

## HER/HOR Catalysts for the H<sub>2</sub>-Br<sub>2</sub> Fuel Cell System

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### Abstract

Large scale deployment of renewable power sources like wind and solar require energy storage because of their intermittent nature. The Hydrogen-Bromine (H<sub>2</sub>-Br<sub>2</sub>) fuel cell system is considered to be a suitable electrical energy storage system because of its high energy capacity, high round-trip conversion efficiency and low cost. See Figure 1. While the bromine reactions do not need to be catalyzed, the hydrogen (HER/HOR) reactions require a catalyst that is highly active, to keep the performance high and the cost low, and stable and durable in the highly corrosive HBr/Br<sub>2</sub> environment of the cell as required by the extended life of this application.

Platinum, while having very high catalytic activity for the HER/HOR reactions, is not stable in the HBr/Br<sub>2</sub> environment. An alternative catalyst is needed. This presentation will discuss the performance and stability of various HER/HOR catalysts that we have evaluated for this fuel cell system.

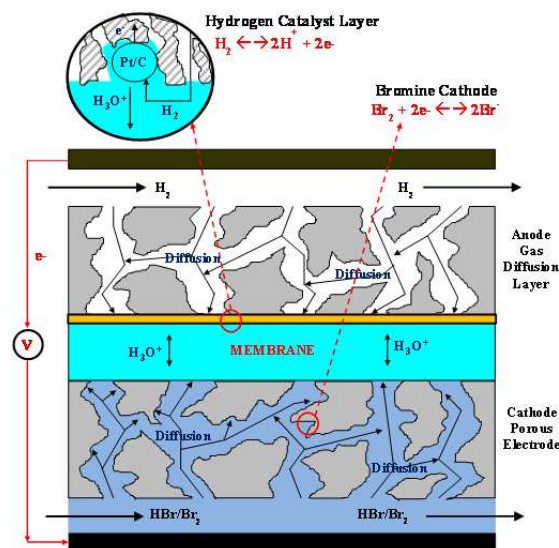


Figure 1. Schematic of a H<sub>2</sub>-Br<sub>2</sub> flow cell

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