



Surface Chemistry for Decreased Platinum Usage in Fuel Cells

Frederick T. Wagner, Ph.D.

*Electrochemical Energy Research Laboratory
General Motors Research & Development
Honeoye Falls, NY*

The mass of platinum used in the oxygen reduction electrodes of current fuel cell vehicles must be reduced 4 to 8-fold to allow mass production at costs competitive with those of internal-combustion powertrains. Concepts of surface science suggest several pathways to the required activity gains. Improved methods for the atomic-scale characterization and control of the surface and near-surface compositions and structures of practical catalysts are accelerating the development of new oxygen reduction catalysts with the necessary combination of activity and durability.

Frederick T. Wagner is currently the supervisor of catalyst and support development for General Motors Fuel Cell Activities, stationed in Honeoye Falls, NY. Fred received an A.B. in chemistry from Oberlin College in 1976, doing his honors thesis on molecular beam scattering from surfaces with Prof. Richard Schoonmaker. He received a Ph.D. in physical chemistry from the University of California, Berkeley in 1981, completing his thesis "Photocatalytic Hydrogen Production from Water and Intermetallic Compound Formation on SingleCrystal Surfaces of Titanium Oxides" with Prof. Gabor Somorjai. Fred then did a post-doc in electrochemical surface science at the Lawrence Berkeley Laboratory with Dr. Philip Ross, concentrating on the electrochemistry of Pt single-crystal surfaces. He joined the physical chemistry department of General Motors Research Laboratories in 1983. Fred transferred to the GM fuel cell program in 1998, concentrating first on catalysts for on-board fuel processing and then on fuel cell electrocatalysts. He moved from the Michigan tech center to the New York fuel cell center in 2001. The GM experience has allowed Fred to run experiments in everything from ultrahigh vacuum chambers to whole vehicles and vehicle assembly plants.

Date: Thursday, Oct 29, 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: Thursday, Oct 22, 2009 to Mr. Kent Snyder

Ksnjde13@ford.com

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



