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Catalysis Club of Philadelphia

<http://www.catalysisclubphilly.org>

Thursday, March 22, 2007

Holiday Inn Select Hotel
Naamans Road and I-95, Claymont, DE

Student Poster Presentations Start at 5:00 pm

"From Photocatalysis to Selective Hydrogenation on Microporous Silicas"

Prof. Raul F. Lobo

Center for Catalytic Science and Technology
Department of Chemical Engineering
University of Delaware

Social Hour & Student Posters

5:00 p.m.

Dinner

6:30 p.m.

Meeting

7:30 p.m.

Menu:

Chicken Champagne

Roast Loin of Pork - Served with Port Wine Demi Glace

Penne Pomodoro

Members	\$30.00
Walk Ins & Non-members	\$35.00
Students & Retired Members	\$15.00

For meal reservations, please notify your **company representative** or **Carl Menning** (phone: 302-893-9398, fax: 302-831-1048, e-mail: menning23@gmail.com) by **Thursday, March 15.**

Company Representatives – We would like to encourage you to make meal/meeting reservations to your company representative.

Membership – dues for the 2006-2007 season will be \$10.00 (\$5.00 for the local chapter and \$5.00 for the national club). Dues for students and post-docs will be \$6.00 (\$5.00 for local club and \$1.00 for national club). Please send your payment to Steve Harris, Lyondell Chemical Co., 3801 West Chester Pike, Newtown Square, PA 19073-2387.

Next Meeting will be held on Thursday, April 19, 2007. The speaker will be Dr. Stacey Zones of Chevron.

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Thursday, March 22, 2007

“From Photocatalysis to Selective Hydrogenation on Microporous Silicas”

Prof. Raul F. Lobo

Center for Catalytic Science and Technology
Department of Chemical Engineering
University of Delaware

Abstract

We will present recent results on the investigation of microporous materials for the photocatalytic decomposition of VOCs and as supports for the selective hydrogenation of acetylene in the presence of excess ethylene.

We have evaluated the potential of ETS-10 and V-doped ETS-10 materials for the photocatalytic decomposition of small organic molecules. We show using a combination of experimental and theoretical methods, that it is possible to control the bandgap of ETS-10 by the addition of small amount of vanadium in the framework of ETS-10. In fact, even under visible light irradiation some photo oxidation is observed. The advantages and disadvantages of ETS-10 compared to anatase TiO_2 will be discussed.

We have also prepared novel catalysts synthesized by supporting Pd-based bimetallic particles on cation-exchanged zeolite beta and zeolite L. These novel materials are tested for the selective hydrogenation of acetylene in streams containing excess ethylene. Using batch and continuous flow reactors in addition to various physical characterization techniques, we demonstrate that the most selective catalysts are obtained using Pd-Ag bimetallic particles on potassium-exchanged zeolites. Although the selectivity of K-beta and K-L zeolites is similar, the activity on a metal basis of K-L zeolites is higher than zeolite beta.

Speaker's Biography



Raul F. Lobo is full professor of Chemical Engineering at the University of Delaware. His research interests span the development of novel porous materials for catalysis and separations, the characterization of disordered zeolite structures and the scientific aspects of catalysts synthesis. He has published over seventy refereed reports and he is co-inventor in three US patents. He obtained his undergraduate degree in Chemical Engineering at the University of Costa Rica and later moved to California to pursue graduate studies in Chemical Engineering at Caltech. He received his Ph. D. in the study of New Molecular Sieves and Zeolites and worked for one year at Los Alamos National Laboratory, New Mexico, as a postdoctoral fellow. He started his academic career at the Center for Catalytic Science and Technology, University of Delaware in the fall of 1995.

The Catalysis Club of Philadelphia: 2006-2007 Meeting Schedule

Thursday, 9/28/06	Prof. James Dumesic , University of Wisconsin 2006 Catalysis Club of Philadelphia Award Lecture <i>“Catalytic Production of Liquid Fuels and Chemicals from Biomass-derived Oxygenated Hydrocarbons”</i> Rohit Vijay , University of Delaware – Student Talk (15 min) <i>“Discovery and Mechanistic Investigation of Cobalt Containing NSR Catalysts”</i>
Thursday, 10/19/06	Dr. Steven H. Overbury , Oak Ridge National Laboratory <i>“Experimental and Computational Studies of Reaction Pathways and Size Dependence in Au Catalysis”</i> Parag R. Shah , University of Pennsylvania – Student Talk (15 min) <i>“Redox Properties of Supported Vanadia Systems”</i>
Thursday, 11/9/06 (Joint w CSNY)	Dr. Stu Soled , ExxonMobil <i>“Supported Metal Catalysts: Some Interesting New Leads in an Old Field and Use of Zeta Potential Measurements in Catalyst Characterization”</i>
Thursday, 1/25/07	Prof. Lanny Schmidt , University of Minnesota <i>“Hydrogen from Renewable Fuels in Millisecond Reactors”</i> Elizabeth I. Ross , Lehigh University – Student Talk (15 min) <i>“New Insights into the Solid Acidity of Supported WO₃/ZrO₂ Catalysts”</i>
Thursday, 2/22/07	Prof. Galen Stucky , University of California at Santa Barbara <i>“The Organic-Inorganic Interface in Synthesis and Catalysis”</i>
Thursday, 3/22/07	Prof. Raul Lobo , University of Delaware <i>“From Photocatalysis to Selective Hydrogenation on Microporous Silicas”</i>
Thursday, 4/19/07	Dr. Stacey Zones , Chevron <i>“Complexities in Understanding the Synthesis and Characterization Features for High Silica Zeolites”</i>
Thursday, 5/17/07	Spring Symposium

Catalysis Club of Philadelphia Company Representatives 2006-2007

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