Water Transport Within the Stack: Water Transport Exploratory Studies (Topic 2)

Los Alamos National Laboratory

- Funding

DOE Cost Share	Recipient Cost Share	TOTAL
$6,550,000	$290,811	$6,840,811
96%	4%	100%

- Project Description: This project will be focused on improving the understanding of water transport within fuel cells. It will be structured in three areas: fuel cell studies, characterization of component water transport properties, and modeling of water transport. Gas diffusion layers, microporous layers, and membrane-electrode-assemblies play critical roles in water management within operating fuel cells and rely on appropriate water content for optimal performance. This project will utilize state-of-the-art characterization techniques to examine these components and their interfaces. Models will use experimental data from fuel cell testing and component characterization. A transient model framework will be developed in the membrane, catalyst, gas diffusion, and microporous layers that can represent all relevant physical processes, including water transport/removal under normal operating conditions, water freezing during shut-down, and water thawing during start-up.

- Timeframe: 4 years, starting in FY07

Sub-Contractors

Institutions
Oak Ridge National Laboratory
Sandia National Laboratory
Case Western Reserve University
W. L. Gore and Associates, Inc.
SGL Carbon Group
National Institute of Standards and Technology