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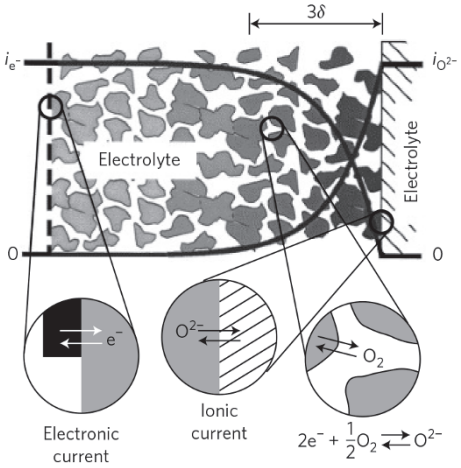
IN BRIEF

HETEROGENEOUS CATALYSIS

What is really happening in fuel cells



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Collectively referred to as solid oxide cells, solid oxide fuel cells and electrolysers are important energy conversion devices that make use of a common architecture — two electrodes separated by a solid oxide electrolyte. Typically running at high temperatures, solid oxide fuel cells convert fuel into electricity, whereas solid oxide electrolysers use power to split water or carbon dioxide into fuel and dioxygen. The performance of these devices strongly depends on the electrochemically active region on the electrode side of the electrode–electrolyte interface, in which three key functionalities are required: electrocatalytic activity, ionic conductivity and electronic conductivity. A Review by John Irvine and colleagues for *Nature Energy* examines the components, structure and evolution of this interface under operating conditions. In particular, it highlights the importance of segregation and surface enrichment in determining activation and aging in solid oxide cells.

James Gallagher, Associate Editor, Nature Energy

ORIGINAL ARTICLE Irvine, J. T. S. et al. Evolution of the electrochemical interface in high-temperature fuel cells and electrolysers. *Nat. Energy* **1**, 15014 (2016)