INPOMS WEBINAR: "Decoupled Electrolysis for Water Splitting and Beyond"

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Abstract

There has been much interest recently in electrocatalytic water splitting for storing intermit-tent renewably-generated power (*e.g.* solar) as chemical fuels such as hydrogen.[1] Conventional electrolysers usually require stable power inputs in order to operate effectively and safely and so may be unsuited to harnessing renewable power, which is often intermittent and diffuse. Decoupled electrolysis using suitable redox mediators[2] allows oxygen and hydrogen production to be separated in both space and time. The advantages of this approach for harnessing intermittent power sources will be explained, such as the production of ultra-pure product gases[3,4] and the potential benefits of using such a system in a more diffuse, solar-driven hydrogen production platform.[5,6] The application of this technology to chemical hydrogenations[7] and redox flow batteries with remarkably high energy densities will also be discussed.[8]

References

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Biography

Mark D. Symes was born in London in 1982 and obtained his MSci degree from the University of Cambridge (2005) and a PhD from the University of Edinburgh (2009), before undertaking postdoctoral appointments at the Massachusetts Institute of Technology and the University of Glasgow. He was elevated to the faculty at Glasgow in 2013 and is now a Royal Society University Research Fellow and Senior Lecturer in electrochemistry, electrocatalysis and electrochemical technology at Glasgow. He currently leads a group of 10 PhD students and PDRAs and has served as the Chair of the Royal Society of Chemistry Electrochemistry Group since 2019.

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