But the impact of this “disorder” on catalysis and other material properties has been hard to quantify- in part because of the challenges of characterising disordered materials. X-ray Absorption Spectroscopy offers an important solution to this problem enabling us to study materials in their “functional active state” even when highly disordered and amorphous. In this talk I will examine some of the things we have learnt about functional electro-catalysts from X-ray Absorption Spectroscopy- from catalyst identification to understanding timescale effects in electron transfer important for catalyst design.§

Primary author(s) : HOCKING, Rosalie (Swinburne University of Technology)

Presenter(s) : HOCKING, Rosalie (Swinburne University of Technology)

Session Classification : Session 8 - Advanced Materials and Hard Matter

Track Classification : Advanced Materials and Hard Matter