Electrochemical systems for sustainable energy supply

Fraunhofer Institute for Chemical Technology, Department of Applied Electrochemistry
Joseph-von-Fraunhofer-Str. 7, 76327 Pfinztal, Germany
Dr. Carsten Cremers, Mrs. Karolina Zack

Pfinztal, 17th November 2010

Renewable energies are an important issue in achieving a sustainable energy supply for the future. However, most renewable energies have limitations which hinder their use. Common limitations are restricted resources, for example for biomass-derived fuels, or lack of control for example for wind or solar energy. Tools to increase the efficiency of conversion or buffer solutions are consequently required to achieve the desired sustainability. Electrochemistry may provide tools to overcome many of these problems.
The Fraunhofer Institute for Chemical Technology is strongly engaged in the development of electrochemical systems for a more efficient use of renewable energies. At our booth at the 2011 FC EXPO we will present some recent developments in this area. These developments concern:

- Direct alcohol fuel cells with alkaline anion exchange membranes:
  These types of fuel cells allow the efficient conversion of alcoholic fuels from renewable sources (ethanol, glycerol) or fossil waste materials (ethylene glycol)
- Redox flow batteries:
  These fuel-cell-like batteries can be independently scaled with respect to energy content and power. They also offer excellent durability, high stability and fast response times, rendering them very useful solutions for buffering intermittently-generating renewable sources such as wind or photovoltaic plants
- Air electrodes for electrochemical power devices:
  Electrochemical power sources with an air electrode can be used to overcome limitations in energy storage density for mobile applications. Based on our expertise in fuel cell cathodes we will present the latest developments in air electrodes for lithium air and vanadium flow air batteries

For more information please contact Mrs. Karolina Zack
karolina.zack@ict.fraunhofer.de, phone +49-721-4640-222