

## High Temperature Membrane Working Group

May 19, 2006

Crystal Gateway Marriott  
Arlington, Virginia

### MINUTES

The meeting was called to order by Nancy Garland at 9 a.m., who introduced Jim Fenton, who chaired the meeting, and the 12 presenters who would discuss their projects. Sign-in sheets were distributed and 57 people signed in.

Jim Fenton discussed plans for the next meeting as well as the future and challenges facing the many issues involving high temperature membranes. In particular, he discussed two key milestones:

Year two, at the third quarter, conductivity of 0.07 S/cm at 80% relative humidity at room temperature using alternate materials (not Nafion<sup>®</sup>) will be demonstrated.

Year three, at the third quarter, conductivity of  $>0.1$  S/cm at 50% relative humidity at 120 °C will be demonstrated as a Go/No-Go Decision Point.

Revised Go/No Go Decision Point: Discussions during and after the working group meeting generated some concern on the proper interpretation of the 3rd year go/no go decision point. The current milestone could be read to mean operation at a relative humidity of 50% at 120 °C while the intent is for the relative humidity to be based on a room temperature measurement. This latter interpretation is consistent with the HFCIT Multi-Year RD&D Plan 2010 membrane technical target (see Table 3.4.12) of an inlet water vapor partial pressure of 1.5 kPa. With the next amendment to our awards, the go/no go decision point at Q3 Year 3 will be modified in the Statement of Project Objectives to: "Go/ no go decision point: Demonstrate conductivity of  $>0.1$  S/cm at 120°C and 1.5 kPa inlet water vapor partial pressure to the fuel cell stack (50% relative humidity measured at room temperature)."

From 9:30 until 11:45, the Topic 1 award winners each gave a 10-minute presentation on their projects:

Peter Pintauro, Case Western University  
Dominic Gervasio, Arizona State University  
Andy Herring, Colorado School of Mines  
Morton Litt, Case Western University  
Joyce Hung, GE Global

Ludwig Lipp, Fuel Cell Energy  
Serguei Lvov, Pennsylvania State University  
Jimmy Mays, University of Tennessee  
James McGrath, Virginia Tech University  
Corky Mittelsteadt, Giner Electrochemical  
Darryl DesMarteau, Clemson University  
Clovis Linkous, Florida Solar Energy Center/University of Central Florida.

Following a question-and-answer session, Jim led a discussion that included the following topics:

Measurements, standards and protocols  
Issue of permeation of hydrogen and oxygen  
The Fenton Test  
Membrane durability  
Tom Benjamin discussed the recent DOE solicitation on membranes and DOE's interest in protocols to test membranes.  
Plans for the next meeting were discussed. Possible sites include Washington, D.C., and San Francisco.

Since the meeting, there has been further discussion regarding the next Working Group meeting, with possible sites at the September ACS meeting in San Francisco or the February 2007 following the Asilomar Conference on PEM fuel cell systems. The fall 2006 meeting will not be held because the Electrochemical Society will be meeting outside the U.S. in Cancun. It is hoped that the meeting site and date can be finalized soon.

The meeting adjourned at 12:07 p.m. Following the official meeting and taking of the group photo, David Peterson of the Golden Field Office discussed contractual issues for the new contracts.

The meeting ended at 12:40 p.m.