High Surface Area Carbon Electrodes for the Bromine Reactions in H_2-Br_2 Fuel Cells

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Hydrogen-Bromine (H_2-Br_2) fuel cells (Figure 1) are considered to be one of the viable systems for large scale energy storage because of their high energy conversion efficiency, flexible operation and low capital cost. Since the bromine reactions in this fuel cell system do not need any precious metal catalysts, plain porous carbon paper can be used as an electrode material. The active surface area of the carbon electrode plays a significant role in optimizing the performance of the H_2-Br_2 fuel cell.

In this study, the carbon nanotubes are directly grown on the electrode surface using Chemical Vapor Deposition (CVD) to enhance the active surface area of these porous electrodes.[1,2] The synthesized electrodes are then characterized using Scanning Electron Microscopy (SEM), Energy Dispersive X-Ray Spectroscopy (EDX), Transmission Electron Microscopy (TEM), and X-Ray Diffraction (XRD). Along with the characterization results, the preliminary data acquired from electroanalytical methods such as cyclic voltammetry will be discussed in this presentation.

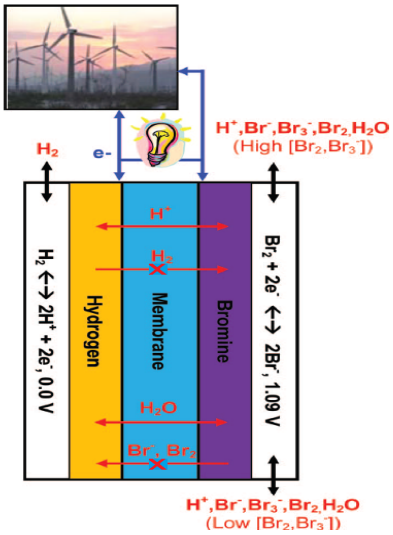

Fig1. Schematic of a H_2-Br_2 system

References

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