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IAPME Seminar

Dynamic Active Sites in Water Splitting

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Venue: N23-4018
Time: 10:00 - 11:00
Hosted by: Prof. Kwun Nam HUI

Abstract

In-depth understanding of the real-time behaviors of active sites during electrocatalysis is essential for the advancement of sustainable energy conversion. Recently, the concept of dynamic active sites has been recognized as a potent approach for creating self-adaptive electrocatalysts that can address a variety of electrocatalytic reactions, outperforming traditional electrocatalysts with static active sites. Nonetheless, the comprehension of the underlying principles that guide the engineering of dynamic active sites is presently insufficient. In this work, we systematically analyze the fundamentals of dynamic active sites for water splitting and consider important future directions for this emerging field. We reveal that dynamic behaviors and reversibility are two crucial factors that influence electrocatalytic performance. By theoretical calculations and in-situ/ex-situ experiments, we demonstrated that dynamic active sites are stable in harsh conditions such as in acidic water oxidation, which pave the way to the development of the next-generation electrocatalyst.

Biography

Prof. Huanyu JIN is a full professor at the Shenzhen Institute of Advanced Technology, Chinese Academy of Sciences (CAS). Before joining CAS, he served as a lecturer at the Institute for Sustainability, Energy, and Resources at the University of Adelaide. His research is dedicated to the development of innovative nanomaterials for sustainable chemical production, water splitting, and various other applications in energy conversion and utilization. He has published over 60 papers in renowned international academic journals, over 30 as the first/corresponding author, in journals such as Chem. Rev., Sci. Adv., Nat. Commun., Adv. Mater., and Angew. Chem. He has garnered 10,000 total citations and an H-index of 41. He has received awards such as the Stephen Wilkins Medal and the JMCA Emerging Investigator. He serves as an editorial board member for the journal 2D Materials and as a young editorial board member for journals such as InfoMat, Journal of Energy Chemistry, and Carbon Energy. He is listed as Highly Cited Researcher and "Stanford/Elsevier's Top 2% Scientist".

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