

## Defective carbon-based materials for electrocatalysis

Qi Long<sup>1,2</sup>, Xiangdong Yao<sup>2</sup>, and Jun Chen<sup>1</sup>

<sup>1</sup>Intelligent Polymer Research Institute, Faculty of Engineering and Information Sciences, University of Wollongong, Squires Way, North Wollongong, NSW 2500, Australia.

<sup>2</sup>School of Advanced Energy, Sun Yat-Sen University (Shenzhen), Shenzhen, Guangdong 518107, P. R. China.

Email: [junc@uow.edu.au](mailto:junc@uow.edu.au)

In the past few decades, tremendous efforts have been devoted to developing carbon-based materials to reduce the need for precious metals in the field of electrocatalysis.<sup>1</sup> Thereinto, defective carbon-based electrocatalysts have recently been considered one of the most promising alternatives owing to their irreplaceable advantages, such as environmentally friendly, low cost, and high structural tunability.<sup>2-4</sup> However, despite remarkable progress has been achieved, grand challenges of their further development remain with the traditional “trial-and-error” approaches, mainly due to the lack of precise synthetic methodologies as well as in-depth understandings of active centres and underlying electrocatalytic mechanisms. Herein, we report some new synthetic strategies to precisely control the carbon defect density or manipulate the targeted migration of metal species on defective carbon substrate, which not only successfully realize the monitoring the structural dynamic evolution of DCMs, but also improve the fundamental understanding of the synthetic and electrocatalytic mechanisms.<sup>5</sup> We believe that the development of synthetic methodologies of DCMs provides plenty of room for expanding the “gene pool” of electrocatalysts and then pushing the DCMs towards industrialization.

### References:

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### Biography

Professor Jun Chen is currently appointed as Deputy Director of Intelligent Polymer Research Institute (IPRI), University of Wollongong (UOW). His research interests include: Electroactive Materials, Electro-/Bio- Interfaces, Nano/Micro- Materials, 2D/3D Printing and Wearable Electronic Devices. Since 2018, Professor Chen has been identified as *Highly Cited Researchers* (5-times) in Cross Field . In 2021, Prof. Chen has been admitted as a *Fellow of The Royal Society of Chemistry* (FRSC).

