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## Hydrogen Oxidation Reaction in Alkaline Media: From Mechanism to Recent Electrocatalysts

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**ABSTRACT** The sluggish cathodic oxygen reduction reaction (ORR) of proton exchange membrane fuel cells (PEMFCs) heavily relies on the employment of a large quantity of unaffordable Pt-based electrocatalysts to accelerate the slow kinetics. As switching from acidic proton exchange membrane to alkaline hydroxide one, it is highly promising to completely replace platinum group metal (PGM)-based ORR electrocatalysts with PGM-free counterparts. However, anodic hydrogen oxidation reaction (HOR), with a fast kinetics in PEMFCs even at a low Pt loading of  $50 \mu\text{g}_{\text{Pt}} \text{cm}^{-2}$  or less, becomes two orders of magnitude slower in alkaline

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