

NETL/OPT Hydrogen Workshop Agenda

Welcome Address for Alice Murphy

(You will be introduced by Fred Brown)

Good morning. I am Alice Murphy, Deputy Director for Operations, and I want to welcome you to the National Energy Technology Laboratory and to this Hydrogen Workshop. This Workshop is jointly sponsored by NETL and Energy Efficiency and Renewable Energy's (EE) Office of Power Technologies (OPT). I trust that your discussions on the production of hydrogen from fossil fuels will be profitable.

Since becoming a National Lab this past December, NETL has been working hard to live up to Secretary Richardson's desire that we become "world- renowned center for fossil energy and environmental technology."

This means that we must continue to build on our experience with fossil fuel technologies including hydrogen production. This Workshop is part of that building and part of the partnership that FE has with EE in moving forward with the hydrogen program.

Both the OPT and NETL have extensive history in hydrogen research and development. It makes good sense to leverage the expertise of these two organizations through NETL and OPT to create a powerful synergy. For the past four years the Office of Fossil Energy has been working with the OPT Hydrogen Program on several jointly funded and managed projects including membrane development for separating hydrogen from synthesis gas and the systems and economics studies of the production of hydrogen from low rank coal. In March 1999 FE and EE signed a Memorandum of Agreement (MOA) to work together on hydrogen projects of mutual interest. This Workshop is the part of that agreement. By working together we can solve problems and provide solutions that would be impossible for one organization alone. NETL welcomes this partnership.

The Strategic Plan for the DOE Hydrogen Program states that the production of hydrogen from fossil fuels will be the source of large

sustainable

volumes of low-cost hydrogen until such time as production from renewable resources is available. This workshop is intended to support this objective and accelerate its implementation by identifying the critical technology issues and systems that need the most attention on a schedule consistent with the needs of the Hydrogen Program.

We all know that fossil fuels must play a significant role in America's energy portfolio and hydrogen is an important part of that role. It is abundant, inexpensive to produce, and most important, extremely clean. We also know that the real driver behind cleaner fuels is air quality. Understanding how to use this clean fuel will help us to provide an efficient and environmental friendly source of energy for the next century. However, if we are to exploit the full benefits of hydrogen, then we will require more understanding of its generation, transportation, and storage.

For example, catalytic membrane reactors fabricated from Ion Transport Membrane (ITM) materials provide a simple, potentially low-cost route for converting natural gas to synthesis gas, a precursor to hydrogen and liquid fuels. Our research has also identified a new composition of materials called Proton Transport Membranes (PTM) that can separate hydrogen at high temperatures and pressures. As a result, we are actively involved in developing enabling PTM technologies for cost-effective separation of hydrogen.

Another example is the use of nanotubes, metal hydrides, and glass microspheres which can help to overcome storage limitations in vehicles by allowing more hydrogen to be stored in a smaller volume. We must understand how nanotubes, metal hydrides, and microspheres work and so we can further exploit this phenomenon while convincing the public that hydrogen is a safe fuel for vehicles. A daunting task indeed.

And of course we cannot forget fuel cells, which are opening up a whole new avenue of energy production for transportation, distributed generation, and specialized uses. Fuel cells are becoming a cornerstone

in our energy technology strategy for tomorrow. For fuel cells to continue their role in this strategy, we must have an ample source of hydrogen.

During this workshop, you will be discussing various hydrogen technology issues including overall systems, carbon sequestration, and hydrogen utilization. You will also be attempting to identify ways to stimulate regional interest in hydrogen and to provide an opportunity for cross-fertilization of ideas between the FE and EE stakeholders.

Thank you for attending ^{DOE} this very important workshop. We need all of your ideas to make the Hydrogen Program a success. Be open and forthright with your opinions and ideas, because only working together can we ever hope to provide the energy our country needs for the future.

Again, welcome to NETL. Please enjoy your stay.