



## The Electrochemical Society – Detroit Section

*Seminar Notice: Wednesday, April 26, 2006*

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### Energy Management and Hybrid Electric Vehicles

***Dr. Mark Verbrugge, Director of the Materials and Processes Lab  
General Motors Research Laboratories***

#### ***Abstract***

How do automakers go about integrating energy storage devices within vehicles? What data is required from suppliers to make this process efficient? What are the most challenging issues in terms of operating energy management systems within hybrid electric vehicles? These and related questions will be overviewed in the context of advanced batteries and supercapacitors for automotive applications.

***Dr. Mark Verbrugge*** started his GM career in 1986 with the GM Research Labs after receiving his doctorate in Chemical Engineering from the College of Chemistry at the University of California (Berkeley). Mark has published and patented in topic areas associated with electroanalytical methods, polymer electrolytes, advanced batteries and supercapacitors, fuel cells, high-temperature air-to-fuel-ratio sensors, surface coatings, compound semiconductors, and various manufacturing processes related to automotive applications of structural materials.

Mark's research efforts resulted in his receiving the Norman Hackerman Young Author Award (1990) and the Energy Technology Award (1993) from the Electrochemical Society as well as GM internal awards including the John M. Campbell Award (1992) and the Charles L. McCuen Award (2003).

In 1996, Mark was awarded a Sloan Fellowship to the Massachusetts Institute of Technology, where he received an MBA. Mark returned from MIT in 1997 to join GM's Advanced Technology Vehicles (ATV) as Chief Engineer for Energy Management Systems. In 2002, Mark rejoined the GM Research Labs as Director of the Materials and Processes Lab, which maintains research programs involving metallurgy, physical chemistry, physics, and polymer science. Mark is a Board Member of the United States Automotive Materials Partnership and the United States Advanced Battery Consortium, and he serves as the GM Technical Director for HRL Laboratories, LLC, owned by GM, Boeing, and Raytheon.

**Date:** *Wednesday, April 26, 2006*

**Location:** Lawrence Technological University  
21000 West Ten Mile Road  
Southfield, MI 48075

**Building # 8 (Technology Bldg. in the Gallery, Main Floor)**

**Enter from 10 Mile Rd. Park in Parking Lot A or H (Parking Lot H is across 10 Mile Rd.)**

**Time:** 5:30 pm Reception / 6:30 pm Dinner / 7:30 pm Speaker

**Price:** \$20 Members / \$22 Guests / \$15 Students

**Payment:** Cash or Check

**Please RSVP by:** Friday, April 21, 2006 to Lisa Abajian [labajian@ovonic.com](mailto:labajian@ovonic.com) or (248) 293-7002

#### **For Directions**

**Area Map:** <http://www.ltu.edu/contacts/directions.asp>

**Campus Map:** <http://www.ltu.edu/contacts/campusmap.asp>

