William R. Wiley
EMSL In Brief
Environmental Molecular Sciences Laboratory

Internationally Recognized Chemist Advancing Catalysis Research at EMSL

Wayne Goodman

A Texas A&M professor internationally recognized for his research in heterogeneous catalysis and surface science is spending a six-month sabbatical at EMSL to help advance the research portfolio of the new Institute for Interfacial Catalysis (IIC), located at the Pacific Northwest National Laboratory (PNNL).

Wayne Goodman is collaborating with post-doctoral fellow Patrick Hahn and EMSL researcher Igor Lyubinetsky to image and study a bimetallic catalyst comprised of isolated palladium atoms surrounded by gold atoms deposited in the first atomic layer of a crystalline gold support. The collaborators are using EMSL's state-of-the-art scanning tunneling microscope to determine how bimetallic catalysts control chemical transformations—the backbone of catalysis. The research involves investigating how the surrounding gold atoms alter the electrons (and therefore the chemistry) of the palladium atom and where individual molecules bind to the atom's surface.

Goodman is a Robert A. Welch Chair, Distinguished Professor, and co-director of the Center for Catalysis Surface Chemistry at Texas A&M. He is past recipient of several prestigious awards of the American Chemical Society, the Giuseppe Parravano Award, the Yarwood Medal, the Humboldt Research Award, and the Fulbright Distinguished Scholar Award.

The $8-million IIC was established in February 2005 and is headed by University of Texas at Austin chemist J. Mike White and PNNL scientist Chuck Peden. The institute is the centerpiece to helping researchers explore fundamental chemical changes on surfaces where catalytic reactions take place.

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