

Acid-stable hafnium catalysts for the Oxygen Evolution Reaction

A low-cost alternative to iridium in water electrolysis

Technology

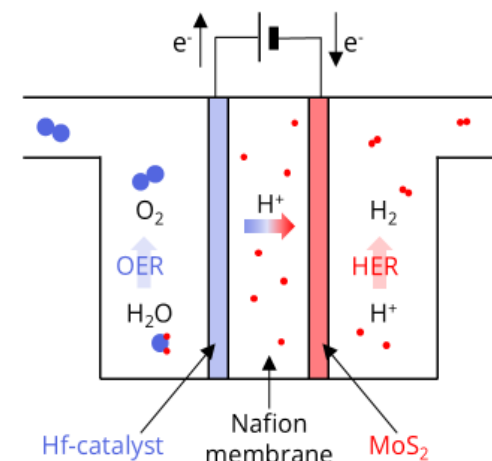
Hafnium-based catalysts for the oxygen evolution reaction - often considered to be the limiting step in the manufacture of inexpensive green hydrogen - offer a potentially cheaper alternative to costly iridium-based incumbents.

Benefits

- Maintains long-term performance as a result of high stability and catalytic efficiency under acidic conditions.
- Replacing iridium, one of the rarest elements in the Earth's crust, with abundantly available materials, significantly reduces manufacturing costs.
- Sustainably attractive: annual production levels of hafnium are approximately ten times that of iridium.

Commercial applications

- Water Electrolysis: replacing scarce and expensive iridium in Polymer Electrolyte Membrane electrolyzers for the conversion of water into green hydrogen.



Schematic of a Nafion-divided water electrolysis system showing the anodic oxygen evolution reaction (left hand cell) catalysed by the new hafnium-based materials.

Opportunity

The inventors of this technology welcome enquiries concerning potential co-development projects and / or licensing.

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