



The Electrochemical Society – Detroit Section

Seminar Notice: Wednesday, November 18, 2009

Modified complex metal hydrides for hydrogen storage

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Currently, hydrogen is being stored on board automobiles either using high pressure compressed hydrogen tanks at 350 or 700 bar or by using liquid hydrogen stored at 20K. These systems suffer from low hydrogen volumetric storage density, which is the case for the high pressure tanks, or hydrogen boil off problems, as is the case for liquid hydrogen, making these systems impractical for onboard storage. On the other hand, storage of chemically bonded hydrogen in materials like complex metal hydrides, such as alanates or borohydrides, considerably enhances the materials hydrogen volumetric density. Currently, global research efforts are focused on improving the hydrogen storage properties in these materials including enhancing their gravimetric density, dehydrogenation thermodynamics, kinetics, and reversibility. However, one key challenge against their utilization is the thermodynamic and kinetic barriers of hydrogen charge and discharge. In the work we will present, we will share our research efforts targeting the modification of complex hydrides thermal properties. We will show our concept targeting the formation of intermediate stability complex hydrides by combining a high thermodynamic stability borohydride such as LiBH₄ with lower stability alanates. We will show the thermal property enhancement findings we obtained and discuss our progress to date.

Dr. Mohtadi earned her bachelor's degree in Chemical Engineering from the University of Jordan and her MSc from the Technical University of Hamburg-Harburg. She authored a PhD dissertation titled *The Effects of Sulfur and NO_x impurities on Proton Exchange Membrane Fuel Cell Performance* under the supervision of Dr. John Van Zee at The University of South Carolina. She joined the Materials Research Department at Toyota in 2004 where she is the senior scientist leading the North American effort on H₂ storage materials for fuel cell vehicle applications.

Date: Wednesday, November 18, 2009

Location: Lawrence Technological University

21000 West Ten Mile Road, Southfield, MI 48075

Building #5 (Taubman Welcome Center), 4th Floor, Room 406

Use Parking Lot A, C or D (Lots C & D are accessed off NW Highway)

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

Price: \$20 Members / \$22 Guests / \$10 Students

Payment: Cash or Check

RSVP by: Wednesday, Nov 11th, 2009 to Kent Snyder

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<http://www.electrochem.org/ecs/sections/detr/detr.htm>



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