

# ECE SEMINAR



The Autonomous Systems Research Group

## **Speaker:** Dr. Mohammad Saad Alam

Lead R&D Systems Engineer,  
Magnetis Marelli SpA (FIAT Chrysler Automobiles), MI, USA.

Dr. Mohammad Saad Alam has worked as Assistant Professor in the Department of Electrical and Computer Engineering at Saginaw Valley State University, Michigan, USA. He also headed the alternative energy initiative at the Saginaw Valley State University. Currently, he is working as Plug-in hybrid and electric vehicle Scientist in Automotive R&D and is also serving on SAE standards committees for the development of worldwide standards for the integration of plug-in hybrid vehicles with the Smart grid. Dr. Alam's areas of interest are alternative energy, intelligent control of hybrid energy systems, hybrid and plug-in hybrid vehicles, Smart grid etc.

**Date:** Wednesday, March 05, 2014

**Time:** 11:00 AM

**Venue:** Building 42A, Third floor, Room 333

## **Title**

### **An overview of Plug-in Hybrid and Electric Vehicles in the Smart Grid Environment**

## **Abstract**

Each vehicle built today is designed with an electric-power system as an important foundation of its design. Many differences can be found between the electrification systems of vehicles and those of conventional stationary energy supplies. However, immense similarities do exist. Both have the same underlying goal – to provide power and energy; both adhere to the same physical principals and limitations; and both apply similar technical approaches and regulations. Overall, a vast exchange of technology exists between the two power engineering systems.

Currently, there is a global race in the contemporary automotive industry to improve fuel economy and emissions without compromising the reliability and performance. To facilitate these improvements, engineers must focus on employment of electrical power systems rather than non-electric power transfer systems. This concept is known as the MEV concept –the more electric vehicle concept. The emergence of electrified vehicles requires extra electric power which is being proposed to manage by Smart grids.

The objective of this lecture is to present a conceptual definition and a brief description of the electrical aspects of hybrid, electric and plug-in hybrid vehicular systems, how these vehicles will interact with smart grid in the future and to identify the potential areas of expertise for electrical and mechanical engineering students where they can play a key role in the emerging field of these green vehicles. Further, potential areas of research for engineering faculty will also be discussed in the field of electric, hybrid, plug-in hybrid, electric vehicular systems and the smart grid.

**ALL ARE CORDIALLY INVITED**