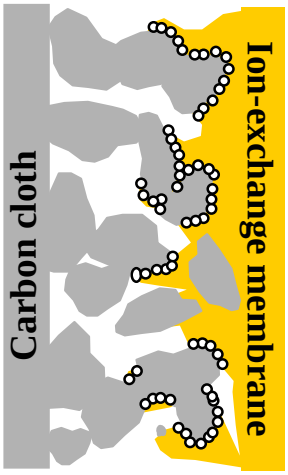
Electrocatalyzation of Fuel Cells using the FARADAYIC® Process

Objective:

This project demonstrated the feasibility of using the patented FARADAYIC® Process to electrocatalyze a membrane electrode assembly for a PEM fuel cell.

Summary:

The FARADAYIC® Process is used to electrocatalyze a gas diffusion layer for a PEM fuel cell membrane electrode assembly. This process allows enables manufacture of high performance, low cost membrane electrode assemblies utilizing a reel-to-reel manufacturing process. The Faraday innovation utilizes electrodeposition to deposit small platinum particles into the thin carbon/ionomer catalyst layer. In contrast to the chemical Pt/C catalyst preparation process, the electrodeposition process offers several advantages: 1) deposition of small platinum particles in the catalyst layer at high platinum loading, and 2) compatibility with a continuous manufacturing line, using reel-to-reel plating technology.

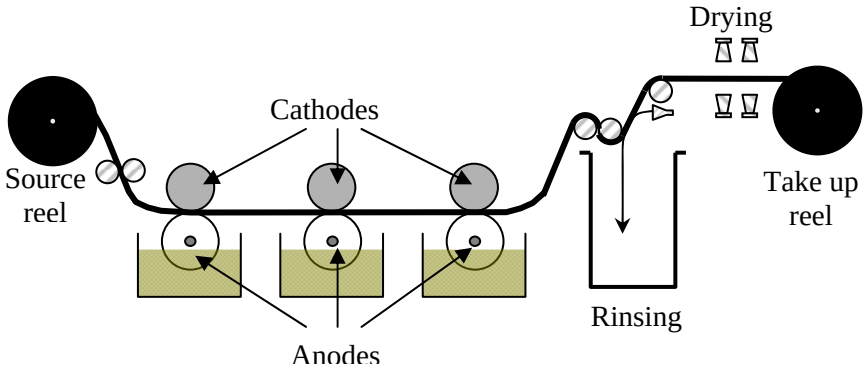


Tunable Loading
High Surface Area
High Utilization

Background:

The patented FARADAYIC® Process is an electrochemical manufacturing technique that utilizes a controlled electric field to electrodeposit a material of interest. Since the FARADAYIC® Process is electrically mediated, it does not require small amounts of proprietary chemicals to facilitate the metal deposition as needed in conventional electrochemical processes (e.g. DC). The material deposition rate is determined by the applied electric field, which is user-defined and computer controlled. This provides the means for precise control of the length of the process, the total material deposited and the properties of the deposit.

The FARADAYIC® Process technology illustrated above is protected by a substantial patent portfolio including issued, allowed, and pending patent actions.



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