Special Seminar

Department of Materials Science and Engineering

Department of Chemical Engineering

UNIVERSITY OF WASHINGTON

Wednesday, May 9, 2012

SEMINAR TIME: 1:30-2:20pm

LOCATION: A118 Physics/Astronomy Auditorium (PAA)

Dr. Mark W. Verbrugge

Mark Verbrugge is the Director of GM's Chemical Sciences and Materials Systems Laboratory, which maintains global research programs—enabled by the disciplines of chemistry, physics, and materials science—and targets the advanced development of structural subsystems, energy storage and conversion devices, and various technologies associated with fuels, lubricants, and emissions.

Mark is a Board Member of the United States Automotive Materials Partnership LLC and the United States Advanced Battery Consortium LLC, and an adjunct professor for the Department of Physics, University of Windsor, Ontario, Canada.

Mark has received a number of GM internal awards as well as external awards including the Norman Hackerman Young Author Award (1990) and the Energy Technology Award (1993) from the Electrochemical Society, and the Lifetime Achievement Award from the United States Council for Automotive Research in 2006. Mark was elected to the National Academy of Engineering in 2009.

Energy Challenges, Electrified Vehicles, and Lithium Ion Traction Batteries

ABSTRACT:

The first portion of the lecture will relate global energy challenges, trends in personal transportation, and electrochemical energy storage technologies. Great progress has been made in recent years relative to battery technology, as exemplified by the Chevy Volt coming to market. Primary concerns associated with lithium ion batteries and high-volume traction applications are associated with cost, life (cycle and calendar), and performance over a wide temperature range. Despite these concerns, it is well recognized that soon lithium ion batteries will be used in a variety of electrified vehicles, spanning from engine start/stop applications to hybrid electric vehicles to pure electric vehicles. Hence, it is critically important to understand phenomena governing the durability of lithium ion cells within the context of traction applications. We focus the technical part of this talk on the combined mechanical and chemical degradation of lithium ion electrode materials, including both recent theoretical and experimental methods to clarify the governing phenomena.

Host: Prof. Jihui Yang (206-543-7090, Email: jihuiy@uw.edu)

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