

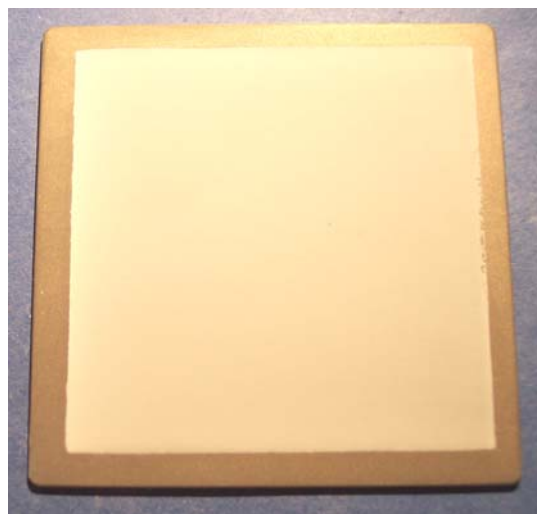
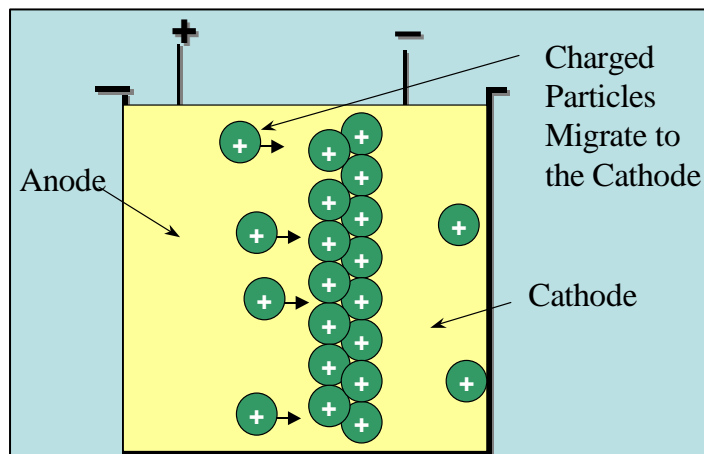
Electrophoretic Deposition using the FARADAYIC[®] Process

Objective:

This project demonstrated the feasibility of depositing ceramic coatings onto metallic substrates using the patented FARADAYIC[®] Process.

Summary:

The FARADAYIC[®] Electrophoretic Deposition process is an affordable, non-line-of-sight method of coating complex-shaped substrates with controllable thickness distributions and with columnar microstructure that is sufficiently strain-tolerant and will survive in the turbine environment. This innovation exists at a Manufacturing Readiness Level of ~2. Typically plasma spray or electron beam physical vapor deposition are used to deposit ceramic coatings. FARADAYIC[®] Electrophoretic Deposition is a non-line-of-sight process that is easy to control and more cost effective when compared with the more conventional techniques.



Background:

The patented FARADAYIC[®] Process is an electrochemical manufacturing technique that utilizes a controlled electric field to deposit a material of interest. Since the FARADAYIC[®] Process is electrically mediated, it does not require small amounts of proprietary chemicals to facilitate 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 process length, the total material deposited and the deposit properties.

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