

JUSTIN M. NOTESTEIN

Department of Chemical & Biological Engineering
Robert R. McCormick School of Engineering and Applied Science
Northwestern University
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EDUCATION

Princeton University	Chemical Engineering, <i>magna cum laude</i> Certificate in Materials Science and Engineering	B.S.E. 2001
University of California, Berkeley	Chemical Engineering	Ph.D. 2006
Univ. Illinois, Urbana-Champaign	Chemistry Postdoctoral Fellow	2006-2007

PROFESSIONAL EXPERIENCE

2013-present Associate Professor, Chemical and Biological Engineering, *Northwestern University*
The Notestein group researches engineering approaches to atom-precise materials for heterogeneous catalysis and adsorption. Our group focuses on reactions and processes essential to the development of sustainable fuels and chemicals.

2017-present Member, Northwestern Argonne Institute for Science and Engineering, *Northwestern University*

2009-present Affiliate, International Institute of Nanotechnology, *Northwestern University*

2007-present Member, Center for Catalysis and Surface Science, *Northwestern University*

2007-2013 Assistant Professor, Chemical and Biological Engineering, *Northwestern University*

2006-2007 Post-Doctoral Research Associate, Chemistry, *University of Illinois, Urbana Champaign*
Grafted oligomers were developed for switchable porous surfaces in sensing and separations.

2001-2006 Doctoral Student, Chemical Engineering, *University of California, Berkeley*
A new class of hybrid organic-inorganic materials based on grafted calixarenes was synthesized and characterized for host-guest adsorption and oxidation catalysis.

2000-2001 Undergraduate Researcher, Chemical Engineering, *Princeton University*
Ring-opening metathesis and anionic polymerization were combined to synthesize diblock copolymers.

RECOGNITION

Associated Student Government Faculty Honor Roll, Northwestern University, 2013, 2010, 2008
DuPont Young Professor Award, national recognition, 2011, 2012, 2013
"Mover and Shaker", *Catalysis Review* magazine, 2011
3M Non-Tenured Faculty Award, national recognition, 2010, 2011, 2012
McCormick (School of Engineering) Advisor of the Year, Northwestern University, 2009-2010
Young Investigator Award, International Catalysis Congress, 2008
Camille and Henry Dreyfus New Faculty Award, national recognition, 2007

Phi Beta Kappa Fellowship, California alpha chapter, 2006
Dow Outstanding Teaching Assistant Award, UC Berkeley, 2002
National Science Foundation Graduate Student Fellowship, 2001-2004

SELECTED ACHIEVEMENTS by GROUP MEMBERS

The Graduate School Terminal Year Fellowship, 2017 (Nauert)
PPG Fellowship, 2017 (Ahn)
NSF Graduate Research Fellowship 2017-2020 (Cheng)
NSF Graduate Research Fellowship 2017-2020 (Rosen)
Distinguished Graduate Researcher, runner-up, 2017 (Nauert)
George Thodos Teaching Assistant Award 2017 (Nauert)
Kokes Travel Award, North American Catalysis Society, 2017 (Nauert)
1st Place Poster, Catalysis Club of Chicago Annual Symposium, 2017 (Nauert)
Distinguished Graduate Researcher, 2016 (Thornburg)
The Graduate School Terminal Year Fellowship, 2016 (Thornburg)
Participant, Safety by Design, Improving Safety in Research Laboratories, 2016 (Gosavi)
Gore Fellows 1st Prize, 2015 (Thornburg)
Christine Mirzayan Science & Technology Policy Fellowship, National Academies, 2016 (Raimondo)
The Graduate School Terminal Year Fellowship, 2015 (Yacob)
Distinguished Graduate Researcher, runner up, 2015 (Yacob)
Industrial & Engineering Chemistry Graduate Student Award, ACS, 2015 (Yacob)
Kokes Travel Award, North American Catalysis Society, 2015 (Yacob)
George Thodos Teaching Assistant Award 2015 (Ardagh and Thornburgh)
AIChE Chicago Annual Poster Competition, 1st Prize, 2015 (Watson)
Co-instructor, Responsible Conduct of Research, 2015 (Raimondo)
NSF Graduate Research Fellowship 2014-2017 (Nauert)
NSF Graduate Research Fellowship 2104-2017 (Scholes, former undergraduate)
1st Place Poster, Catalysis Club of Chicago annual Symposium, 2014 (Yacob)
Ryan Nanotechnology fellowship 2013 (Nauert)
NIH – Initiative to Maximize Student Development Fellowship 2011-2013 (Yacob)
Christine Mirzayan Science & Technology Policy Fellowship, National Academies, 2012 (Young)
First Place Poster, Undergraduate Poster Session, AIChE Annual National Meeting 2012 (Grosso-Giordano)
Carl Storm Fellowship, Catalysis Gordon Conference 2012 (Yacob)
George Thodos Teaching Assistant award 2012 (Contreras)
Separations Division Travel Award, AIChE Annual Meeting 2012 (Thompson)
Catalysis and Reaction Engineering Division Travel Award, AIChE Annual Meeting 2012 (Young)
Catalysis and Reaction Engineering Division Travel Award, AIChE Annual Meeting 2011 (Prieto)
Kokes Travel Award, North American Catalysis Society, 2011 (Prieto)

Northwestern University Graduate Leadership Council, Elected Chair, 2011 (Young)
MRSEC Fellow, 2010-2011 (Young)
McCormick Graduate Leadership Council, Elected Chair, 2010-2011 (Young)
Women's Initiative Committee Travel Award, AIChE Annual Meeting 2010 (Young)
ISEN Cluster Fellowship, 2009-2010 (Young)
George Thodos Teaching Assistant award 2009 (Korinda)
Link Energy Fellowship, runner up 2009 (Prieto)
Ryan Nanotechnology Fellowship 2008 (Prieto)

PUBLICATIONS * corresponding author % undergraduate or high school author

1. Z. Bo, S. Ahn, M. A. Ardagh, N. M. Schweitzer, C.P. Canlas, O.K. Farha, J.M. Notestein*, "Synthesis and Stabilization of Small Pt Nanoparticles on TiO₂ partially Masked by SiO₂," *Appl. Catal. A* **2017**, in press.
2. V. K., Paidi, L. Savereide, D.J. Childers, J.M. Notestein, C.A. Roberts*, J. van Lierop*, "Predicting NO_x Catalysis by Quantifying Ce³⁺ from Surface and Lattice Oxygen," *ACS Appl. Mater. & Interfaces*, **2017**, in press.
3. N.E. Thornburg, J.M. Notestein*, "Rate and selectivity control in thioether and alkene oxidation with H₂O₂ over phosphonate-modified niobium(V)-silica catalysts," *ChemCatChem*, **2017**, in press.
4. L.R. McCullough, D.J. Childers, R.A. Watson, B.A. Kilos, D. Barton, E. Weitz, H.H. Kung, J.M. Notestein*, "Acceptorless dehydrogenative coupling of neat alcohols using Group VI sulfide catalysts," *ACS Sustainable Chem. & Eng.* **2017**, *5*, 4890-4896.
5. K.C. Schwartzenberg, J.W.J. Hamilton, A.K. Lucid, E. Weitz, J. Notestein, M. Nolan*, J.A. Byrne*, K.A. Gray*, "Multifunctional photo/thermal catalysis for the reduction of carbon dioxide," *Catal. Today*, **2017**, *280*, 65-73.
6. S. Ahn, N. Thornburg, Z. Li, T. Wang, L. Gallington, K. Chapman, J. Notestein, J. Hupp, O. Farha*, "Stable Metal–Organic Framework Supported Niobium Catalysts," *Inorg. Chem.* **2016**, *55*, 11954-11961.
7. M. A. Ardagh, Z. Bo, S. L. Nauert, J. M. Notestein*, "Depositing SiO₂ on Al₂O₃: a route to tunable Bronsted acid catalysts," *ACS Catal.*, **2016**, *6*, 6156-6164.
8. N. E. Thornburg, S. L. Nauert, A. B. Thompson, J. M. Notestein, "Synthesis-structure-function relationships of silica-supported niobium(V) catalysts for alkene epoxidation with H₂O₂," *ACS Catal.*, **2016**, *6*, 6124-6134.
9. M. Bachrach, T. Marks*, J.M. Notestein*, "Understanding the Hydrodenitrogenation of Heteroaromatics on a Molecular Level," *ACS Catal.*, **2016**, *6*, 1455-1476.
10. S. L. Nauert, F. Schax, C. Limberg, J. M. Notestein*, "Cyclohexane oxidative dehydrogenation over copper oxide catalysts," *J. Catal.*, **2016**, *341*, 180-190.
11. C.C. Yang, B.A. Kilos, D.G. Barton, E. Weitz, J.M. Notestein*, "Increased Productivity in Ethylene Carbonylation by Zeolite-Supported Molybdenum Carbonyls," *J. Catal.*, **2016**, *338*, 313-320.
12. M. Bachrach, T. Marks*, J. M. Notestein*, "C-N bond hydrogenolysis of aniline and cyclohexylamine over TaOx-Al₂O₃," *New J. Chem.*, **2016**, *7*, 6001-6004.
13. C. A. Roberts*, L. Savereide, D. J. Childers, T. C. Peck, J. M. Notestein, "In situ FTIR spectroscopy of highly dispersed FeOx catalysts for NO reduction: Role of Na promoter," *Catal. Today*, **2016**, *267*, 56-64.
14. N. E. Thornburg, Y. Liu, P. Li, J. T. Hupp, O. K. Farha, J. M. Notestein*, "MOFs and their grafted analogues: regioselective epoxide ring-opening with Zr₆ nodes," *Catal. Sci. Technol.*, **2016**, *6*, 6480-6484.
15. S. Yacob, B.A. Kilos, D. G. Barton, J.M. Notestein*, "Vapor Phase Ethanol Carbonylation Over Rh Supported on Zeolite 13X," *Appl. Catal. A.*, **2016**, *520*, 122-131.

16. P. A. Ignacio de Leon, C.A. Contreras, N.E. Thornburg, A.B. Thompson, J.M. Notestein*, "Catalyst structure and substituent effects on epoxidation of styrenics with immobilized Mn(tmtacn) complexes," *Appl. Catal. A.*, **2016**, 511, 78-86.
17. N.A. Grosso-Giordano^o, T. Eaton, Z. Bo, S. Yacob, C.C. Yang, J.M. Notestein*, "Silica Support Modifications to Enhance Pd-catalyzed Deoxygenation of Stearic Acid," *Appl. Catal. B.*, **2016**, 192, 93-100.
18. C.A. Contreras, P.A. Ignacio de Leon, J.M. Notestein*, "Synthesis of a family of peracid-silica materials and their use as alkene epoxidation reagents," *Microporous Mesoporous Mater.*, **2016**, 225, 289-295.
19. N.E. Thornburg, A.B. Thompson, J.M. Notestein*, "Periodic Trends in Highly Dispersed Groups IV and V Supported Metal Oxide Catalysts for Alkene Epoxidation with H₂O₂," *ACS Catal.* **2015**, 5, 5077-5088.
20. D. Prieto-Centurion, T. R. Eaton, C.A. Roberts, P.T. Fanson, J.M. Notestein*, "Catalytic reduction of NO with H₂ over redox-cycling Fe on CeO₂," *Appl. Catal. B*, **2015**, 168, 68-76.
21. C.A. Roberts*, D. Prieto-Centurion, Y. Nagai, Y. F. Nishimura, R. Desautels, J. van Lierop, P.T. Fanson, J. M. Notestein*, In Situ Characterization of highly dispersed, ceria-supported Fe sites for NO reduction by CO. *J. Phys. Chem. C* **2015**, 119, 4334-4234.
22. Z. Bo, T. R. Eaton, J. R. Gallagher, C.P. Canlas, J. T. Miller, J. M. Notestein*, Size-selective synthesis and stabilization of small Ag nanoparticles on TiO₂ partially masked by SiO₂. *Chem. Mater.* **2015**, 27, 1269-1277.
23. S. Yacob, S. Park, B.A. Kilos, D. G. Barton, J.M. Notestein*, "Vapor phase ethanol carbonylation with heteropolyacid-supported Rh," *J. Catal.* **2015**, 325, 1-8.
24. M. Bachrach, N. Morlanes, C. P. Canlas, J. T. Miller, T. J. Marks, J. M. Notestein*, "Increasing the Aromatic Selectivity of Quinoline Hydrogenolysis Using Pd/MO_x-Al₂O₃," *Catal. Lett.* **2014**, 144, 1832-1838.
25. C-C Yang, B. A. Kilos, D. G. Barton, E. Weitz, J. M. Notestein*, "The role of iodide promoters and the mechanism of ethylene carbonylation catalyzed by molybdenum hexacarbonyl," *J. Catal.* **2014**, 319, 211-219.
26. T. R. Eaton, A. M. Boston,^o A. B. Thompson, K. A. Gray, J. M. Notestein*, "Counting Active Sites on Titanium Oxide-Silica Catalysts for Hydrogen Peroxide Activation through In Situ Poisoning with Phenylphosphonic Acid," *ChemCatChem* **2014**, 6, 3215-3222.
27. A. B. Thompson, R. C. Scholes^o, J. M. Notestein*, "Recovery of Dilute Aqueous Acetone, Butanol, and Ethanol with Immobilized Calixarene Cavities," *ACS Appl. Mater. & Interfaces*, **2014**, 6, 289-297.
28. T. R. Eaton, M. P. Campos,^o K. A. Gray, J. M. Notestein*, "Quantifying accessible sites and reactivity on titania-silica (photo)catalysis: Refining TOF calculations," *J. Catal.* **2014**, 309, 156-165.
29. C. P. Canlas, J. Lu, N. A. Ray, N. A. Grosso-Giordano^o, J. W. Elam, S. Lee, R. E. Winans, P. C. Stair, R. P. Van Duyne, and J. M. Notestein*, "Shape-Selective Sieving Layers on an Oxide Catalyst Surface," *Nature Chem.*, **2012**, 4, 1030-1036.
30. D. Prieto-Centurion, A. M. Boston^o, J. M. Notestein*, "Structural and electronic promotion with alkali cations of silica-supported Fe(III) sites for alkane oxidation," *J. Catal.*, **2012**, 296, 77-85.
31. K. R. Bjorkman, N. J. Schoenfeldt, J. M. Notestein, L. J. Broadbelt*, "Microkinetic modeling of cis-cyclooctene oxidation on heterogeneous Mn-tmtacn complexes," *J. Catal.*, **2012**, 291, 17-25.
32. J. M. Notestein*, "Review: R. Sebesta (ed): Enantioselective Homogeneous Supported Catalysis," *Catal. Lett.*, **2012**, 142, 1150-1151.
33. P. Young, J. M. Notestein*, "The Role of Amine Surface Density on Carbon Dioxide Adsorption on Functionalized Mixed Oxide Surfaces," *ChemSusChem*, **2011**, 4, 1671-1678.
34. N. J. Schoenfeldt, Z. Ni, A. W. Korinda, R. J. Meyer, J. M. Notestein*, "Manganese Triazacyclononane Oxidation Catalysts Grafted under Reaction Conditions on Solid Co-Catalytic Supports," *J. Am. Chem. Soc.*, **2011**, 133, 18684-18695.

35. N. J. Schoenfeldt, J. M. Notestein*, "Solid Co-catalysts for Immobilizing and Activating Manganese Triazacyclononane Oxidation Catalysts," *ACS Catal.*, **2011**, *1*, 1691-1701.
36. A. B. Thompson, S. Cope%, T. D. Swift%, J. M. Notestein*, "Adsorption of n-Butanol from Dilute Aqueous Solution with Grafted Calixarenes," *Langmuir*, **2011**, *27*, 11990-11998.
37. D. Prieto-Centurion, J. M. Notestein*, "Surface speciation and alkane oxidation with isolated Fe sites on silica," *J. Catal.*, **2011**, *279*, 103-110.
38. N. J. Schoenfeldt, A. W. Korinda, J. M. Notestein*, "A heterogeneous, selective oxidation catalyst based on Mn triazacyclononane grafted under reaction conditions," *Chem. Commun*, **2010**, *46*, 1640-1642.
39. N. Morlanes, J. M. Notestein*, "Grafted Ta-calixarenes: tunable, selective catalysts for direct olefin epoxidation with aqueous H₂O₂," *J. Catal.*, **2010**, *275*, 191-201.
40. N. Morlanes, J. M. Notestein*, "Kinetic Study of cyclooctene epoxidation with aqueous hydrogen peroxide over silica-supported calixarene Ta(V)," *Appl. Catal. A-General*, **2010**, *22*, 5319-5327.
41. J. M. Notestein*, C. Canlas, J. Siegfried%, J. S. Moore, "Covalent grafting of m-phenylene-ethynylene oligomers to oxide surfaces," *Chem. Mater.* **2010**, *22*, 5319-5327.
42. A. Solovyov, J. M. Notestein, K. A. Durkin, A. Katz*, "Graftable chiral ligands for surface organometallic materials: calixarenes bearing asymmetric centers directly attached to the lower rim," *New J. Chem.* **2008**, *32*, 1314-1325.
43. J. M. Notestein, L. R. Andrini, A. Solovyov, F. G. Requejo, A. Katz*, E. Iglesia*, "The role of outer-sphere surface acidity in alkene epoxidation catalyzed by calixarene-Ti(IV) complexes," *J. Am. Chem. Soc.* **2007**, *129*, 15585-15595.
44. J. M. Notestein, A. Katz*, E. Iglesia*, "Photoluminescence and charge transfer complexes of calixarenes grafted on TiO₂ nanoparticles," *Chem. Mater.* **2007**, *19*, 4998-5005.
45. J. M. Notestein, L. R. Andrini, V. I. Kalchenko, F. G. Requejo*, A. Katz*, E. Iglesia*, "Structural assessment and catalytic consequences of the oxygen coordination environment in grafted Ti-calixarenes," *J. Am. Chem. Soc.* **2007**, *129*, 1122-1131.
46. J. M. Notestein, A. Katz*, "Enhancing heterogeneous catalysis through cooperative hybrid organic-inorganic interfaces," *Chem. Eur. J.* **2006**, *12*, 3954-3965.
47. J. M. Notestein, A. Katz*, E. Iglesia*, "Energetics of small molecule and water complexation in hydrophobic calixarene cavities," *Langmuir* **2006**, *22*, 4004-4014.
48. J. M. Notestein, E. Iglesia, A. Katz*, "Grafted metallocalixarenes as single-site surface organometallic catalysts," *J. Am. Chem. Soc.* **2004**, *126*, 16478-16486.
49. A. Katz*, P. DaCosta, A. C. P Lam%, J. M. Notestein, "The first single-step immobilization of a calix[4]arene onto the surface of silica," *Chem. Mater.* **2002**, *14*, 3364-3368.
50. J. M. Notestein%, L. B. W. Lee, R. Register*, "Well-defined diblock copolymers via termination of living ROMP with anionically polymerized macromolecular aldehydes," *Macromolecules* **2002**, *35*, 1985.

PATENTS

51. "Dow Patent Disclosure 4" Sept 2017
52. "Dow Patent Disclosure 3" Sept 2017
53. "Dow Patent Disclosure 2" Dec 2016
54. "Dow Patent Disclosure 1" May 2016
55. "Catalysts and Related Methods for Photocatalytic Production of H₂O₂ and Thermocatalytic Reactant Oxidation," Gray, K. A.; Notestein, J. M.; Eaton, T. R., Application US2016023044, **2016**.

56. "Fabrication of catalyst used in catalytic converter of automotive vehicle, involves contacting substrate containing with transition/post transition metal, and contacting substrate with alkali/alkaline earth metal cations", J. M. Notestein, D. Prieto-Centurion, P. T. Fanson, C. A. Roberts, Applications WO2015077268, US20150139883, **2015**.
57. "New catalyst for useful for oxidizing alkane e.g. ethane to acetaldehyde, ethanol, methanol, and formaldehyde comprises support modified with carboxylate group which is functionalized with manganese complex", J. M. Notestein, N. J. Schoenfeldt, A. W. Korinda, US Patent 9,024,076, **2015**.
58. "Immobilized Calixarenes and Related Compounds and Process for their Production" A. Katz, E. Iglesia, J. M. Notestein, US Patent 6,951,690, **2005**.

SELECTED INVITED EXTERNAL PRESENTATIONS

- Invited talk, Department of Energy Contractors Meeting, Gaithersburg MD, July 2017
- Annual Graduate Seminar, Chemical Engineering, Purdue University, March 2017
- Invited Talk, Division of Catalysis and Reaction Engineering, AIChE Fall National Meeting, San Francisco, CA, Nov 2016
- Invited Talk, Division of Catalysis Science and Technology, ACS Spring National Meeting, San Diego, CA, March 2016
- Departmental Seminar, Chemical Engineering, California Institute of Technology, October 2015
- Keynote, "Catalytic Materials and Technologies for Upgrading of CO_x," ACS National Meeting, Denver, March 2015.
- Emerging Leaders Lecture Series, University of Toronto, March 2015
- External Speaker Series, Exxon-Mobil, May 2014
- Departmental Seminar, Chemical Engineering, Penn State, April 2014
- Department Seminar, Chemical Engineering, University of Oklahoma, April 2014
- Invited Lecture, Michigan Catalysis Society, March 2014
- Keynote Lecture, Calixarenes 12, St. Johns, Newfoundland, Canada, July 2013
- Department Seminar, Chemistry, University of Wisconsin Madison, February 2013.
- Department Seminar, Chemical and Biological Engineering, Northwestern University, October 2012
- Invited Talk, Catalysis and Reaction Engineering Division, AIChE National Meeting, Pittsburgh, October 2012
- Keynote Lecture, Catalysis Gordon Conference, Colby Sawyer College, NH, June 2012
- Invited Talk, Division of Catalysis Science and Technology, ACS Fall National Meeting, San Diego, CA, March 2012
- Department Seminar, Chemical and Biological Engineering, Princeton University, March 2012
- Award lecture, DuPont, Wilmington DE, October 2011
- Corporate meeting, 3M, St. Paul MN, October 2011
- Invited Talk, Materials Engineering and Sciences Division, AIChE National Meeting, Minneapolis MN, October 2011
- Invited Poster, Department of Energy Contractors Meeting, 'Heterogeneous Catalysis,' Annapolis MD, October 2011
- Keynote Lecture. 15th Int. Symp. on Relation between Homogeneous and Heterogeneous Catalysis, Berlin, Sept. 2011
- Corporate meeting, The Dow Chemical Company, Midland MI, August 2011
- Invited Talk, Hydrotreating Symposium, Energy and Fuels Division, ACS National Meeting, Denver CO, August 2011
- Invited Talk, Division of Catalysis Science and Technology, ACS National Meeting, Anaheim CA, March 2011
- Invited poster, Department of Energy Contractors Meeting, 'Homogeneous Catalysis,' Annapolis MD, June 2010
- Invited Talk, Division of Catalysis Science and Technology, ACS National Meeting, San Francisco, March 2010
- Department Seminar, Chemical Engineering, University of Illinois at Chicago, January 2010

Invited poster, Department of Energy Contractors Meeting, 'Heterogeneous Catalysis,' Annapolis MD, June 2009
Annual Meeting, UNICAT, Fritz Haber Institute, Berlin, Germany, May 2009
Annual Meeting, Institute for Catalysis in Energy Processes, Northwestern University, April 2009
Department Seminar, Environmental Engineering, Northwestern University, February 2009
Workshop, 2nd Northwestern-Berkeley-Heidelberg Workshop on Catalysis, Heidelberg Germany, September 2008
Department Seminar, Center for Catalysis and Surface Science, Northwestern University, January 2008
Departmental Colloquium, Chemical Engineering, MIT, 2006
Departmental Colloquium, Chemical and Biological Engineering, Northwestern University, 2006
Departmental Colloquium, Chemical Engineering, Stanford University, 2006

TEACHING and EDUCATION *indicates course developed wholly or in part by Notestein

Process Economics, Design & Evaluation (undergraduate required course), F07, F08, W10, W14
Analysis of Chemical Process Systems (undergraduate required course), W08, W09, F09, F10, F11, F12
Kinetics and Reactor Design (graduate required course), F09, F12, F13, F14, F15, F16
*Chemical Product Design (undergraduate elective), W12, W13, W14, W15, W16, S17, S18
*Modern Techniques in Heterogeneous Catalysis Research (graduate elective, with Prof. Schweitzer) W18, S18
*Introduction to the Light Hydrocarbon Economy (graduate elective) W18, S18

Northwestern Library Exhibit, *"Two Degrees and You: An NU Approach to Climate Change"*, 2014
Participation in NSF-funded educational study, *"Critical Thinking Initiative in STEM,"* 2011-2013
Invited lecturer, *"Reconceptualizing the Research Paper,"* for the Teaching, Learning, & Technology series of workshops at Northwestern University, Spring 2010, 2011
Searle Teaching Fellow, a selective program at Northwestern University that develops teaching strategies, assessment methods, and project-based learning, 2008-2009.
Grant recipient, *"Chemical Product Design: A New Course and a Theme for Independent Undergraduate Research,"* Alumnae Association of Northwestern," 4/2011-6/2012
Grant recipient, *"Chemical Product Design at Northwestern: A new course and a new approach to chemical engineering education,"* P&G Fund of The Greater Cincinnati Foundation, 2/2013

DEPARTMENT and UNIVERSITY SERVICE

University Office of Safety Board, 2015-
Synchrotron Research Facility board, 2015-
Chemical and Biological Engineering Director of Graduate Studies, 2014-
Executive committee, Center for Catalysis and Surface Science, 2014-
University Library Committee, 2014-
McCormick Teaching and Mentorship Award Committee, 2012-2014
British and Selective Fellowships Committee, 2008-2014
American Institute of Chemical Engineers Advisor, 2008-2014
Omega Chi Epsilon Student Chapter Advisor, 2008-

PROFESSIONAL SERVICE

Meeting Chair, 26th Meeting of the North American Catalysis Society, 2019, Chicago.

Panelist, Basic Research Needs workshop, DOE BES catalysis program, 2017.

Member, Roundtable on Industrial Catalysis Revitalization, American Chemical Council, 2015

Organizing committee, Meeting on *Interfaces of Heterogeneous and Homogeneous Catalysis*, Utrecht, 2105.

Organizing committee, ACS Division of Catalysis, 2010-

Steering committee, Midwest Regional AIChE Conference, 2013, 2014, 2015

Academic liaison, Chicago section of the AIChE, 2009-

Organic Reactions Catalysis Society Editorial Board, 2012

Session Chair or Co-Chair at AIChE: Fundamentals of Oxide Catalysis, Fundamentals of Supported Catalysis, Reaction Engineering in Pharmaceuticals and Fine Chemicals, Catalyst Preparation; ACS, NAM, 2007-current

Symposium Organizer: 2013 Spring National ACS, Frustrated Acid-Base Pairs, Division of Catalysis; 2011 Midwest Regional AIChE, Student Poster Session; 2011 Spring National AIChE, Student Poster Session; 2010 National ACS, Photocatalysis; 2010 Midwest Regional AIChE, 2009 Chicago Regional AIChE.

Reviewer for NSF panels, ACS PRF, DOE, UK Catalysis Science Program, North American Catalysis Meeting, International Catalysis Congress, *Science*, *Nature Chemical Biology*, *Catal. Lett.*, *Chem. Eng. J.*, *Fuel*, *J. Am. Chem. Soc.*, *Appl. Catal., Org. Proc. Res. Dev.*, *J. Catal.*, *Energy and Fuels*, *Ind. Eng. Chem. Res.*, *J. Phys. Chem.*, *Organometallics*, *Int. J. Hydrogen Energy*, *Langmuir*, *ACS Nano*, *ACS Catal.*, *Green Chem.*, *ChemSusChem*, and others.

RESEARCH ADVISING * indicates exclusive financial support by Notestein

PhD and THESIS MS STUDENTS ADVISED:

1. Christian Contreras 2016-2021 (PhD, Chemistry, with Peter Stair)
2. *Emily Cheng 2016-2021 (PhD)
3. *Charmaine Bennett 2016-2021 (PhD, co-advisor Linda Broadbelt)
4. *Mihir Bhagat 2016-2021 (PhD, co-advisor Linda Broadbelt)
5. Andrew Rosen 2016-2021 (PhD, with Randy Snurr)
6. Abhinav Bhandari 2015-2017 (MS)
7. Alex Grant 2015-2017 (MS, 50% supported by Dick Co, now at Lilac Solutions)
8. Sol Ahn 2014-2019 (PhD, 50% supported by Omar Farha)
9. Abha Ghosavi 2014-2019 (PhD, 50% supported by Chad Mirkin)
10. *Scott Nauert 2013-2018 (PhD)
11. *M. Alexander Ardagh, 2013-2018 (PhD)
12. *Louisa Savereide, 2013-2018 (PhD)
13. *Bo Zhenyu, 2012-2017 (PhD, MSE, now at Micron Semiconductors)
14. *Nicholas Thornburg, 2012-2017 (PhD, now at NREL)
15. *Rachel Watson, 2012-2017 (PhD, co-advisor Harold Kung, now at BASF)
16. *Lauren McCullough, 2012-2017 (PhD, co-advisor Harold Kung, not at Dow)
17. *Christian Contreras, 2011-2013 (MS, now PhD in Chemistry, Northwestern)
18. *Sara Yacob, 2011-2016 (PhD, now at Exxon-Mobil)
19. *Todd Eaton, 2010-2015 (PhD, co-advisor Kimberley Gray, now at NREL)
20. Kevin Schwartzenberg, 2010-2015 (PhD, EnvE, 50% supported by Kimberley Gray, now at Tradewater, LLC)
21. Mark Bachrach, 2010-2014 (PhD Chem, 50% supported by Tobin Marks, now at Northwestern Research Safety)

22. *Anthony Thompson, 2009-2014 (PhD, now at Savannah River)
23. *Dario Prieto-Centurion, 2008-2013 (PhD, now Assist. Prof at Montana Tech)
24. *Pria Young, 2008-2013 (PhD, now at BP)
25. *Andrew Korinda, 2007-2012 (PhD, now at Hemlock Semiconductor)

POSTDOCTORAL SCHOLARS SPONSORED:

1. *Youlong Zhu, 2017-current (co-advisor Prof. Nguyen)
2. Chao Liu, 2016-current (with Prof. Weitz and Prof. Gray)
3. *Corinna Raimondo, 2015-2016 (now at Northwestern Office of Research Integrity)
4. *Sherzod Madrahimov (co-advisor Prof. Nguyen), 2014-2015 (now Assist. Prof. at Texas A&M at Qatar)
5. *David Childers, 2014-2017 (now at Cardinal Intellectual Property)
6. *Chieh-Chao Yang (co-advisor Prof. Weitz), 2012-2016 (now at DuPont)
7. *Sergio Garibay (co-advisor Prof. Nguyen), 2012-2017
8. *Patricia Ignacio-deLeon, 2012-2014 (now at Argonne)
9. *Sunyoung Park, 2012-2013 (now at KIST)
10. *Christian Canlas, 2010-2012 (now at W.R. Grace)
11. *Natalia Morlanés-Sánchez, 2009-2011 (now at KAUST)
12. *Nicholas Schoenfeldt, 2008-2011 (now at UOP)

UNDERGRADUATE AND HIGH SCHOOL STUDENT RESEARCH MENTORING % indicates published or submitted manuscript

UNDERGRADUATE: Mr. Yang Xia, 2017; Mr. Sam Dull, 2016-2017 (Stanford PhD); Mr. Eric Taw%, 2016-2017; Mr. Reed Kolbe, 2015; Mr. Chi Hun Choi, 2013-2015; Mr. Andrew Boston%, 2011, 2013-2014 (Colorado PhD); Ms. Yuanxi Zhao, 2013, Mr. Mitchell Kirshner, 2013; Mr. Michael P. Campos (Chem, Columbia PhD), % Mr. PJ Santos%, 2012; Ms. Rachel Scholes% (Berkeley, PhD, NSF), 2011-2013; Mr. Nicolas Grosso% (Berkeley PhD) 2011-2013; Mr. Joshua Kaplan, 2011; Ms. Sydney Cope%, 2010; Ms. Lisa Felberg, 2009-2010 (Berkeley PhD); Mr. Theodore D. Swift% (Delaware PhD), 2009; Mr. John Siegfried%, 2008-2009; Mr. David Gabriel, 2008-2009

Research Experience for Undergraduates (administered through the Materials Research Science and Engineering Center): Ms. Megan Raysor (Fayetteville State University), 2015; Ms. Ludmilla Sorokina (Harold Washington Community College, Chicago), 2014; Ms. Hannah Hinton (Cerritos Community College (CA)), 2013; Ms. Amen Eloramem (Illinois Institute of Technology), 2013; Mr. Andrew Karas (Polytechnic University of NY), 2012; Mr. Stephen Brand (NU, now CalTech PhD), 2011; Mr. Alex Baron (University of Miami at Ohio), 2009.

Summer Research Opportunity Program (administered by the Graduate School with an emphasis on underrepresented groups): Ms. Yeilyn Colon (University of Notre Dame), 2014; Mr. Justin Swaney (University of Wisconsin, Madison), 2013.

HIGH SCHOOL: Mr. Ryan Franks (Illinois Math and Science Academy, IMSA) 2014-2015; Ms. Nishida Kumar (IMSA) 2011-2012, Ms. Ashley Radee (IMSA) 2011-2012, Ms. Elizabeth Ott (IMSA) 2010-11; Mr. Samir Mishra (IMSA) 2009-10; Ms. Jessie Salter (Evanston Township High School) 2010.

CURRENT AND COMPLETED SUPPORT.

NSF Engineering Research Center: CISTAR, Center for Innovative and Strategic Transformation of Alkane Resources (F. Ribeiro, director), Purdue University subcontract, 10/01/2017-09/31/2022.

Entrenched metal nanoparticles for 3D-nanostructured oxides, International Institute of Nanotechnology, Northwestern University, 01/01/2017-12/31/2017.

Reactor studies of alkane dehydrogenation over MOF-supported oxides and sulfides, Inorganometallic Catalyst Design Center (L. Gagliardi, PI), 08/01/2016 to 07/31/2018.

Understanding and controlling epoxide ring opening selectivity (lead PI), The Dow Chemical Company, 01/01/2017 to 12/31/2019.

Institute for Catalysis and Energy Processes (co-lead PI with P. Stair), DOE/BES/Catalysis, 09/01/2015 to 08/31/2018.

Lab-Directed Research and Development: Single Site Catalysts for Selective Alkane Oxidation (S. Nguyen, PI), Argonne National Laboratory subcontract, 01/01/2016 to 12/31/2017.

SusChEM: Using theory-driven design to tailor novel nanocomposite oxides for solar fuel production (K. Gray, PI), National Science Foundation, CBET, Catalysis and Biocatalysis, 9/1/2014 to 8/31/2017.

McCormick Research Catalyst Award: Towards Integrated Valorization of Urban Waste Streams: Coupled Processing of Wastewater and Lignin to Hydrogen Peroxide, Aromatic Platform Chemicals, and Clean Water (co-PI w/ G. Wells), McCormick, 09/01/2014 to 12/31/2016.

Booster: Coupling Thermal and Photocatalysis in Novel Metal Oxides for CO₂ to Fuels, Institute for Sustainability and Energy at Northwestern, 09/01/2013 to 08/31/2014.

Novel Catalysts for Epoxidation of Divinylarenes and Allyl Aryl Ethers (lead PI), The Dow Chemical Company, 10/28/2011 to 10/27/2016.

Catalytic Routes to Methyl Methacrylate (MMA) Via Ethanol Carbonylation (lead PI), The Dow Chemical Company, 10/24/2011 to 10/23/2016.

Dispersed Oxide Catalysts for Selective Catalytic Reduction of NO (sole PI), Toyota Motor Engineering and Manufacturing, 09/01/2010 to 2/28/2016.

Templating Routes to Supported Oxide Catalysts by Design (sole PI), DOE/BES/Catalysis (DE-SC0006718), 09/01/2011 to 08/31/2015. Folded into ICEP in 2015.

EFRC: Institute for Atom-Efficient Chemical Transformations (Chris Marshall, PI), Argonne National Laboratory Subcontract/DOE/BES, 08/01/2009 to 07/31/2014.

DuPont Young Professor Grant (sole PI), 09/01/2011 to 08/31/2014.

Atom-precise adsorption sites from grafted, porous oligomers (sole PI), National Science Foundation, CBET, Separations (CBET 0933667), 09/01/2009 to 08/31/2013.

Doctoral New Investigator: Surface organometallic chemistry for improved performance and understanding of hydrodenitrogenation catalysis (sole PI), American Chemical Society Petroleum Research Fund, 09/01/2009 to 08/31/2013.

3M non-tenured faculty grant (sole PI), 04/01/2010 to 03/31/2013.

Booster: Understanding and control of photocatalysts for CO₂ photoreduction to fuels (co-PI w/ K. Gray), Initiative for Sustainability and Energy at Northwestern, 09/01/2011 to 08/31/2012.

Seed: Controlling nanoparticle surface and bulk with graded organic-inorganic interfaces (sole PI), NSF MRSEC at Northwestern (DMR 0520513), 01/01/2010 to 02/29/2012.

Booster: Hybrid materials for binding and activating CO₂ in artificial photosynthesis (sole PI), Initiative for Sustainability and Energy at Northwestern, 06/01/2009 to 05/31/2010.

Dow Methane Challenge: Methane conversion by nanoengineered catalyst environments and soft oxidants (Tobin Marks, PI), The Dow Chemical Company, 02/01/2008 to 12/02/2011.

Camille and Henry Dreyfus New Faculty Award: Novel oxidation catalysts from surface-grafted organometallics to form cooperative organic-inorganic interfaces for energy needs and sustainability (sole PI), Camille and Henry Dreyfus Foundation, 09/01/07 to 08/31/2012.