

## **Bio-Derived Liquids to Hydrogen Distributed Reforming Working Group (BILIWG) & Hydrogen Production Technical Team Research Review**

### **Meeting Action Items and Highlights**

November 6, 2007

#### Action Items:

- Brian James (DTI: Cost Analysis Work) will complete a detailed engineering case study of forecourt production of hydrogen from ethanol in the Spring of 2008 for use by members of the working group and others.
- Catalyst cost- DOE offered to facilitate H2A analysis of catalyst costs (assumptions regarding catalyst leasing, recycling, timeframe)
- Researchers developing catalysts need to justify the use of expensive raw materials in their next reports. (HPTT)
- Researchers developing reactors should need to indicate what fuels they can currently process in a single reactor, what their target suite of fuels is, and their pathway to achieve fuel flexibility. (DOE)
- Please make sure to use the appropriate / agreed upon metrics in all reports. These metrics were discussed in the facilitated sessions (see “figures of merit” presentation) (DOE and HPTT)

#### Highlights:

- Sandy Thomas, H2Gen: “Low-Cost Hydrogen from Ethanol: A Distributed Production System.”
  - Shipped their 18<sup>th</sup> commercial system that reforms natural gas.
  - Examining the use of ethanol in their reactors to make their reactors fuel flexible.
- Greg Keenan, Virent Energy Systems: “Hydrogen Generation from Biomass Derived Carbohydrates via Aqueous Phase Reforming”
  - 10 kg/day H2 pilot plant- glycerol run for over 1200 hrs
  - Experiments using corn syrup, molasses progressing well. In addition are examining raw sugar, but raw sugar is more expensive than corn syrup and molasses
- Romesh Kumar, Argonne National Laboratory: “DOE Hydrogen Quality Working Group Update and Recent Progress”
  - Preliminary Recommendations
    - Quantification of cost and performance of PSA v H2 quality on the fuel cell to determine life cycle costs
    - Quantification of contaminant effects on FC cost and performance is needed.
    - Significant need for development of low cost methods for gas sampling and analysis for certification and on line quality control.
  - Testing and analysis may be a very significant cost factor for certification and control of hydrogen quality.