

Curriculum Vitae of Raul F. Lobo

Address

University of Delaware
Center for Catalytic Science and Technology
Department of Chemical Engineering
329 Colburn Lab., Newark, DE 19716 USA
Phone: 302/831-1261; Fax: 302/831-2085; E-mail: lobo@udel.edu

Personal

Born August 27, 1966
San Jose, Costa Rica
US Citizen
Married (two children)

Education

Graduate Ph.D. in Chemical Engineering (Chemistry Minor) — 1995
California Institute of Technology, Pasadena, California
Advisor: Prof. Mark E. Davis
M.Sc. in Chemical Engineering — 1993
California Institute of Technology

Undergraduate “Licenciatura” in Chemical Engineering — 1989
University of Costa Rica, Costa Rica

Professional experience

Claire D. LeClaire Professor Department of Chemical and Biomolecular Engineering,
University of Delaware — Sept. 2014 to present

Professor Department of Chemical and Biomolecular Engineering,
University of Delaware — Sept. 2006–2014

Director Center for Catalytic Science and Technology, University
of Delaware — Aug. 2012–present

Visiting Professor Department of Chemical Engineering, University of
California at Berkeley 2010–2011

Associate Professor Department of Chemical Engineering — Sept. 2000–
2006, University of Delaware

Visiting Fellow Centre for High-Resolution Electron Microscopy, Delft
University of Technology, The Netherlands —Sept.
2001–May 2002.

Visiting Professor Department of Chemical Engineering, Universidad Rey
Juan Carlos, Madrid, Spain —July 2001

Co-Director Center for Catalytic Science and Technology (CCST),
1996–present

Assistant Professor Department of Chemical Engineering — Sept. 1995–
Aug. 2000, University of Delaware

Postdoctoral Fellow	Theoretical Chemistry and Molecular Physics Group Nov. 1994 to Sep. 1995 Los Alamos National Laboratory, Los Alamos, New Mexico Advisor: Dr. Antonio Redondo
Graduate Research Assistant	Chemical Engineering — 1990 to 1994 California Institute of Technology
Undergraduate Research Assistant	Laboratory of Cellular and Molecular — 1988-1989 Biology, University of Costa Rica

Professional Societies: Membership

American Institute of Chemical Engineers
American Chemical Society
American Society for Engineering Education
International Zeolite Association
North American Catalysis Society
American Association for the Advancement of Science

Honors and Awards

CAREER Award for Young Investigators of the NSF, 1997
Camille Dreyfus Teacher-Scholar, 1999
Young Scholar of the Francis Alison Society, 1999
Outstanding Young Faculty of the College of Engineering, 1999
Innovation Recognition Program, The Dow Chemical Company, 2001
Ipatieff Prize, American Chemical Society, 2004

Professional Service

- Member of Editorial Board Chemistry of Materials (ACS) and ChemSusChem.
- Member of American Chemical Society, American Institute of Chemical Engineers, Philadelphia Catalysis Club, North American Catalysis Society, International Zeolite Association and AAAS.
- Member of Chemical Technology Operating Council of AIChE (2008-2011).
- Member of the Structure-Commission of the International Zeolite Association (1998-2010)
- Treasurer, International Zeolite Association (2013-2016)

Publications

Bibliometric Data for January 15th, 2017 (ISI Web of Knowledge)

Total citations: 6881

h-Index: 42

Average Citations: 36

Refereed Publications

My name is in bold in those publications resulting from work conducted at Delaware and where I am the corresponding author, or where I have made a substantial intellectual contribution. Publications 1-11 are the result of doctoral work at the California Institute of Technology.

- (1) Davis, M. E.; Lobo, R. F. "Zeolite and Molecular-Sieve Synthesis." *Chem. Mater.* **1992**, 4, 756.
- (2) Lobo, R. F.; Annen, M. J.; Davis, M. E. "Zeolite Phi - a Physical Mixture of Chabazite and Offretite." *J. Chem. Soc. - Faraday Trans.* **1992**, 88, 2791.
- (3) Lobo, R. F.; Pan, M.; Chan, I.; Li, H. X.; Medrud, R. C.; Zones, S. I.; Crozier, P. A.; Davis, M. E. "Ssz-26 and Ssz-33 - 2 Molecular-Sieves with Intersecting 10-Ring and 12-Ring Pores." *Science* **1993**, 262, 1543.
- (4) Cambor, M. A.; Lobo, R. F.; Koller, H.; Davis, M. E. "Synthesis and Characterization of Zincosilicates with the Sod Topology." *Chem. Mater.* **1994**, 6, 2193.
- (5) Lobo, R. F.; Davis, M. E. "Synthesis and characterization of pure-silica and boron-substituted SSZ-24 using N(16)methylsparteinium bromide as structure-directing agent." *Micropor. Mater.* **1994**, 3, 61.
- (6) Lobo, R. F.; Pan, M.; Chan, I.; Medrud, R. C.; Zones, S. I.; Crozier, P. A.; Davis, M. E. "Physicochemical Characterization of Zeolites Ssz-26 and Ssz-33." *J. Phys. Chem.* **1994**, 98, 12040.
- (7) Lobo, R. F.; Zones, S. I.; Davis, M. E. Effect of the Stacking Probability on the Properties of the Molecular-Sieves Cit-1, Ssz-26 and Ssz-33. In *Zeolites and Related Microporous Materials: State of the Art 1994*, 1994; Vol. 84; pp 461.
- (8) Koller, H.; Lobo, R. F.; Burkett, S. L.; Davis, M. E. "Sio-Center-Dot-Center-Dot-Center-Dot-Hosi Hydrogen-Bonds in as-Synthesized High-Silica Zeolites." *J. Phys. Chem. B.* **1995**, 99, 12588.
- (9) Lobo, R. F.; Davis, M. E. "Cit-1 - a New Molecular-Sieve with Intersecting Pores Bounded by 10-Rings and 12-Rings." *J. Am. Chem. Soc.* **1995**, 117, 3764.
- (10) Lobo, R. F.; Zones, S. I.; Davis, M. E. "Structure-Direction in Zeolite Synthesis." *J. Inc. Phen. Mol. Rec.* **1995**, 21, 47.

- (11) Freyhardt, C. C.; Lobo, R. F.; Khodabandeh, S.; Lewis, J. E.; Tsapatsis, M.; Yoshikawa, M.; Cambor, M. A.; Pan, M.; Helmkamp, M. M.; Zones, S. I.; Davis, M. E. "VPI-8: A high-silica molecular sieve with a novel "pinwheel" building unit and its implications for the synthesis of extra-large pore molecular sieves." *J. Am. Chem. Soc.* **1996**, *118*, 7299.
- (12) Freyhardt, C. C.; Tsapatsis, M.; **Lobo, R. F.**; Balkus, K. J.; Davis, M. E. "A high-silica zeolite with a 14-tetrahedral-atom pore opening." *Nature* **1996**, *381*, 295.
- (13) **Lobo, R. F.**; Zones, S. I.; Medrud, R. C. "Synthesis and Rietveld refinement of the small-pore zeolite SSZ-16." *Chem. Mater.* **1996**, *8*, 2409.
- (14) **Lobo, R. F.**; Tsapatsis, M.; Freyhardt, C. C.; Chan, I.; Chen, C. Y.; Zones, S. I.; Davis, M. E. "A model for the structure of the large-pore zeolite SSZ-31." *J. Am. Chem. Soc.* **1997**, *119*, 3732.
- (15) **Lobo, R. F.**; Tsapatsis, M.; Freyhardt, C. C.; Khodabandeh, S.; Wagner, P.; Chen, C. Y.; Balkus, K. J.; Zones, S. I.; Davis, M. E. "Characterization of the extra-large-pore zeolite UTD-1." *J. Am. Chem. Soc.* **1997**, *119*, 8474.
- (16) Velev, O. D.; Jede, T. A.; **Lobo, R. F.**; Lenhoff, A. M. "Porous silica via colloidal crystallization." *Nature* **1997**, *389*, 447.
- (17) Feuerstein, M.; **Lobo, R. F.** "Influence of oxygen and nitrogen on Li-7 MAS NMR spectra of zeolite LiX-1.0." *Chem. Commun.* **1998**, 1647.
- (18) Feuerstein, M.; **Lobo, R. F.** "Characterization of Li cations in zeolite LiX by solid-state NMR spectroscopy and neutron diffraction." *Chem. Mater.* **1998**, *10*, 2197.
- (19) Shantz, D. F.; **Lobo, R. F.** "Spatial ordering of organic and inorganic charge centers in as-made high-silica zeolites determined by multidimensional {¹H}->H-2 CPMAS NMR correlation spectroscopy." *Chem. Mater.* **1998**, *10*, 4015.
- (20) Shantz, D. F.; **Lobo, R. F.** "Spatial correlation of charge centers in the tectosilicate nonasil determined by multidimensional {¹H}->H-2 CPMAS NMR correlation spectroscopy." *J. Am. Chem. Soc.* **1998**, *120*, 2482.
- (21) Shantz, D. F.; **Lobo, R. F.** "Solid-state deuterium NMR studies of organic molecules in the tectosilicate nonasil." *J. Phys. Chem. B* **1998**, *102*, 2339.
- (22) Velev, O. D.; Jede, T. A.; **Lobo, R. F.**; Lenhoff, A. M. "Microstructured porous silica obtained via colloidal crystal templates." *Chem. Mater.* **1998**, *10*, 3597.
- (23) Burton, A.; Feuerstein, M.; **Lobo, R. F.**; Chan, J. C. C. "Characterization of cancrinite synthesized in 1,3-butanediol by Rietveld analysis of powder neutron diffraction data and solid-state Na-23 NMR spectroscopy." *Micropor. Mesopor. Mater.* **1999**, *30*, 293.

- (24) Burton, A.; **Lobo, R. F.** "The role of barium cations in the synthesis of low-silica LTL zeolites." *Micropor. Mesopor. Mater.* **1999**, *33*, 97.
- (25) Feuerstein, M.; **Lobo, R. F.** "Mobility of Li cations in X zeolites studied by solid-state NMR spectroscopy." *Solid State Ion.* **1999**, *118*, 135.
- (26) Juttu, G. G.; **Lobo, R. F.** "Framework modification of microporous silicates via gas-phase treatment with ZrCl₄." *Cat. Lett.* **1999**, *62*, 99.
- (27) Shantz, D. F.; Burton, A.; **Lobo, R. F.** "Synthesis, structure solution, and characterization of the aluminosilicate MCM-61: the first aluminosilicate clathrate with 18-membered rings." *Micropor. Mesopor. Mater.* **1999**, *31*, 61.
- (28) Shantz, D. F.; Fild, C.; Koller, H.; **Lobo, R. F.** "Guest-host interactions in As-made Al-ZSM-12: Implications for the synthesis of zeolite catalysts." *J. Phys. Chem. B* **1999**, *103*, 10858.
- (29) Shantz, D. F.; **Lobo, R. F.** "H-2-¹H-1} CPMAS NMR of guest-host species in zeolites: An experimental study." *J. Phys. Chem. B* **1999**, *103*, 5920.
- (30) Shantz, D. F.; **Lobo, R. F.** "Guest-host interactions in zeolites as studied by NMR spectroscopy: implications in synthesis, catalysis and separations." *Top. Catal.* **1999**, *9*, 1.
- (31) Accardi, R. J.; **Lobo, R. F.** "Accessibility of lithium cations in high-silica zeolites investigated using the NMR paramagnetic shift effect of adsorbed oxygen." *Micropor. Mesopor. Mater.* **2000**, *40*, 25.
- (32) Braunbarth, C.; Hillhouse, H. W.; Tsapatsis, M.; Burton, A.; Lobo, R. F.; Jacubinas, R. M.; Kuznicki, S. M. "Structure of strontium ion-exchanged ETS-4 microporous molecular sieves." *Chem. Mater.* **2000**, *12*, 1857.
- (33) Bulanin, K. M.; **Lobo, R. F.**; Bulanin, M. O. "Low-temperature adsorption of N₂, O₂, and D₂ on LiX, NaX, and NaLiX zeolites studied by FT-IR spectroscopy." *J. Phys. Chem. B* **2000**, *104*, 1269.
- (34) Burton, A.; Accardi, R. J.; **Lobo, R. F.**; Falcioni, M.; Deem, M. W. "MCM-47: A highly crystalline silicate composed of hydrogen-bonded ferrierite layers." *Chem. Mater.* **2000**, *12*, 2936.
- (35) Fild, C.; Shantz, D. F.; Lobo, R. F.; Koller, H. "Cation-induced transformation of boron-coordination in zeolites." *Phys. Chem. Chem. Phys.* **2000**, *2*, 3091.
- (36) Juttu, G. G.; **Lobo, R. F.** "Characterization and catalytic properties of MCM-56 and MCM-22 zeolites." *Micropor. Mesopor. Mater.* **2000**, *40*, 9.
- (37) Shantz, D. F.; auf der Gunne, J. S.; Koller, H.; **Lobo, R. F.** "Multiple-quantum H-1 MAS NMR studies of defect sites in as-made all-silica ZSM-12 zeolite." *J. Am.*

- Chem. Soc.* **2000**, *122*, 6659.
- (38) Feuerstein, M.; Accardi, R.J.; **Lobo, R. F.** "Adsorption of Nitrogen and Oxygen in the Zeolites LiA and LiX Investigated by ^6Li and ^7Li MAS NMR Spectroscopy", *J. Phys. Chem. B* **2000**, *104*, 10282.
- (39) Accardi, R. J.; **Lobo, R. F.**; Kalwei, M. "Paramagnetic effect of oxygen in the Na-23 MAS NMR and Na-23 MQMAS NMR spectroscopy of zeolite LiNaX." *J. Phys. Chem. B* **2001**, *105*, 5883.
- (40) Boshoff, J. H. D.; Lobo, R. F.; Wagner, N. J. "Influence of polymer motion, topology and simulation size on penetrant diffusion in amorphous, glassy polymers: Diffusion of helium in polypropylene." *Macromolecules* **2001**, *34*, 6107.
- (41) Shantz, D. F.; **Lobo, R. F.** "Two new silicate hydrates $(\text{C}_{20}\text{H}_{30}\text{N}_2)_8 \cdot [\text{Si}_8\text{O}_{20}](2) \cdot 110\text{H}(2)\text{O}$ and $(\text{C}_{20}\text{H}_{30}\text{N}_2)_4 \cdot [\text{Si}_8\text{O}_{20}] \cdot 42\text{H}(2)\text{O}$, and their implications for the role of non-covalent interactions in high-silica zeolite synthesis." *Micropor. Mesopor. Mater.* **2001**, *43*, 127.
- (42) **Lobo, R. F.**; Koningsveld, H. v. "A New Description of the Disorder in Zeolite ZSM-48." *J. Am. Chem. Soc.* **2002**, *124*, 13222.
- (43) Sawant, K. R.; **Lobo, R. F.** "Imprinting the Surface of Mesoporous Materials Using Organic Structure-Directing Agents"; International Symposium on Nanoporous Materials, 2002, Ottawa, p 53.
- (44) Wang, Z.; Lambros, J.; **Lobo, R. F.** "Micromechanical compressive response of a zeolite single crystal." *J. Mater. Sci.* **2002**, *37*, 2491.
- (45) Navarro, U.; Trujillo, C.A.; Oviedo, A.; **Lobo, R. F.**; "Impact of the deactivation conditions on the acidity of Y zeolites used for the formulation of FCC catalysts, studies by FTIR of adsorbed CO", *J. Catal.*, **2002**, *211*, 64.
- (46) Kragten, D. D.; Fedeyko, J. M.; Sawant, K. R.; Rimer, J. D.; Vlachos, D. G.; **Lobo, R. F.**; Tsapatsis, M. "Structure of the silica phase extracted from silica/(TPA)OH solutions containing nanoparticles." *J. Phys. Chem. B.* **2003**, *107*, 10006.
- (47) Rudakova, A. V.; **Lobo, R. F.**; Bulanin, K. M. "FT-IR study of carbon monoxide adsorption on Li-exchanged zeolite X." *J. Phys. Chem. B.* **2003**, *107*, 5212.
- (48) van Koningsveld, H.; **Lobo, R. F.** "Disorder in zeolite SSZ-31 described on the basis of one-dimensional building units." *J. Phys. Chem. B* **2003**, *107*, 10983.
- (49) Varkey, S. P.; **Lobo, R. F.**; Theopold, K. H. "Zeolite MCM-22 supported heterogeneous chromium catalyst for ethylene polymerization." *Cat. Letters* **2003**, *88*, 227.

- (50) Wang, Z. M.; **Lobo, R. F.**; Lambros, J. "The mechanical properties of siliceous ZSM-5 (MFI) crystals." *Micropor. Mesopor. Mater.* **2003**, *57*, 1.
- (51) Fedeyko, J.; Sawant, K.; Kragten, D.; Vlachos, D.; **Lobo, R. F.** The structure of subcolloidal zeolite precursor nanoparticles. In Recent Advances In The Science And Technology Of Zeolites And Related Materials, Pts A - C, 2004; Vol. 154; pp 1267.
- (52) Fedeyko, J. M.; Rimer, J. D.; Vlachos, D. G.; **Lobo, R. F.** "Spontaneous Formation of Silica Nanoparticles in Basic Solutions of Small Tetraalkylammonium Cations." *J. Phys. Chem. B.* **2004**, *108*, 12271.
- (53) Heijboer, W. M.; Glatzel, P.; Sawant, K. R.; Lobo, R. F.; Bergmann, U.; Barrea, R. A.; Koningsberger, D. C.; Weckhuysen, B. M.; de Groot, F. M. F. "K-beta Detected XANES of Framework-Substituted Fe-ZSM-5 Zeolites." *J. Phys. Chem. B* **2004**, *108*, 10002.
- (54) Martinez-Inesta, M. M.; Peral, I.; Proffen, T.; **Lobo, R. F.** A pair distribution function analysis for zeolite beta. In Recent Advances In The Science And Technology Of Zeolites And Related Materials, Pts A - C, 2004; Vol. 154; pp 1393.
- (55) Rimer, J.D.; Kragten, D.D.; Tsapatsis, M.; **Lobo, R. F.**; Vlachos, D.G.; Growth Mechanisms of silicalite-1. In Recent Advances In The Science And Technology Of Zeolites And Related Materials, Pts A - C, 2004; Vol. 154; pp 317.
- (56) Martinez-Iñesta, M. M.; Peral, I.; Proffen, T.; **Lobo, R. F.** "A Pair Distribution Function Analysis of Zeolite Beta." *Micropor. Mesopor. Mater.* **2004**, *77*, 55.
- (57) Peral, I.; Jones, C. Y.; Varkey, S. P.; **Lobo, R. F.** "Structural comparison of two EUO-type zeolites investigated by neutron diffraction." *Micropor. Mesopor. Mater.* **2004**, *71*, 125.
- (58) Smith, M. A.; Foley, H. C.; **Lobo, R. F.** "A simple model describes the PDF of a non-graphitizing carbon." *Carbon* **2004**, *42*, 2041.
- (59) van Koningsveld, H.; **Lobo, R. F.**; Martinez-Inesta, M. M. A reinvestigation of the disorder in zeolite UTD-1. In Recent Advances In The Science And Technology Of Zeolites And Related Materials, Pts A - C, 2004; Vol. 154; pp 1180.
- (60) Fedeyko, J. M.; Vlachos, D. G.; **Lobo, R. F.** "Formation and structure of self-assembled silica nanoparticles in basic solutions of organic and inorganic cations." *Langmuir* **2005**, *21*, 5197.
- (61) Koller, H.; Fild, C.; Lobo, R. F. "Variable anchoring of boron in zeolite beta." *Micropor. Mesopor. Mater.* **2005**, *79*, 215.

- (62) Kumar, A.; **Lobo, R. F.**; Wagner, N. J. "Porous Amorphous Carbon Models from Periodic Gaussian Chains of Amorphous Polymers." *Carbon* **2005**, 43 3099-3111.
- (63) Martinez-Inesta, M. M.; **Lobo, R. F.** "Investigation of the negative thermal expansion mechanism of zeolite chabazite using the pair distribution function method." *J. Phys. Chem. B* **2005**, 109, 9389.
- (64) Rimer, J. D.; Fedeyko, J. M.; Vlachos, D. G.; **Lobo, R. F.** "Silica Self-Assembly and the Synthesis of Microporous and Mesoporous Silicates." *Chem. Eur. J.* **2006**, 12 2926-2934.
- (65) Rimer, J. D.; Vlachos, D.; **Lobo, R. F.** "Evolution of Self-Assembled Silica-Tetrapropylammonium Nanoparticles at High Temperatures." *J. Phys. Chem. B.* **2005**, 109, 12762.
- (66) Rimer, J. D.; Vlachos, D. G.; **Lobo, R. F.** "Physical Basis for the Formation and Stability of Silica Nanoparticles in Basic Solutions of Monovalent Cations." *Langmuir* **2005**, 21 8960-8971.
- (67) Smith, M. A.; **Lobo, R. F.** "The Local and Surface Structure of Ordered Mesoporous Carbons from Nitrogen Sorption, NEXAFS and Synchrotron Radiation Studies." *Micropor. Mesopor. Mater.* **2006**, 92, 81-93.
- (68) Fedeyko, J.M.; Vlachos, D.G.; **Lobo, R.F.**; "On the Connection between Zeolite Precursor Nanoparticles and M41S-type Ordered Mesoporous Silicas", *Micropor. Mesopor. Mater.* **2006**, 90 102-111.
- (69) Zimmerman, A.M.; Doren D. J.; **Lobo, R.F.**; "Electronic and geometric properties of ETS-10: QM/MM studies of cluster models", *J. Phys. Chem. B.*, **2006** 110 8959-8964.
- (70) Cheng, Y.C.; **Lobo, R.F.**; Sandler, S.I.; Lenhoff, B.; "Kinetics and equilibria of lysozyme precipitation and crystallization in concentrated ammonium sulfate solutions", *Biotech. Bioeng.* **2006** 94 177-188.
- (71) **Lobo, R.F.**; Palmqvist A.E.C.; "Mechanistic insights into templated materials synthesis", *Curr. Op. Coll. Interf. Sc.* **2005** 10 185-187. (Editorial)
- (72) Nash, M.; **Lobo, R.F.**; Rikov, S.; Doren, D.J.; "Photocatalytic Activity of Vanadium-substituted ETS-10", *J. Phys. Chem. C.* **2007** 111, 7029.
- (73) Fedeyko, J.M.; Fox H.; Vlachos, D.G., **Lobo, R.F.**; "Initial Stages of Self-Organization of Silica-Alumina Gels in Zeolite Synthesis" *Langmuir* **2007** 23, 4532.
- (74) Rimer, J.D.; Roth, D.; Vlachos, D.G.; **Lobo, R.F.**; "Self-assembly and Phase Behavior of Germanium Oxide Nanoparticle in Basic Aqueous Solutions" *Langmuir* **2007** 23, 2784.

- (75) **Lobo, R.F.**, “The Promise of Emptiness”, *Nature*, **2006**, *443*, 757. (Commentary)
- (76) Huang, W.; McCormick, J. R.; Lobo, R. F.; Chen, J.; “Selective hydrogenation of acetylene in the presence of ethylene on zeolite-supported bimetallic catalysts”, *J. Catal*, **2007**, *246*, 40-51.
- (77) Martinez-Inesta, M.A.M., Lobo, R. F., “Investigation of the structure of platinum clusters supported in zeolite beta using the pair distribution function”, *J. Phys. Chem. C*. **2007**, *111*, 8573.
- (78) Shough, A.M.; Doren, D.J.; Nash, M.; **Lobo, R.F.**;”Effects of vanadium substitution on the structure and photocatalytic behavior of ETS-10”, *J. Phys. Chem. C.*; **2007**, *111*, 1776-1782.
- (79) Rimer, J. D.; Trofymuk, O.; Navrotsky, A.; **Lobo, R.F.**; Vlachos, D.G.; “Kinetic and Thermodynamic Studies of Silica Nanoparticle Dissolution”, *Chem. Mater.* **2007** *19* 4189.
- (80) Rimer, J. D.; Vlachos, D.G.; **Lobo, R.F.**; “Kinetics of Silicalite-1 Crystallization”, Proceedings of the 15th International Zeolite Conference, Beijing, Aug. 2007.
- (81) Shough, A.M., **Lobo, R. F.**, Doren, D. J., “A visible light photocatalyst: effects of vanadium substitution on ETS-10”, *Phys. Chem. Chem. Phys.*, **2007**, *9*, 5096-5104.
- (82) Nash, M. J., Shough, A. M., Fickel, D. W., Doren, D.J., **Lobo, R. F.**,”High Temperature Dehydrogenation of Bronsted Acid Sites in Zeolites”, *J. Am. Chem. Soc.*, **2008** *130*, 2460-2462.
- (83) Huang, W., Pyrz, W., **Lobo, R.F.** and Chen J.G., “Selective hydrogenation of acetylene in the presence of ethylene on K-zeolite beta supported Pd and Pd/Ag catalysts”, *Appl. Catal.*, **2007**, *333*, 254-263.
- (84) **Lobo, R.F.**, “Chemical Diversity of Zeolite Catalytic Sites”, *AIChE J.*, **2008**, *54*, 1402-1409.
- (85) Huang, W., **Lobo, R.F.**, Chen, J.G., “Characterization of Na⁺-beta-zeolite supported Pd and PdAg bimetallic catalysts using EXAFS, TEM and flow reactor studies”, *J. Mol. Catal. A – Chem.*, **2008**, *283*, 158-165.
- (86) Hould, N., Lobo, R.F., “Nanoparticle Precursors and Phase Selectivity in Hydrothermal Synthesis of Zeolite beta”, *Chem. Mater.* **2008**, *18*, 5807.
- (87) Rimer, J.D., Trofymuk, O. Lobo, R.F. Navrotsky, A., Vlachos, D. G., “Thermodynamics of Self-Assembly in Basic Solutions of Monovalent Cations”, *J. Phys. Chem. C*. **2008**, *112*, 14754-14761.

- (88) Nash, M.J., Lobo, R. F., Doren, D. J., “Photocatalytic Oxidation of ethylene by ammonium exchanged ETS-10 and AM-6”, *Appl. Catal. B: Env.* in press.
- (89) Rudakova, A.V., Lobo, R. F., Bulanin, K. M., “Spectroscopic Study of Zeolite Na-ETS-10 and Ethylenen Photopolymerization Reaciton on Its Surface”, *Optics and Spectroscopy*, **2008**, *105*, 739-744.
- (90) Ooms, K., Polenova, T., Shough A.M., Doren, D.J., Nash, M.J., Lobo, R.F., —Identification of Mixed Valence Vanadium in ETS-10 using EPR, V51 NMR and DFT Studies, *J. Phys. Chem. C.*, **2009**, *113*, 10477-10484.
- (91) Huang, W., Li, A., Lobo, R.F., Chen, J.G., —Effects of zeolite structure, exchanged cations and bimetallic formulations on the selective hydrogenation of acetylene over zeolite-supported catalysis, *Cat. Lett.* **2009**, *130*, 380.
- (92) Lobar, R.F. and Palmqvist, A.E.C., —Nanostructures, *Curr. Op. Coll. Interface Sc.* **2009**, *14*, 225. (Editorial)
- (93) Fickel, D.W., Shough, A.M., Doren, D.J., Lobo,R.F., —High-temperature dehydrogenation of defective silicalitesll , *Micropor. Mesopor. Mater.* **2010**, *129*, 156-163.
- (94) Hould, N.D., Kumar, S., Tsapatsis, M., Nikolakis, V., Lobo, R.F., —Structure and colloidal stability of nanosized zeolite beta precursorsll , *Langmuir* **2010** *26* 1260-1270.
- (95) Fickel, D.W., Lobo, R. F. “Copper coordination in Cu-SSZ-13 and Cu-SSZ-16 investigated by variable temperature XRD”, *J. Phys. Chem. C.* **2010** *114*, 1633-1640.
- (96) Smith, M.A., Lobo, R. F., “A fractal description of the pore structure in block-copolymer templated mesoporosu silicates”, *Micropor. Mesopor. Mater.*, **2010** *131*, 204-209
- (97) Moissette, A., Lobo, R. F., Vezin, H., Al-Majnouni, K.A., Bremard, C., “Long lived charge separated states induced by trans-stylbene incorporation in the pores of Bronsted Acidic HZSM-5 Zeolites: Effect of Gallium on the Spontaneous Ionization Process”, *J. Phys. Chem. C.* **2010**, *114* 10280-10290.
- (98) Boppana, V.B.R., Doren, D. J., **Lobo, R. F.**, “A spinel oxinitride with visible light photocatalytic activity”, *ChemSusChem*, **2010**, *3*, 814-817
- (99) Boppana, V.B.R., Doren, D. J., **Lobo, R. F.**, “Analysis of Ga coordination environment in novel spinel Zinc Gallium Oxy-nitride photocatalyst’, *J. Mater. Chem.*, **2010** *20* 9787-9797.
- (100) **Lobo, R. F.**, “Synthetic Glycolysis”, *ChemSusChem* **2010**, *3*, 1237.

- (101) Al-Majnouni, K.A., Hould, N.A., Lonergan, W.W., Lobo, R.F., “High-Temperature Decomposition of Brønsted Acid Sites in Ga-substituted Zeolites”, *J. Phys. Chem. C.*, **2010**, *114*, 19395.
- (102) Foster, A.; **Lobo, R.F.**; “Identifying Reaction Intermediates and Catalytic Active Sites through in-situ Characterization Techniques”, *Chem. Soc. Revs.*, **2010**, *39*, 4783.
- (103) Korhonen, S.T., Fickel, D.W., Lobo, R.F., Weckhuisen, B.M., Beale, A.M., “Isolated Cu²⁺ ions: active sites for the selective catalytic reduction of NO”, *Chem. Comm.*, **2011** 47 800-802.
- (104) Fickel, D.W., D’Addio, E., Lauterbach, J.A., Lobo, R.F., “The ammonia selective catalytic reduction activity of copper-exchanged small-pore zeolites”, *Appl. Cat. B-Env.* **2011** *102*, 441-448.
- (105) Hould, N.D.; Foster, A.; Lobo, R.F., “Zeolite Beta Mechanism of Nucleation and Growth”, *Micropor. Mesopor. Mater.*, **2011**, *142*, 104-115.
- (106) Jae, J.; Tompsett, G.A.; Foster, A.J.; Hammond, K.D.; Auerbach, S.M.; Lobo, R.F.; Huber, G.W.; “Investigation into the Shape Selectivity of Zeolite Catalysts for Biomass Conversion”, *J. Catal.*, **2011**, *279*, 257-268.
- (107) Kumar, A.; Lobo, R.F.; Wagner, N.J. “Grand Canonical Monte Carlo Simulation of Adsorption of Nitrogen and Oxygen in Realistic Nanoporous Carbon Models”, *AIChE J.*, **2011**, *53*, 1496-1505.
- (108) Boppana, V.B.R.; Hould, N.D.; Lobo, R.F.; “Synthesis, characterization and photocatalytic properties of novel zinc germanate nano-materials”, *J. Sol. St. Chem.* **2011**, *184*, 1054-1062.
- (109) Al Majnouni, K.A.; Yun, J.H.; Lobo, R.F.; “High-Temperature Produced Catalytic Sites Selective for n-Alkane Dehydrogenation in Acid Zeolites: The Case of HZSM-5”, *ChemCatChem*, **2011**, *3*, 1333-1341.
- (110) Boppana, V.B.R., Lobo, R. F., “SnO_x-ZnGa₂O₄ Photocatalysts with Enhanced Visible Light Activity”, *ACS Catal.* **2011**, *1*, 923-928.
- (111) Boppana, V.B.R., Lobo, R. F., “Photocatalytic Degradation of Organic Molecules on Mesoporous Visible-Light active Sn(II)-doped Titania”, *J. Catal.* **2011**, *281*, 156-168.
- (112) Choudhary, V., Pinar A.B., Sandler, S.I., Vlachos, D.G., Lobo, R.F., “Xylose Isomerization to Xylulose and its Dehydration to Furfural”, *ACS Catal.* **2011** *1*, 1724-1728.
- (113) Boppana, V.B.R., Schmidt, H., Jiao, F., Doren, D.G., Lobo R.F. “Structure Analysis and Photocatalytic Properties of Zinc Gallium Oxonitrides”, *Chem. Eur.*

- J.*, **2011**, 17, 12417-12428.
- (114) Bermejo-Deval, R.; Assary, R. S.; Nikolla, E.; Moliner, M.; Roman-Leshkov, Y.; Hwang, S. J.; Palsdottir, A.; Silverman, D.; Lobo, R. F.; Curtiss, L. A.; Davis, M. E. "Metalloenzyme-like catalyzed isomerizations of sugars by Lewis acid zeolites", *Proceedings of the National Academy of Sciences of the United States of America* **2012**, 109, 9727.
- (115) Do, P. T. M.; Foster, A. J.; Chen, J. G.; Lobo, R. F. "Bimetallic effects in the hydrodeoxygenation of meta-cresol on gamma-Al₂O₃ supported Pt-Ni and Pt-Co catalysts", *Green Chemistry* **2012**, 14, 1388.
- (116) Eilertsen, E. A.; Haouas, M.; Pinar, A. B.; Hould, N. D.; Lobo, R. F.; Lillerud, K. P.; Taulelle, F. "NMR and SAXS Analysis of Connectivity of Aluminum and Silicon Atoms in the Clear Sol Precursor of SSZ-13 Zeolite", *Chemistry of Materials* **2012**, 24, 571.
- (117) Foster, A. J.; Do, P. T. M.; Lobo, R. F. "The Synergy of the Support Acid Function and the Metal Function in the Catalytic Hydrodeoxygenation of m-Cresol", *Topics in Catalysis* **2012**, 55, 118.
- (118) Foster, A. J.; Jae, J.; Cheng, Y. T.; Huber, G. W.; Lobo, R. F. "Optimizing the aromatic yield and distribution from catalytic fast pyrolysis of biomass over ZSM-5", *Applied Catalysis a-General* **2012**, 423, 154.
- (119) Hudson, M. R.; Queen, W. L.; Mason, J. A.; Fickel, D. W.; Lobo, R. F.; Brown, C. M. "Unconventional, Highly Selective CO₂ Adsorption in Zeolite SSZ-13", *J. Am. Chem. Soc.*, **2012**, 134, 1970.
- (120) Kulkarni, A.; Bedolla-Pantoja, M.; Singh, S.; Lobo, R. F.; Mavrikakis, M.; Barteau, M. A. "Reactions of Propylene Oxide on Supported Silver Catalysts: Insights into Pathways Limiting Epoxidation Selectivity", *Topics in Catalysis* **2012**, 55, 3.
- (121) Lobo, R. F.; Moissette, A.; Hureau, M.; Carre, S.; Vezin, H.; Legrand, A. "Electron Transfers Induced by t-Stilbene Sorption in Acidic Aluminum, Gallium, and Boron Beta (BEA) Zeolites", *Journal of Physical Chemistry C* **2012**, 116, 14480.
- (122) Williams, C. L.; Chang, C. C.; Do, P.; Nikbin, N.; Caratzoulas, S.; Vlachos, D. G.; Lobo, R. F.; Fan, W.; Dauenhauer, P. J. "Cycloaddition of Biomass-Derived Furans for Catalytic Production of Renewable p-Xylene", *ACS Catalysis* **2012**, 2, 935.
- (123) Yun, J. H.; Lobo, R. F. "Formation and evolution of naphthalene radical cations in thermally treated H-ZSM-5 zeolites", *Micropor. Mesopor. Mater.* **2012**, 155, 82.
- (124) Bermejo-Deval, R.; Assary, R. S.; Nikolla, E.; Moliner, M.; Roman-Leshkov, Y.;

- Hwang, S. J.; Palsdottir, A.; Silverman, D.; Lobo, R. F.; Curtiss, L. A.; Davis, M. E. "Metalloenzyme-like catalyzed isomerizations of sugars by Lewis acid zeolites", *Proc. Nat. Acad. Sc.* **2012**, *109*, 9727.
- (125) Hould, N. D.; Senapati, S.; Koller, H.; Lobo, R. F. "Effect of Al on Zeolite Beta Solid State Chemistry", *Topics Catal.* **2012**, *55*, 1332.
- (126) Do, P.T.M., McAtee, J.R., Watson, D.A., Lobo, R.F., "Elucidation of Diels-Alder Reaction Network of 2,5-dimethylfuran and ethylene on HY Zeolite Catalysts", *ACS Catal.*, **2013**, *3*, 41-46.
- (127) Nikbin, N., Do, P.T., Caratzoulas, S., Lobo, R.F., Dauenhauer, P.J., Vlachos, D.G., "A DFT study of the acid-catalyzed conversion of 2,5-dimethylfuran and ethylene to p-xylene", *J. Catal.*, **2013**, *297*, 35-43.
- (128) Pham, T.D., Liu, Q.L., Lobo, R.F., "Carbon Dioxide and Nitrogen Adsorption on Cation-Exchanged SSZ-13 Zeolites", *Langmuir*, **2013**, *29*, 832-839.
- (129) Roy, S., Bakhmutsky, K., Mahmoud, E., Lobo, R.F., Gorte, R.J., "Probing Lewis Acid Sites in Sn-Beta Zeolite", *ACS Catal.* **2013**, *3*, 573-580.
- (130) Jae, J.H., Zheng, W., Lobo, R.F., Vlachos, D.G., "Production of Dimethylfuran from Hydroxymethylfurfural through Catalytic Transfer Hydrogenation with Ruthenium Supported on Carbon", *ChemSusChem*, **2013** *6*, 1158-1162.
- (131) Artioli, N., Lobo, R.F. and Iglesia, E., "Catalysis by Confinement: Enthalpic Stabilization of NO Oxiadion Transition States by Microporous and Mesoporous Siliceous Materials", *J. Phys. Chem. C.*, **2013**, *117*, 20666-20674.
- (132) Boppana, V.B.R., Jiao, F., Newby, D. Jr., Laverock, J., Smith, K.E., Juma, J.C., Hutchings, G., Lobo, R.F., "Analysis of visible-light-active Sn(II)-TiO₂ Photocatalyst", *Phys. Chem. Chem. Phys.*, **2013**, *15*, 6185-6189.
- (133) Choudhary, V., Pinar, A.B., Lobo, R. F., Vlachos, D. G., Sandler, S.I., "Comparison of Homogeneous and Heterogeneous Catalysts for Aqueous Glucose to Fructose Isomerization in Aqueous Media", *ChemSusChem*, **2013**, *6*, 2369-2376.
- (134) Mahmoud, E., Watson, D.A., Lobo, R.F., "Renewable Production of Phthalic Anhydride from biomass-derived furan and maleic anhydride", *Green Chem.*, **2014**, *16*, 167-175.
- (135) Pham, T., Xiong, R.C., Sandler, S.I., Lobo, R. F., "Experimental and computational studies of the adsorption of CO₂ and N₂ on Pure Silica Zeolites", *Micropor. Mesopor. Mater.*, **2014**, *185*, 157-166.
- (136) Emdadi, L., Wu, Y.Q., Zhu, G.H., Chang, C.C., Fan, W., Pham, T., Lobo, R.F., Liu, D.X., "Dual Templated Synthesis of Meso- and Microporous MFI Zeolite

- Nanosheets Assemblies with Tailored Activity in Catalytic Reactions”, *Chem. Mater.*, **2014**, *26*, 1345-1355.
- (137) Loiland, J.L. and Lobo R.F., “Low Temperature Catalytic NO oxidation over Microporous Materials”, *J. Catal.*, **2014**, *311*, 412-423.
- (138) Jae, J., Zheng, W.Q., Karim, A.M., Guo, W., Lobo, R.F. and Vlachos, D.G. , “The Role of Ru and RuO₂ in the Catalytic Transfer Hydrogenation of 5-Hydroxymethylfurfural for the production of 2,5-dimethylfuran”, *ChemCatChem*, **2014**, *6*, 848-856.
- (139) Jun, J.H. and Lobo, R.F., “Catalytic Dehydrogenation of Propane over iron-silicate zeolites”, *J. Catal.*, **2014**, *312*, 263-270.
- (140) Mahmoud, E. and Lobo, R.F., “Recent Advances in Zeolite Science based on Advanced Characterization Techniques”, *Micropor. Mesopor. Mater.*, **2014**, *189*, 96-106.
- (141) Jae, J., Mahmoud, E., Lobo, R.F. and Vlachos, D.G., “Cascade of Liquid-Phase Catalytic Transfer Hydrogenation and Etherification of 5-Hydroxymethylfurfural to Potential Biodiesel Components over Lewis Acid Zeolites”, *ChemCatChem*, **2014**, *6*, 508-513.
- (142) Catatzoulas, S., Davis, M.E., Gorte, R.J., Gounder, R., Lobo, R.F., Nikolakis, V., Sandler, S.I., Snyder, M.A., Tsapatsis, M., Vlachos, D.G., “Challenges of and Insights into Acid-Catalyzed Transformations of Sugars”, *J. Phys. Chem. C.*, **2014**, *118*, 22815-22833.
- (143) Pham, T.D., Hudson, M.R., Brown, C.M., Lobo, R.F., “Molecular Basis for the High CO₂ Adsorption Capacity of Chabazite Zeolites”, *ChemSusChem*, **2014**, *7*, 3031-3038.
- (144) Yun, J.H., Lobo, R.F., “Radical Cation Intermediates in Propane Dehydrogenation and Propene Hydrogenation over H-[Fe]- Zeolites”, *J. Phys. Chem. C.*, **2014**, *118*, 27292-27300.
- (145) Yun, J.H., Lobo, R.F., “Effects of temperature pretreatment on propane cracking over H-SSZ-13 zeolites”, *Cat. Sci. Tech.*, **2015**, *5*, 264-273.
- (146) Wulfers, M.J., Teketel, S., Ipek, B. and Lobo, R.F., “Conversion of methane to methanol on copper-containing small-pore zeolites and zeotypes”, *Chem. Comm.*, **2015**, *51*, 4447-4450.
- (147) Loiland, J. and Lobo, R.F., “Oxidation of zeolite acid sites in NO/O₂ mixtures and the catalytic properties of the new site in NO oxidation”, *J. Catal.*, **2015**, *325*, 68-78.
- (148) Courtney, T.D., Chang, C.C., Gorte, R.J., Lobo, R.F., Fan, W., Nikolakis, V.,

- “Effect of water treatment on Sn-BEA zeolite: Origin of 960 cm⁻¹ FTIR peak”, **2015**, *210*, 69-76.
- (149) Mahmoud, E., Yu, Jingye, Gorte, R. J. and Lobo, R.F., “Diels-Alder and Dehydration Reactions of Biomass-derived Furans and Acrylic Acid for the Synthesis of Benzoic Acid”, *ACS Catal.*, **2015**, *5*, 6946-6955.
- (150) Koehle, M. and Lobo, R.F., “Lewis Acidic Zeolite Catalysts for the Meerwein-Ponndorf-Verley Reduction of Furfural”, *Cat. Sci. Technol.*, **2016**, *6*, 3018-3026.
- (151) Loiland, J.,A., Wulfers, M.J., Marinkovic, N.S. and Lobo R.F., “Fe/ γ -Al₂O₃ and Fe/K/ γ -Al₂O₃ as Reverse Water Gas Shift Catalysts”, *Catal. Sci. Technol.*, **2016**, *6*, 5267-5279 (Cover Art of the issue).
- (152) Schreiner, E.P., Shewangizaw, T., and Lobo, R.F., “Catalytic n-pentane Conversion on H-ZSM-5 at High Pressure”, *New J. Chem.* **2016**, *40*, 4245-4251.
- (153) Takahiko, M. and Lobo, R.F., “A General Method for Aluminum Incorporation into High-Silica Zeolites Prepared in Fluoride Media”, *Chem. Mater.* **2016**, *28*, 638-649.
- (154) Yeh, Y.H., Zhu, S.Y., Staiber, P., Lobo, R.F., Gorte, R.J., “Zn-Promoted H-ZSM-5 for Endothermic Reforming of n-Hexane at High-Pressures”, *Ind. Eng. Chem. Res.*, **2016**, *55*, 3930-3938.
- (155) Koller, H., Senepati, S., Ren, J., Uesbeck, Te., Siozios, V., Hunger, M. and Lobo, R.F., “Post-synthesis Conversion of Borosilicate Zeolite Beta to an Aluminosilicate with Isolated Acid Sites: A Quantitative Distance Analysis by Solid-State NMR”, *J. Phys. Chem. C.* **2016**, *120*, 9811-9820.
- (156) Sheng, H. and Lobo, R.F., “Iron-promotion of Silica-Supported Copper Catalysts for Furfural Hydrodeoxygenation”, *ChemCatChem*, **2016**, *8*, 3402-3408.
- (157) Pham, T.D. and Lobo R.F., “Adsorption equilibria of CO₂ and small hydrocarbons in AEI-, CHA-, SIT- and ROO-type siliceous zeolites”, *Micropor. Mesopor. Mater.* **2016**, *236*, 100-108.
- (158) Pham, T.D., Hudson, M.R., Brown, C.M., Lobo, R.F., “On the structure-property relationships of cation-exchanged ZK-5 Zeolites for CO₂ Adsorption”, *ChemSusChem*, **2017**, *10*, 946-957. DOI: 10.1002/cssc.201601648
- (159) Salavati-Fard, T., Caratzoulas, S., Lobo, R.F., Doren, D.J., “Catalysis of the Diels-Alder Reaction of Furan and Methyl Acrylate in Lewis Acid Zeolites”, *ACS Catal.*, **2017**, *7*, 2240-2246.
- (160) Koehle, M., Saraci, E., Dauenhauer, P., Lobo, R.F., “Production of p-Methylstyrene from Furanic Compounds”, *ChemSusChem*, **2017**, *10*, 91-98.

- (161) Park, D.S., Joseph, K.E., Koehle, M., Krumm, C., Ren, L.M., Damen, L.M., Shete, M.H., Lee, H.S., Zuo, X.B., Lee, B., Fan, W., Vlachos, D.G., Lobo, R.F., Dauenhauer, P.J., "Tunable Oleo-Furan Surfactants by Acylation of Renewable Furans", ACS Central Sc., **2016**, 2, 820-824.

Books Edited

1. "Microporous and Macroporous Materials," Eds. R. F. Lobo, J. S. Beck, S. L. Suib, D. R. Corbin, M. E. Davis, L. E. Iton, S. I. Zones, MRS Symposium Proceedings, San Francisco CA, 1996.

Books Chapters

1. **R. F. Lobo**. "Introduction to the Structural Chemistry of Zeolites" in Handbook of Zeolite Science and Technology, eds. Scott Auerbach, Kathleen Carrado, and Prabir Dutta, Marcel Dekker: New York, 2003.
2. **Raul F. Lobo**, Intermolecular Forces in Zeolite Adsorption and Catalysis in "Ordered porous solids: recent advances and prospects". Eds. S. Mintova, M. Tsapatsis, V. Valtchev, Elsevier, 2009, 800 pp.
3. D. Fickel and **R. F. Lobo**, The Synthesis of Zeolites from the Perspective of Solid-Solutions of Sodium Aluminate in a Silica Matrix, in "Zeolites: from Model Materials to Industrial Applications". Eds. J. Cejka, J. Perez-Pariente, W. J. Roth, Research Signpost: Trivandrum, India, 2008.

Patents and Patent Applications

1. R. F. Lobo and M. E. Davis, US Patent 5512267, "Zeolite CIT-1," April 30, 1996.
2. D. Corbin, S. Schwarz, R. F. Lobo, "Process for Preparing Methylamines Using Acidic Chabazite-type Zeolite Catalysts," US 6166258, Dec. 2000.
3. D. Corbin, R. F. Lobo, S. Schwarz, "Method of making methylamines using chabazite catalysts", US6232502B1, Nov. 1998.

Presentations at Professional Meetings

ACS Symposium on "Sol-Gel Synthesis of Catalysts and Advanced Materials", American Chem. Soc., San Francisco, CA (April 1997)

International Symposium on Zeolites and Microporous Crystals, Japan Association of Zeolites, Tokyo, Japan (August, 1997)

North American Catalysis Society Meeting, Chicago, IL, (Invited Lecture, May 1997)

North East Corridor Zeolite Association (NECZA), Philadelphia (December 1997)

AIChE Annual Meeting, Adsorption Fundamentals Session, (Nov., 1998)

Materials Research Society Meeting, Boston, MA (Dec. 1998)

International Catalysis Conference, Granada, Spain (Jul. 2000)

International Symposium on Zeolites and Microporous Crystals, Sendai, Japan (August, 2000)

International Symposium on Zeolites and Microporous Crystals, Post-Symposium, Tokyo, Japan (August 2000)

AIChE Annual Meeting, Indianapolis (November, 2002)

North East Corridor Zeolite Association (NECZA), Philadelphia (December 2002)

International Zeolite Conference, Cape Town (April 2004)

American Conference on Neutron Scattering, Washington DC (June 2004)

International Catalysis Conference, Paris (July 2004)

Gordon Research Conferences (Solid-State Chemistry), New London, NH (July, 2004)

Simpósio Iberoamericano de Catálisis, Merida, Mexico (September, 2004)

North East Corridor Zeolite Association (NECZA), Philadelphia (December 2004)

American Chemical Society National Meeting, San Diego, CA (March, 2005)
Colloids and Surface Science Division

American Chemical Society National Meeting, Atlanta, GA (March, 2006) Colloids and Surface Science Division

American Chemical Society National Meeting, Atlanta, GA (March, 2006) Petroleum Chemistry Division

International Catalysis Congress, Seoul, Korea (July, 2008).

247th ACS National Meeting, Symposium in Honor of Mark Davis, Dallas, TX, March 2014

Advanced Porous Materials Symposium, ETH, Zurich, Swiss., June 2014

AIChE Annual Meeting, Atlanta, GA, Nov. 2014.

Invited Talks at Professional Meetings and Academic Institutions (since 2000)

Princeton University, NJ (October, 2000)

Instituto de Ciencia de Materiales, Barcelona, Spain (August, 2001)

Instituto de Catálisis y Petroleoquímica, Madrid, Spain (August, 2001)

Laboratory for Crystallography, ETH, Switzerland (January, 2002)

University of Amsterdam, The Netherlands (March, 2002)

Catholic University at Louvain, Belgium (April, 2002)

North East Corridor Zeolite Association (NECZA), Philadelphia (December 2002)

British Zeolite Conference, Edinburgh, United Kingdom (August 2002)

International Union for Crystallography General Meeting, Geneva (August 2002)
University of Florida, Gainesville, FL (April 2003)
American Chemical Society National Meeting, Irvine CA (March, 2004)
California Institute of Technology, Pasadena (March, 2004)
Tulane University, New Orleans, LA (September, 2004)
American Chemical Society National Meeting, San Diego, CA (March, 2005) Two
talks in Colloids and Surface Science Division, and Petroleum Division
Gordon Research Conferences (Zeolite and Layered Materials), New London, NH
(July, 2005)
University of California at Santa Barbara, Santa Barbara, CA (Nov., 2008)
University of California at Davis, Davis, CA (Oct., 2010)
University of California at Berkeley, Berkeley, CA (Oct. 2010)
AIChE Annual Meeting, Symposium in honor of Thomas Degnan, Salt Lake City,
UT (Nov. 2010)
Frontiers in Catalysis Series, Pacific Northwest National Laboratory, Richland, WA
(Nov. 2010)
Plenary Talk, International Zeolite Conference, Moscow, July, 2013
Worcester Polytechnic Institute, Worcester, MA, Oct., 2013
ExxonMobil, Clinton, NJ, January, 2014
University of Pennsylvania, October, 2014
Colorado School of Mines, January, 2015
University of Notre Dame, February, 2015
Rutgers University, March, 2016
International Zeolite Conference School, Campinas, Brazil (two lectures), 2016
Purdue University, September, 2016

Graduate Student Mentoring and Training

Undergraduate Student Thesis (since 2000)

Melanie Webb, 2002, Senior Thesis: *Photoreduction of Silver on ETS-10*. Currently graduate student in Princeton University.

Stephen Ekatan, 2004, Senior Project: *Investigation of the Self Assembly of Nanoparticles*

Emilly Maldonado, Merck visiting student from the University of Puerto Rico at Mayaguez (summer 2005). *Silica Nanoparticles for Composite Materials*

Daniel Roth, 2007. *Self-Assembly of Germania Nanoparticles*.

Joshua Comdem, 2008. *Silica Microstructure in Physiological Conditions*.

Past Graduate Students (13)

Daniel Shantz, Ph. D., 2000. Chemical Engineering. *Guest Host Interactions in High-Silica Zeolites*. Currently at Texas A&M University, College Station, TX.

Allen Burton, Ph. D., 2000. Chemical Engineering. *Cation siting in low-silica zeolites with potential applications in pressure swing adsorption technology and structural studies of novel tectosilicates* . Currently at Chevron Research and Technology, Richmond, CA.

Gopalakrishnan Juttu, Ph. D., 2001. Chemical Engineering. *Modified Microporous Aluminosilicates as novel solid acid catalysts*. Currently at SABIC, Houston, TX.

Robyn Accardi, Ph.D., 2002. Chemical Engineering. *Structure-Property Relationships in Zeolites: Characterization by Combined NMR and Diffraction Methods*. Currently with Ceramem, Inc., Boston, MA.

Jan Boshoff, Ph. D., 2004. Chemical Engineering. *Configurational Diffusion in Glassy, Amorphous Polymers: Effects of Polymer Structure on Permeation via Molecular Simulation*. Currently at SASOL, South Africa. Co-Advised with Prof. Norman Wagner.

Kaveri Sawant, Ph D., 2004. Chemical Engineering. *Imprinting the Surface of Mesoporous Aluminosilicates using Organic Structure-Directing Agents*. Currently with Rohm & Haas Electronic Materials, Newark, DE.

Michael Smith, Ph D., 2004. Chemical Engineering. *Nanoporous Carbon Synthesis, Characterization and Control of the Local Structure by Templated Pyrolysis*.

María Martínez-Iñesta, Chemical Engineering (2000-2005). *The Pair Distribution Function Method and its Application to Complex Zeolite Structural Problems*. Assistant professor at the University of Puerto Rico at Mayagüez.

Joseph Fedeyko, Chemical Engineering (2001-2006). *Silica Self-Assembly in Basic Aqueous Solutions*. Co-advised with Prof. Dionisios Vlachos. Johnson & Matthey Catalysis, PA.

- Jeffrey Rimer, Chemical Engineering (2001-2007). *Growth Mechanisms of Zeolite Silicalite-1*. Co-advised with Prof. Dionisios Vlachos. Currently a postdoctoral fellow at NYU, Department of Chemistry.
- Michael Nash, Chemical Engineering (2003-2008). *Photocatalysis with ETS-10 Materials*. Currently at Eastman Chemical Co., Tennessee.
- Wei Huang, Chemical Engineering (2003-2008). *Selective Hydrogenation/Dehydrogenation Catalysis using Supported Bimetallic Catalysts*. With Prof. Jinguang Chen. Air Liquide America, LLC.
- Ann Marie Shough (2003-2008), Chemistry. *Quantum Chemistry Studies of Catalytic and Photocatalytic Materials: Transition Metal Substitution, Active Sites, Thermodynamics, and Reaction Mechanisms* With Prof. Douglas Doren. Currently at ExxonMobil.
- William Pyrz, Chemical Engineering (2004-2008). *Transmission Electron Microscopy of Bimetallic Supported Catalysts*. Co-advised with Prof. Douglas Buttrey. Currently at Merck Inc.
- Dustin Fickel, Chemical Engineering (2005-2010). *High Temperature Reactivity of Bronsted Acid and Defect Sites in Zeolites*. Currently at Sabic Corp.
- Khalid Al-Majnouni(2006-2011). *Alkane Cracking via Redox Mechanisms in acid zeolites*. Sabic.
- Nathan Hould (2006-2011). *Nanoparticle Precursors in the Mechanism of Formation of High Silica Zeolites*.
- Bharat Bopana (2007-2011). *Novel Oxinitrides for the decomposition of Volatile-Organic-Compounds using Visible Light*. Corning Chemical Co.
- Andrew Foster (2008-2012). *Development of Zeolite Catalysts for Catalytic Fast Pyrolysis of Biomass*. Chervron Research and Technology.
- Brett Guralnik (2008-2013). *Novel Hybrid Photovoltaic Devices Based on Zn₃P₂ Nanoparticles*.
- Jang Ho Yun (2009-2014). *Redox Processes in High-Silica Zeolites*. Samsung-Total, Korea
- Trong Pham (2010-2015). *Zeolite Adsorbents for CO₂ separations*. Sabic.
- Jason Loiland (2011-2015). *Mechanisms of NO oxidation over High-Silica Zeolites*. Sabic USA
- Eyas Mahmoud (2011-2016) *Biomass Upgrading into Fuels and Chemicals*.
- Bahar Ipek (2011-2016) *Small Pore Zeolites for H₂ adsorption and Direct Methanol Production*.

Current Graduate Students

Edward Schreiner (2012-present) *Supercritical Cracking of Alkanes*

Huibo Sheng (2012-present) *Selective hydrogenation of biomass-derived Furfural*

Maura Koehle (2013-present) *Kinetics and Selectivity of Microporous Lewis Acid Catalysts for Biomass Transformations*

Chen-Yu Chou (2014-present) *Catalytic Reduction of CO₂ to CO and Methanol*

Past and Present Postdoctoral Fellows

Dr. Matthias Feuerstein, 1996-1998.

Dr. Stephan Riemann, 1999-2000.

Dr. Raphael Peshche, 2001-2002. Co-supervised with Prof. Norman Wagner.

Dr. Zhong-Min Wang, 2000-2001

Dr. David Kragten, 2002-2003. Co-supervised with Prof. Dionisios Vlachos

Dr. Saji Varkey, 2000-2002. Co-supervised with Prof. Klaus Theopold.

Dr. Inmaculada Peral, 2001-2003.

Dr. Apoorva Kulkarni, 2010-2011

Dr. Ana Belen Pinar, 2010-2011

Dr. Qingling Liu, 2011-2013

Dr. Ji Na, 2012-2013. Co-supervised with Prof. Jingguang Chen

Dr. Adriana Aristizabal, 2012-2013

Dr. Matthew Wulfers, 2013-2014

Dr. Shewanigan Forsido, 2013-2014

Dr. Takahito Moteki, 2013-2014

Dr. Erisa Saraci, 2015-present

Dr. Ali Mehdad, 2015-present

Dr. Young Jin Kim, 2015-2016

Dr. Trong Pham, 2015-2016

Dr. Efterpi Vasileiadou, 2015-present

Dr. Bahar Ipek, 2016