Rapid and pH Sensitive Water Oxidation Catalysis

Scientific Achievement

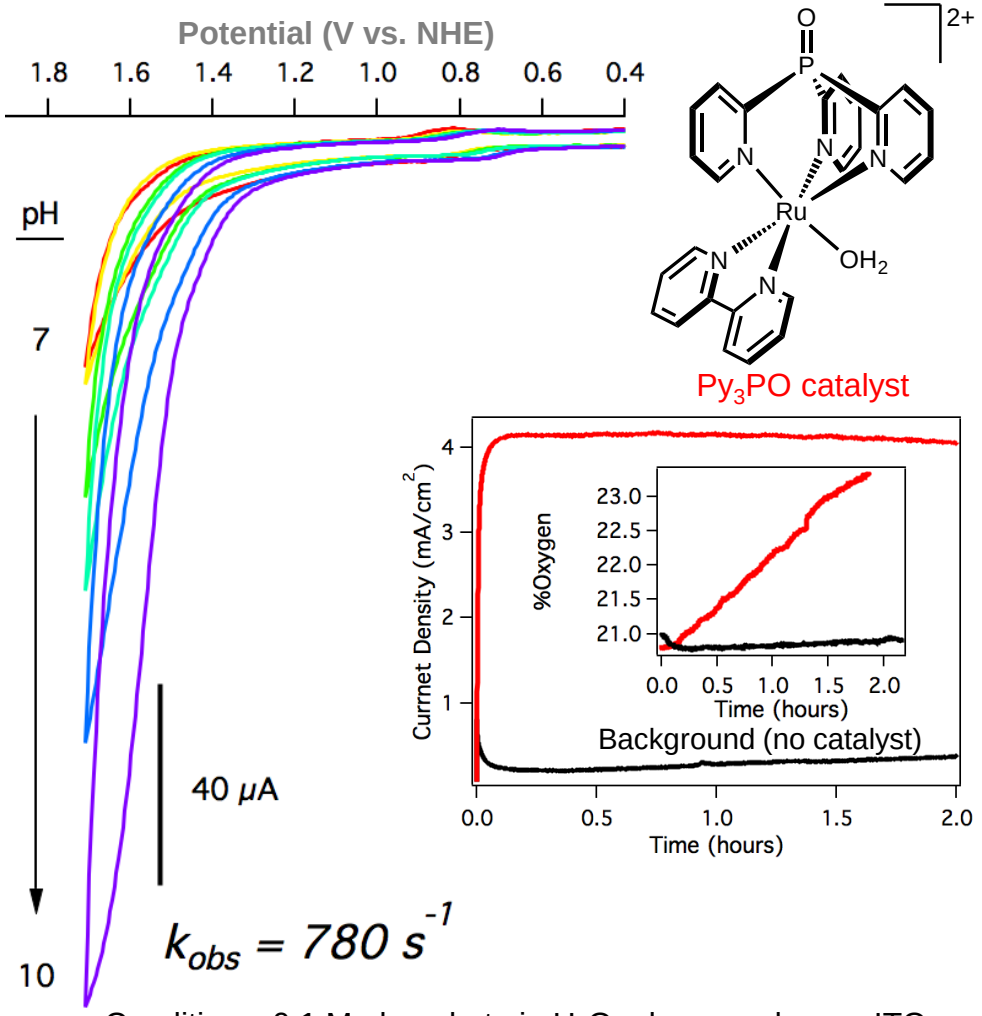
Ruthenium complexes of the tripodal ligand tris(2-pyridyl)phosphine oxide (Py_3PO) were found to be exceptional electrocatalysts for water oxidation. The Py_3PO catalyst exhibits faster rates and pH-dependent onset potentials.

Significance and Impact

As one of the fastest water oxidation electrocatalysts, the Py_3PO complex is a promising new candidate for solar fuels devices. The unusual facial coordination warrants further study.

Research Details

- Synthesized Ru complexes of Py_3PO.
- Characterized electrochemical response in water over a wide pH range.
- Assessed catalysis through electrokinetic analysis and sustained 2 h electrolysis.



Conditions: 0.1 M phosphate in H_2O, glassy carbon or ITO working electrode, Pt counter electrode

Walden, A. G. and Miller, A. J. M. *Chemical Science,* **2015**, *6*, 2405–2410.

Work was performed at the University of North Carolina at Chapel Hill

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