

KEVIN H. SHAUGHNESSY
Professor and Chair

Contact Information:

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Education:

B. S. with Honors and Highest Distinction: Chemistry, University of Nebraska-Lincoln,
1992

Ph.D.: Organic Chemistry, Stanford University, 1998. Dissertation: "Synthetic and
Mechanistic Studies of Metal-Catalyzed Diene Cyclizations"
Advisor: Prof. Robert M. Waymouth

Professional Experience:

2014-present Professor of Chemistry, The University of Alabama
2009-present Chair, Department of Chemistry, The University of Alabama
2007-2009 Director of Undergraduate Studies in Chemistry, The University of
Alabama
2005-2014 Associate Professor of Chemistry, The University of Alabama
1999-2005 Assistant Professor of Chemistry, The University of Alabama
1999-2014 Faculty Member, Center for Green Manufacturing, The University of
Alabama
1997-1999 Postdoctoral Associate, Prof. John F. Hartwig, Yale University

Teaching Experience:

1999-present Faculty member, The University of Alabama
Undergraduate Classes: Organic Chemistry I and II, Organic Chemistry
Laboratory I and II, Spectroscopic Techniques in Organic Chemistry,
Intermediate Organic Chemistry, Organometallic Chemistry
Graduate Classes: Organometallic Chemistry, Spectroscopic Techniques
in Organic Chemistry, Physical Organic Chemistry
1992-1997 Graduate Teaching Assistant in Organic Chemistry, Stanford University
1990-1992 Undergraduate Teaching Assistant for General and Organic Chemistry lab
classes, University of Nebraska.

University Service:

2015-present Chair, Graduate Dean and Associate Provost Search Committee,
University of Alabama
2014-present NTRC Policy Committee, College of Arts & Sciences
2014-present Pre-Health Advising Professions Advisory Council, College of Arts &
Sciences
2007-present Gamma Sigma Epsilon Faculty Advisor, Chemistry Department
2005-present REU Program Committee, Chemistry Department

2002-present	Chair, Chemistry Department Web Site Committee
2014-2015	Department of Mathematics Chair Search Committee, College of Arts & Sciences
2013-2015	SACS Reaffirmation Committee on Graduate Education, University of Alabama
2013	Outstanding Commitment to Teaching Award Selection Committee, University of Alabama Alumni Association
2013	Director of Health Professions Advising Program Search Committee, College of Arts and Sciences
2011-2013	University Technology and Learning Committee, University of Alabama
2009-2012	Undergraduate Program and Services Committee, University of Alabama
2007-2010	Distinguished Teaching Fellow, College of Arts & Sciences
2008-2009	Department of Biological Sciences Chair Search Committee
2007-2009	Chair, Undergraduate Curriculum Committee
2007-2009	Student Affiliates of the American Chemical Society, Faculty Advisor
2007-2009	Chemistry Department, Arduengo Lecture Series Committee
2006-2009	Chair, Chemistry Department Seminar Committee
2007-2008	UA Scholarship of Teaching Team
2007-2008	Chemistry Department, Alternative Energy Faculty Search Committee
2006-2007	University Lab Safety and Environmental Compliance Committee
2006-2007	New College, Science Faculty Search Committee
2005-2007	College of Arts and Sciences, Tenure and Promotion Committee
2002-2007	Chemistry Department, Undergraduate Curriculum Committee
1999-2007	Chemistry Department, Graduate Recruiting Committee
2004-2005	College of Arts and Sciences, Ramsay Chair Search Committee
2003-2004	College of Arts and Sciences, Technology Committee
2000-2003	Chemistry Department, Organic Faculty Search Committee
2000-2002	Chemistry Department, Web Site Subcommittee

Other Professional Activities:

- Associate Editor, *Current Organic Chemistry* (2015-present)
- Award Committee Chair, Alabama Section of the American Chemical Society (2007-present)
- Alabama Science in Motion Steering Committee member (2007-present)
- Editorial Board Member, 23rd Organic Reactions Catalysis Society Conference (2010)
- Reviewer for *Science*, *Journal of the American Chemical Society*, *Angewandte Chemie*, *Journal of Organic Chemistry*, *Organic Letters*, *Organometallics*, and many other journals.
- Panel review for the National Science Foundation: STEP, Technology for a Sustainable Environment, and Course, Curriculum, and Laboratory Improvement programs.
- Proposal review for private and government agencies, including the National Science Foundation, NSERC (Canada), Petroleum Research Fund, Office of Army Research, and Research Corporation.
- Content provider for companion websites to *Organic Chemistry* by Paula Y. Bruice and *Organic Chemistry* by L. G. Wade, Jr.

Professional Societies and Honors:

- Inducted to National Academy of Inventors, The University of Alabama Chapter (2016)
- College of Arts & Sciences, Jim Salem Chair Award (2012-13)
- College of Arts & Sciences Distinguished Teaching Fellow (2007-2010)
- UA Alumni Association, Outstanding Commitment to Teaching Award (2007)
- Research Innovation Award, Research Corporation (2001)
- Phi Beta Kappa, University of Nebraska-Lincoln Chapter (1992)
- Phi Lambda Upsilon, Rho Chapter, University of Nebraska-Lincoln (Chemistry Honorary Society, 1992)
- Regents Scholar, University of Nebraska (1988-1992)
- National Merit Scholar (1988)
- Member American Chemical Society (Divisions of Organic and Inorganic Chemistry)
- Member American Associate for the Advancement of Science
- Member Council on Undergraduate Research
- Member Alabama Academy of Science

Research Interests:

Organometallic reaction mechanisms; metal-catalyzed reactions, stereoselective catalysts, ligand design, alternative reaction media, environmentally benign catalyst systems, alternative energy generation and storage systems

Publications:Peer-Reviewed Publications

h-index: 25

Over 3200 citations

Publications at The University of Alabama

54. Lauer, M. G.; Headford, B. R.; Gobble, O. M.; Weyhaupt, M. B.; Gerlach, D. L.; Zeller, M.; Shaughnessy, K. H. "A Trialkylphosphine Derived Palladacycle as a Catalyst in the Selective Cross-Dimerization of Terminal Arylacetylenes with Terminal Propargyl Alcohols and Amides" *ACS Catal.*, **2016**, *6*, 5834-5842. DOI: 10.1021/acscatal.6b01541
53. Hu, C.; Shaughnessy, K. H.; Hartman, R. L. "Influence of water on the deprotonation and the ionic mechanisms of a Heck alkynylation and its resultant E-factors," *React. Chem & Eng.* **2016**, *1*, 65-72. DOI: 10.1039/c5re00034c
52. Sabio, J. C.; Domier, R. C.; Moore, J. N.; Shaughnessy, K. H.; Hartman, R. L. "Palladium theory of aqueous-phase Heck alkynylations for intensification of discovery and manufacture," *Chem. Eng. Technol.*, **2015**, *38*, 1717-1725. DOI: 10.1002/ceat.201500117
51. Shaughnessy, K. H., "Palladium-Catalyzed Modification of Unprotected Nucleosides, Nucleotides, and Oligonucleotides," *Molecules*, **2015**, *20*, 9419-9454. DOI: 10.3390/molecules20059419
- Invited review
50. Semmes, J. G.; Bevans, S. L.; Mullins, C. H.; Shaughnessy, K. H. "Arylation of diethyl malonate and ethyl cyanoacetate catalyzed by palladium/di-*tert*-butylneopentylphosphine," *Tetrahedron Lett.*, **2015**, *56*, 3447-3450. DOI: 10.1016/j.tetlet.2015.01.072

49. Moore, J. N.; Laskay, N. M.; Duque, K. S.; Kelley, S. P.; Rogers, R. D.; Shaughnessy, K. H. "Synthesis of 4-Sulfonatobenzylphosphines and Their Application in Aqueous-Phase Palladium-Catalyzed Cross-Coupling," *J. Organomet. Chem.* **2015**, 777, 16-24. DOI: 10.1016/j.jorganchem.2014.11.011
48. Lauer, M. G.; Thompson, M. K.; Shaughnessy, K. H. "Controlling Olefin Isomerization in the Heck Reaction with Neopentyl Phosphine Ligands," *J. Org. Chem.*, **2014**, 79, 10837-10848. DOI: 10.1021/jo501840u
Highlighted in: "Highlights from the Literature," *Org. Proc. Res. Dev.*, **2015**, 19, 250-258. DOI: 10.1021/op500387k
47. Raders, S. M.; Jones, J. M.; Semmes, J. G.; Kelley, S. P.; Rogers, R. D.; Shaughnessy, K. H. "Di-*tert*-butylneopentylphosphine (DTBNpP): An Efficient Ligand in the Palladium-Catalyzed α -Arylation of Ketones," *Eur. J. Org. Chem.* **2014**, 7395-7404. DOI: 10.1002/ejoc.201402474
46. Bhattarai, B. T. Adhikari, S.; Kimball, E. A.; Moore, J. N.; Shaughnessy, K. H.; Snowden, T. S.; Fronczek, F. R.; Dolliver, D. D. "Palladium-catalyzed *ortho*-halogenation of diaryl oxime ethers," *Tetrahedron Lett.* **2014**, 55, 4801-4806. DOI: 10.1016/j.tetlet.2014.06.080
45. Domier, R. C.; Moore, J. N.; Shaughnessy, K. H.; Hartman, R. L. "Kinetic Analysis of Aqueous-Phase Pd-Catalyzed, Cu-Free Direct Arylation of Terminal Alkynes Using a Hydrophilic Ligand," *Org. Proc. Res. Dev.*, **2013**, 17, 1262-1271. DOI: 10.1021/op4001274
44. Raders, S. M.; Moore, J. N.; Parks, J. K.; Miller, A. D.; Leibing, T. M.; Kelley, S. P.; Rogers, R. D.; Shaughnessy, K. H. "Trineopentylphosphine: A Conformationally Flexible Ligand for the Coupling of Sterically Demanding Substrates in the Buchwald-Hartwig Amination and Suzuki-Miyaura Reaction," *J. Org. Chem.*, **2013**, 78, 4649-4664. DOI: 10.1021/jo400435z. **Featured Article**
Highlighted in: "Highlights from the Literature," *Org. Proc. Res. Dev.*, **2013**, 17, 952-962. DOI: 10.1021/op400159x
43. Dolliver, D. D.; Bhattarai, B. T.; Pandey, A.; Lanier, M. L.; Bordelon, A. S.; Adhikari, S.; Dinsler, J. A.; Flowers, P. F.; Wills, V. S.; Schneider, C. L.; Shaughnessy, K. H.; Moore, J. N.; Raders, S. M.; Snowden, T. S.; McKim, A. S.; Fronczek, F. R.
"Stereospecific Suzuki, Sonogashira, and Negishi coupling reactions of N-alkoxyimidoyl iodides and bromides," *J. Org. Chem.*, **2013**, 78, 3676-3687. DOI: 10.1021/jo400179u
42. Saylor, F. M.; Grano, A. J.; Scogin, W.; Sanders, P.; Småt, J.-H.; Shaughnessy, K. H.; Bakker, M. G. "Formation and Applications of Hierarchically Porous Carbon, Metals and Metal Oxides Formed by Nanocasting", *MRS Proc.*, **2012**, 1389. DOI: 10.1557/opl.2012.493
41. Cho, J. H.; Shaughnessy, K. H. "Aqueous-phase Sonogashira alkynylation to synthesize 5-substituted pyrimidine and 8-substituted purine nucleosides," *Curr. Prot. Nucleic Acid Chem.* **2012**, 49, 1.27.1-10. DOI: 10.1002/0471142700.nc0127s49
40. Cho, J. H.; Shaughnessy, K. H. "Aqueous-Phase Heck Coupling of 5-Iodouridine and Alkenes under Phosphine-Free Conditions." *Synlett* **2011**, 2963-2966. DOI: 10.1055/s-0031-1289886
39. Vongsutilers, V.; Phillips, D. J.; Train, B. C.; McKelvey, G. R.; Thomsen, N. M.; Shaughnessy, K. H.; Lewis, J. P.; Gannett, P. M. "The Conformational Effect of para-

- Substituted C8-Arylguanine Adducts on the B/Z/-DNA Equilibrium," *Biophys. Chem.*, **2011**, *154*, 41-48. DOI: 10.1016/j.bpc.2010.12.006
38. Hill, L. L.; Crowell, J. L.; Tutwiler, S. L.; Massie, N. L.; Hines, C. C.; Griffin, S. T.; Rogers, R. D.; Shaughnessy, K. H.; Grasa, G. A.; Johansson Seechurn, C. C. C.; Li, H.; Colacot, T. J.; Chou, J.; Woltermann, C. J. "Synthesis and X-ray Structure Determination of Highly Active Pd(II), Pd(I), and Pd(0) Complexes of Di(*tert*-butyl)neopentylphosphine (DTBNpP) in the Arylation of Amines and Ketones," *J. Org. Chem.* **2010**, *75*, 6477–6488. DOI: 10.1021/jo101187q
37. Cho, J. H.; Prickett, C. D.; Shaughnessy, K. H. "Efficient Sonogashira Coupling of Unprotected Halonucleosides in Aqueous Solvents Using Water-Soluble Palladium Catalysts," *Eur. J. Org. Chem.* **2010**, 3678-3683. DOI: 10.1002/ejoc.201000313
36. Craciun, R.; Vincent, A. J.; Shaughnessy, K. H.; Dixon, D. A. "Prediction of Reliable Metal–PH₃ Bond Energies for Ni, Pd, and Pt in the 0 and +2 Oxidation States" *Inorg. Chem.*, **2010**, *49*, 5546-5553. DOI: 10.1021/ic1004853
35. Vongsutilers, V.; Daft, J. R.; Shaughnessy, K. H.; Gannett, P. M. "A General Synthesis of C8-Arylpurine Phosphoramidites," *Molecules*, **2009**, *14*, 3339-3352. DOI: 10.3390/molecules14093339
34. Shaughnessy, K. H. "Hydrophilic Ligands and Their Application in Aqueous-Phase Metal-Catalyzed Reactions," *Chem. Rev.* **2009**, *109*, 643-710. DOI: 10.1021/cr800403r. Invited review for Special Thematic Issue on Facilitated Chemical Synthesis. Highlighted in: "Highlights from the Literature," *Org. Proc. Res. Dev.*, **2009**, *13*, 364-370. DOI: 10.1021/op9001005
33. Brown, W. S.; Boykin, D. D.; Sonnier, M. Q., Jr.; Clark, W. D.; Brown, F. V.; Shaughnessy, K. H. "Sterically-Demanding, Zwitterionic Trialkylphosphonium Sulfonates as Air-Stable Ligand Precursors for Efficient Palladium-Catalyzed Cross-Couplings of Aryl Bromides and Chlorides," *Synthesis*, **2008**, 1965-1970. DOI: 10.1055/s-2008-1067095. Invited manuscript.
32. Hill, L. L.; Smith, J. M.; Brown, W. S.; Moore, L. R.; Guevara, P. J.; Pair, E. S.; Porter, J. E.; Chou, J.; Woltermann, C. J.; Craciun, R.; Dixon, D. A.; Shaughnessy, K. H. "Neopentylphosphines as effective ligands in palladium-catalyzed cross-couplings of aryl bromides and chlorides" *Tetrahedron*, **2008**, *64*, 6920-6934. DOI: 10.1016/j.tet.2008.02.037. Invited manuscript.
31. Moore, L. R.; Western, E. C.; Craciun, R.; Spruell, J. M.; Dixon, D. A.; O'Halloran, K. P.; Shaughnessy, K. H. "Sterically Demanding, Sulfonated, Triarylphosphines: Application to Palladium-Catalyzed Cross-Coupling, Steric and Electronic Properties, and Coordination Chemistry," *Organometallics*, **2008**, *27*, 576-593. DOI: 10.1021/om7008606
30. Cho, J. H.; Brown, F. V.; Shaughnessy, K. H. "A Selective and Tin-Free Pd-Catalyzed Phenylselenylation of Aryl Bromides" *Main Group Chem.* **2007**, *6*, 201-214. DOI: 10.1080/10241220801967367. Invited symposium paper.
29. Moore, L. R.; Cooks, S. M.; Anderson, M. S.; Schanz, H.-J.; Griffin, S. T.; Rogers, R. D.; Kirk, M. C.; Shaughnessy, K. H. "Synthesis and Characterization of Water-Soluble Silver and Palladium Imidazol-2-ylidene Complexes with Non-Coordinated Anionic Substituents," *Organometallics*, **2006**, *25*, 5151-5158. DOI: 10.1021/om050442b
28. Huang, R. and Shaughnessy, K. H. "Water-Soluble Palladacycles as Precursors to Highly Recyclable Catalysts for the Suzuki Coupling of Aryl Bromides in Aqueous Solvents,"

- Organometallics*, **2006**, *25*, 4105-4112. DOI: 10.1021/om050940y (#2 top downloaded *Organometallics* article, 3rd quarter 2006)
27. Hill, L. L.; Moore, L. R.; Huang, R.; Craciun, R.; Vincent, A. J.; Dixon, D. A.; Chou, J.; Woltermann, C. J.; Shaughnessy, K. H. "Bulky Alkylphosphines with Neopentyl Substituents as Ligands in the Amination of Aryl Bromides and Chlorides," *J. Org. Chem.* **2006**, *71*, 5117-5125. DOI: 10.1021/jo060303x
 26. Shaughnessy, K. H. "Beyond TPPTS: New Approaches to the Development of Efficient Palladium-Catalyzed Aqueous-Phase Cross-Coupling Reactions," *Eur. J. Org. Chem.* **2006**, 1827-1835. DOI: 10.1002/ejoc.200500972 Invited review. Cover graphic. Among 10 most cited *EJOC* articles from 2006.
 25. Huang, R.; Shaughnessy, K. H. "*t*-Bu-Amphos-RhCl₃·3H₂O: A Highly Recyclable Catalyst System for the Cross-Coupling of Aldehydes and Aryl- and Vinylboronic Acids in Aqueous Solvents," *Chem. Commun.* **2005**, 4484-4486. DOI: 10.1039/b509406b
 24. Western, E. C.; Shaughnessy, K. H. "Inhibitory Effects of the Guanine Moiety on Suzuki Couplings of Unprotected Nucleosides in Aqueous Media," *J. Org. Chem.* **2005**, *70*, 3678-3688. DOI: 10.1016/jo0508321
 23. Klingshirn, M. A.; Rogers, R. D.; Shaughnessy, K. H. "Palladium-Catalyzed Hydroesterification of Styrene Derivatives in the Presence of Ionic Liquids," *J. Organomet. Chem.* **2005**, *690*, 3620-3626. DOI: 10.1016/j.jorganchem.2005.05.031 Special Issue on Ionic Liquids #25 most downloaded article, 3rd quarter 2005.
 22. Sliger, M. D.; P'Pool, S. J.; Traylor, R. K.; McNeill, J., III; Young, S. H.; Hoffman, N. W.; Klingshirn, M. A.; Rogers, R. D.; Shaughnessy, K. H. "Promoting Effect of Ionic Liquids on Ligand Substitution Reactions." *J. Organomet. Chem.*, **2005**, *690*, 3540-3545. DOI: 10.1016/j.jorganchem.2005.02.018 Special issue on Ionic Liquids
 21. P'Pool, S. J.; Klingshirn, M. A.; Rogers, R. D.; Shaughnessy, K. H. "Kinetic Study of the Oxidative Addition of Methyl Iodide to Vaska's Complex in Ionic Liquids," *J. Organomet. Chem.* **2005**, *690*, 3522-3528. DOI: 10.1016/j.jorganchem.2005.02.024 Special issue on Ionic Liquids
 20. Shaughnessy, K. H.; DeVasher, R. B. "Palladium-Catalyzed Cross-Coupling in Aqueous Media: Recent Progress and Current Applications." *Curr. Org. Chem.* **2005**, *9*, 585-604. Invited review.
 19. Sliger, M. D.; Shaughnessy, K. H.; Broker, G. A.; Griffin, S. T.; Rogers, R. D. "Di-*t*-butyl(ferrocenylmethyl)phosphine: air-stability, structural characterization, coordination chemistry, and application to palladium-catalyzed cross-coupling reactions." *J. Organomet. Chem.*, **2005**, *690*, 1478-1486. DOI: 10.1016/j.jorganchem.2004.12.022. #7 most downloaded article, 1st quarter 2005.
 18. DeVasher, R. B.; Spruell, J. M.; Dixon, D. A.; Broker, G. A.; Griffin, S. T.; Rogers, R. D.; Shaughnessy, K. H. "Experimental and Computational Study of Steric and Electronic Effects on the Coordination of Sterically Demanding, Water-Soluble Alkylphosphines to Palladium under Reducing Conditions: Correlation to Catalytic Activity." *Organometallics*, **2005**, *24*, 962-971. DOI: 10.1021/om049241w
 17. DeVasher, R. B.; Moore, L. R.; Shaughnessy, K. H. "Aqueous-Phase, Palladium-Catalyzed Cross-Couplings of Aryl Bromides Under Mild Conditions Using Water-Soluble, Sterically Demanding Alkylphosphines." *J. Org. Chem.* **2004**, *69*, 7919-7927. DOI: 10.1021/jo048910c

16. Moore, L. R. and Shaughnessy, K. H. "Efficient Aqueous-Phase Heck and Suzuki Couplings of Aryl Bromides using Tri(4,6-dimethyl-3-sulfonatophenyl)phosphine Trisodium Salt (TXPTS)." *Org. Lett.* **2004**, *6*, 225-228. DOI: 10.1021/ol0360288
15. Gannett, P. M.; Heavner, S.; Daft, J. R. Shaughnessy, K. H.; Epperson, J. D.; Greenbaum, N. L. "Synthesis, Properties and NMR Studies of a C8-Phenylguanidine Modified Oligonucleotide that Preferentially Adopts the Z-DNA Conformation." *Chem. Res. Tox.* **2003**, *16*, 1384-1395. DOI: 10.1021/tx034023d
14. Shaughnessy, K.H.; Klingshirn, M. A.; P'Pool, S. J.; Holbrey, J. D.; Rogers, R. D. "Polar, Non-Coordinating Ionic Liquids as Solvents for Coordination Polymerization of Olefins," in *Ionic Liquid as Green Solvents: Progress and Prospects*, Rogers, R. D.; Seddon, K. R. Eds., **2003**, pp 300-313, American Chemical Society Symposium Series 856, Washington, DC.
13. Western, E. C.; Daft, J. R.; Johnson, E. M., II; Gannett, P. M.; Shaughnessy, K. H. "Efficient One-Step Suzuki Arylation of Unprotected Halonucleosides using Water-Soluble Palladium Catalysts," *J. Org. Chem.*, **2003**, *68*, 6767-6774. DOI: 10.1021/jo034289p
12. Shaughnessy, K. H.; Huang, R. "Acid-Mediated, Chromium-Catalyzed Allylation of Aldehydes," *Synth. Comm.* **2002**, *32*, 1923-1928. DOI: 10.1081/SCC-120004841
11. Klingshirn, M. A.; Broker, G. A.; Holbrey, J. D.; Shaughnessy, K. H.; Rogers, R. D. "Polar, Non-Coordinating Ionic Liquids as Solvents for the Alternating Copolymerization of Styrene and CO Catalyzed by Cationic Palladium Catalysts," *Chem. Commun*, **2002**, 1394-1395. DOI: 10.1039/b203367d
10. Shaughnessy, K. H.; Booth, R. S. "Sterically Demanding, Water-Soluble Alkylphosphines as Ligands for High Activity Suzuki Couplings in Aqueous Solvents," *Org. Lett*, **2001**, *3*, 2757-2759. DOI: 10.1021/ol0163629

Post-Doctoral Publications and Patents

9. Stambuli, J.P; Stauffer, S. R.; Shaughnessy, K. H.; Hartwig, J. F. "Screening of Homogeneous Catalysts by Fluorescence Resonance Energy Transfer. Identification of Catalysts for Room Temperature Heck Reactions," *J. Am. Chem. Soc.*, **2001**, *123*, 2677-2678. DOI: 10.1021/ja0058435
8. Hartwig, J. F.; Kawatsura, M.; Hauck, S. I.; Shaughnessy, K. H.; Alcazar-Roman, L. M. "Transition metal-catalyzed process for preparing N-aryl compounds," (Yale University), US Patent 6,100,398 (2000)
7. Hartwig, J. F.; Kawatsura, M.; Hauck, S. I.; Shaughnessy, K. H.; Alcazar-Roman, L. M. "Room temperature palladium-catalyzed amination of aryl bromides and chlorides and extended scope of aromatic C-N bond formation with a commercial ligand." *J. Org. Chem.*, **1999**, *64*, 5575-5580. DOI: 10.1021/jo990408i
6. Shaughnessy, K. H.; Kim, P.; Hartwig, J. F. "A fluorescence assay for high-throughput screening of coupling reactions. Application to Heck coupling processes." *J. Am. Chem. Soc.* **1999**, *121*, 2123-2131. DOI: 10.1021/ja983419m
5. Shaughnessy, K. H.; Hamann, B. C.; Hartwig, J. F. "Palladium catalyzed inter-and intramolecular α -arylation of amides. Application of intramolecular amide arylation to the synthesis of oxindoles." *J. Org. Chem.*, **1998**, *63*, 6546-6553. DOI: 10.1021/jo980611y

Ph.D. Publications

4. Shaughnessy, K. H.; Waymouth, R. M. "Enantio- and diastereoselective catalytic carboalumination of 1-alkenes and α,ω -dienes with cationic zirconocenes: scope and mechanism." *Organometallics*, **1998**, *17*, 5728-5745. DOI: 10.1021/om9807811
3. Shaughnessy, K. H.; Waymouth, R. M. "Highly regioselective cyclocarboxylation of nonconjugated dienes catalyzed by palladium." *Organometallics*, **1997**, *16*, 1001-1007. DOI: 10.1021/om9607513
2. Shaughnessy, K. H.; Waymouth, R. M. "Carbometalation of α,ω -dienes and olefins catalyzed by zirconocenes." *J. Am. Chem. Soc.* **1995**, *117*, 5873-5874. DOI: 10.1021/ja00126a036

Undergraduate Publications

1. Zhu, L-S.; Shaughnessy, K. H.; Rieke, R. D. "A facile method for the preparation of functionalized 2-halo-1-olefins." *Synth. Comm.*, **1993**, *23*, 525-529. DOI: 10.1080/00397919308009808

Patents at UA

1. "Catalysis by Metal Nanoparticles Dispersed Within a Hierarchically Porous Carbon" Material, Bakker, M.G.; Saylor, F.M.; Shaughnessy, K.H., US Patent 9,233,366, January 12, 2016.

Books and Book Chapters at UA

4. Shaughnessy, K. H.; Ciganek, B.; DeVasher, R. B. "Copper-Catalyzed Amination of Aryl and Alkenyl Electrophiles," *Organic Reactions*, vol. 85, Denmark, S. Ed., John Wiley and Sons, **2014**, 668 pp. DOI: 10.1002/0471264180.OR085.01
3. Shaughnessy, K. H. "Greener Approaches Cross-Coupling," in *New Trends in Cross-Coupling: Theory and Applications*. Colacot, T. J. ed., RSC Publishing, **2015**, pp 645-696. DOI: 10.1039/9781782620259-00645
2. Shaughnessy, K. H. "Cross-Coupling Reactions in Aqueous Media," in *Palladium-Catalyzed Cross-Coupling Reactions - Practical Aspects and Future Developments*, Molnár, Á. Ed., Wiley-VCH, **2013**, pp 235-286. ISBN: 978-3-527-33254-0
1. Shaughnessy, K. H. "Metal-Catalyzed Cross-Couplings of Aryl Halides to Form C-C Bonds in Aqueous Media," in *Metal-Catalyzed Reactions in Water*, Dixneuf, P.; Cadierno, V. Eds., Wiley-VCH, **2013**, pp 1-46. ISBN: 978-3-527-33188-8

Non-Peer-Reviewed Publications at UA

10. Shaughnessy, K. H. "Tri(neopentyl)phosphine" *Electronic Encyclopedia of Reagents for Organic Synthesis (e-EROS)*, **2014**. DOI: 10.1002/047084289X.rn01717
9. Shaughnessy, K. H. "1-Trimethylammonium-2-(di-*t*-butyl)phosphino)ethane chloride, *t*-Bu-Amphos" *Electronic Encyclopedia of Reagents for Organic Synthesis (e-EROS)*, **2013**. DOI: 10.1002/047084289X.RN01518
8. Shaughnessy, K. H. "Bis(1,1-dimethylethyl)2,2-dimethylpropylphosphine," *Electronic Encyclopedia of Reagents for Organic Synthesis (e-EROS)*, **2010**. DOI: 10.1002/047084289X.rn01224

7. Shaughnessy, K. H. "2-(Pentafluorophenyl)-1,3-bis(2,4,6-trimethylphenyl)-imidazolidine," *Electronic Encyclopedia of Reagents for Organic Synthesis (e-EROS)*, **2008**. DOI: 10.1002/047084289X.rn00907
6. Shaughnessy, K. H. "Tri-*tert*-butylphosphine tetrafluoroborate," *e-EROS*. **2008**. DOI: 10.1002/047084289X.rn00869
5. Shaughnessy, K. H. "Palladium, bis(tris-(1,1-dimethylethyl)phosphine)," *e-EROS*, **2008**. DOI: 10.1002/047084289X.rn00776
4. Shaughnessy, K. H. "On *Comprehensive Organic Reactions in Aqueous Media* by Chao-Jun Li and Tak-Hang Chan" *Angew. Chem. Int. Ed.* **2008**, *47*, 1988. DOI: 10.1002/anie.200785542. (Book Review)
3. Shaughnessy, K. H. "Tri-*tert*-butylphosphine," *e-EROS*. **2007**. DOI: 10.1002/9780470842898.rn00703
2. Shaughnessy, K. H.; P'Pool, S. J.; Klingshirn, M. A.; Rogers, R. D. "Coordination Polymerization of Alkenes in Ionic Liquids." *Polymer Prepr.* **2004**, *45*, 317-318.
1. Holbrey, J. D.; Shaughnessy, K. H.; Klinshirn, M. A.; Broker, G. A.; Rogers, R. D. "Transition Metal Catalyzed CO/Olefin Co-Polymerization in Room Temperature Ionic Liquids," in *Molten Salts XIII*, Delong, H. C.; Bradshaw, R. W.; Matsunaga, M.; Stafford, G. R.; Trulove, P. C. Eds. **2002**, *2002-19*, pp 213-223, The Electrochemical Society Proceedings Series, Pennington, NJ.

Presentations at Regional, National and International Meetings: (since joining UA faculty)

Invited Talks

18. "Ligand design in palladium-catalyzed cross-coupling reactions to control catalyst performance, selectivity, and recovery," Central Regional Meeting of the American Chemical Society, Pittsburgh, PA, October 29th-November 1st, 2014. Paper 210.
17. "Ligand design for metal-catalyzed cross-coupling reactions: the role of size, flexibility, and electron donation in determining catalyst performance," 246th National Meeting of the American Chemical Society, Indianapolis, IN, September 8th-12th, 2013. CATL 32.
16. "Understanding the Role of Conformationally Flexible Phosphine Ligands in Promoting Cross-Coupling Reactions of Challenging Substrates," Global Conference on Catalysis, Dalian, China, June 29-July 1, 2013.
15. "Effect of ligand conformational flexibility on palladium-catalyzed cross-coupling reactions," 18th International Symposium on Homogeneous Catalysis, Toulouse, France, July 9-14th, 2012. OC-11. Selected oral contribution.
14. "Design and Application of Recoverable Aqueous-Phase Catalysts for Cross-Coupling Reactions," Shaughnessy, K. H.; 241st National Meeting of the American Chemical Society, Anaheim, CA, March 27-31st, 2011. I&EC 115.
13. "Aqueous-Phase Palladium-Catalyzed Cross-Coupling: Seeking Highly Active, Easily Recovered, and Recyclable Catalyst Systems," Shaughnessy, K. H., Green Chemistry Symposium, 39th Central Regional Meeting of the American Chemical Society, Columbus, OH, June 12th, 2008, Paper #241.
12. "Effects of Ligand Steric and Electronic Properties on Metal-Catalyzed Cross-Coupling Reactions," Shaughnessy, K. H., Homogeneous Catalysis Symposium, 39th Central Regional Meeting of the American Chemical Society, Columbus, OH, June 11th, 2008, Paper #106.

11. "Aqueous-Phase Palladium-Catalyzed Cross-Coupling: Seeking Highly Active, Easily Recovered, and Recyclable Catalyst Systems," Shaughnessy, K. H., 2nd International Symposium on Green Processing in the Pharmaceutical and Fine Chemical Industries, New Haven, CT May 29th, 2008.
10. "Effects of Ligand Steric and Electronic Properties on Metal-Catalyzed Cross-Coupling Reactions," Shaughnessy, K. H., Organometallics in the Southeast Symposium, 59th Southeastern Regional Meeting of the American Chemical Society, Greenville, SC, October 26th, 2007, Paper #448.
9. "Development of a Palladium-Catalyzed Coupling of Aryl Halides and in situ-Generated Aryl Chalcogenides," Shaughnessy, K. H.; Cho, J.-H., S and Se in the Southeast Symposium, 59th Southeastern Regional Meeting of the American Chemical Society, Greenville, SC, October 25th, 2007, Paper #94.
8. "Organometallic Reaction Mechanisms in Non-Traditional Solvents: Fundamental Studies and Applications to Catalysis," Shaughnessy, K. H., Gordon Research Conference on Inorganic Reaction Mechanisms, Ventura, CA, February 21st, 2007.
7. "Steric and Electronic Properties of Sterically Hindered Hydrophilic Phosphines, Their Coordination Chemistry, and Catalytic Applications." Shaughnessy, K. H., Organometallic Reaction Mechanisms Symposium Honoring Jack Norton, Northwest Regional Meeting of the American Chemical Society, Reno, NV, June, 28th, 2006. Paper #81.
6. "Ionic Liquid Solvent Effects on Fundamental Organometallic Reactions." Shaughnessy, K. H., Ionic Liquids: Perspectives on the Present, Visions for the Future (Symposium #170), International Chemical Congress of Pacific Basin Societies, Honolulu Hawaii, December 18th, 2005, ENV-421
5. "Ionic Liquid Solvent Effects on the Rate and Mechanism of Fundamental Organometallic Reactions." Shaughnessy, K. H., Symposium on the Use of N-Heterocyclic Carbenes in Catalysis, 228th National Meeting of the ACS, Philadelphia, PA, August 25th, 2004. INOR-634.
4. "Coordination Polymerization of Alkenes in Ionic Liquid Solvents." Shaughnessy, K. H.; P'Pool, S. J.; Klingshirn, M. A.; Rogers, R. D., Ionic Liquids in Polymer Systems Symposium, 227th National Meeting of the ACS, Anaheim, CA, March 31st, 2004, POLY-600.
3. "Homogeneous Catalysis in Alternative Reaction Media: Applications and Mechanistic Studies." Shaughnessy, K. H., Organometallic and Materials Chemistry in the Southeast Symposium, 55th Southeast Regional Meeting of the ACS, Atlanta, GA, November 18th, 2003, Paper #460.
2. "Fundamental Studies and Applications of Alternative Reaction Media in Metal-Catalyzed Reactions," Shaughnessy, K. H., Organometallic Chemistry Symposium, 54th Southeast Regional Meeting of the ACS, Charleston, SC, November 15th, 2002, Paper 0588.
1. "Polar, Non-Coordinating Ionic Liquids as Solvents for Coordination Polymerization of Olefins," Shaughnessy, K.H.; Klingshirn, M. A.; P'Pool, S. J.; Holbrey, J. D.; Rogers, Robin D., Symposium on Ionic liquids as Green Solvents: Progress and Prospects, 224th National Meeting of the American Chemical Society (ACS), Boston, MA, August 21st, 2002, IEC-121.

Contributed Talks

31. "Catalytic Application and Mechanistic Studies of Neopentylphosphine Ligands in Pd-Catalyzed Coupling Reactions," Shaughnessy, K. H.; Gordon Research Conference on Organometallic Chemistry, Newport, RI, July 5-10, 2016.
30. "Control of reaction selectivity in palladium-catalyzed transformations through fine tuning of ligand structures." Shaughnessy, K. H., The International Chemical Congress of Pacific Basin Societies 2015, Honolulu, HI, December 15-20, 2016. INOR 658
29. "Control of reaction selectivity in palladium-catalyzed transformations through tuning of ligand structures." Shaughnessy, K. H., 250th National Meeting of the American Chemical Society, Boston, MA, August 16th-20th, 2015. ORGN-474
28. "Ligand-controlled product selectivity in palladium-catalyzed cross-coupling using neopentylphosphines," Shaughnessy, K. H., Organic Reactions and Processes Gordon Conference, Bryant University, July 13th-17th, 2014.
27. "Effect of ligand conformational flexibility on palladium-catalyzed cross-coupling reactions" Shaughnessy, K. H., 17th International Symposium on Organometallic Chemistry Directed Towards Organic Synthesis, Fort Collins, CO July 28th-August 1st, 2013.
26. "Hierarchically porous carbon monolith-supported palladium nanoparticles (ThruPore-STC-Pd): An air-stable and recyclable catalyst system," Shaughnessy, K. H.; Wiggins, W. C.; Speak, S. K.; Semmes, J. G.; Raders, S. M.; Sayler, F.; Yue, S.; Bakker, M. G. 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7th-11th, 2013. ORGN 111
25. "Effect of Ligand Conformational Flexibility on Palladium-Catalyzed Cross-Coupling Reactions" Shaughnessy, K. H. 243rd National Meeting of the American Chemical Society, San Diego, CA, March 25th-29th, 2012. ORGN 423.
24. "Conformationally Flexible Alkylphosphines: Structural Studies and Catalytic Applications," Shaughnessy, K. H. Gordon Research Conference on Organometallic Chemistry, Newport, RI, July 10-15, 2011.
23. "Conformationally Flexible Phosphine Ligands in Palladium-Catalyzed cross-Coupling Reactions," Shaughnessy, K. H.; 241st National Meeting of the American Chemical Society, Anaheim, CA, March 27-31st, 2011. ORGN 99.
22. "Phosphine Steric and Electronic Effects on Pd-Catalysis: Reconciling Computational and Experimental Results," Shaughnessy, K. H., Gordon Research Conference on Organometallic Chemistry, Newport, RI, July 13th, 2009.
21. "The Role of Ligand Steric and Electronic Properties in Coordination Chemistry and Metal-Catalyzed Cross-Coupling Reactions," Shaughnessy, K. H., Gordon Research Conference on Organometallic Chemistry, Newport, RI, July 10th, 2007.
20. "Ligand Steric and Electronic effects on Catalyst Activity in Cross-Coupling Reactions," Shaughnessy, K. H., National Meeting of the American Chemical Society, Chicago IL, March 25th, 2007, INOR-59
19. "Steric and Electronic Properties of Sterically Hindered Hydrophilic Phosphines, Their Coordination Chemistry, and Catalytic Applications." Shaughnessy, K. H., National Meeting of the American Chemical Society, Atlanta, GA, March 26th, 2006, INOR-90.
18. "Efficient and Recyclable Catalysts for Palladium- and Rhodium-Catalyzed Cross-Coupling Reactions in Aqueous Solvents." Shaughnessy, K. H., Organic Reactions in

- Neoteric Media (Symposium #38), International Chemical Congress of Pacific Basin Societies, Honolulu Hawaii, December 18th, 2005, ORG-1368.
17. "Hydrophilic Catalysts for Cross-Coupling Reactions: Catalyst Development and Mechanistic Studies," Shaughnessy, K. H., Organometallic Gordon Conference (Poster), Newport, RI, July 13th-14th, 2005.
 16. "New Ligands for Aqueous-Phase, Palladium-Catalyzed Cross-Coupling: Catalyst Activity and Application to Nucleoside Modification." Shaughnessy, K. H.; DeVasher, R. B.; Moore, L. R.; Western, E. C.; Cho, J.-H. 228th National Meeting of the ACS, Philadelphia, PA, August 25th, 2004. ORGN-67
 15. "Sterically Demanding, Water-Soluble Alkylphosphines: Coordination Chemistry and Applications to Pd-Catalyzed Cross-Coupling," Shaughnessy, K. H.; Booth, R. S.; Moore, L. R., 14th International Symposium on Homogeneous Catalysis, Munich, Germany, July 5-9th, 2004, P-0154.
 14. "Ionic Liquid Solvent Effects on Fundamental Organometallic Reactions." Shaughnessy, K. H.; P'Pool, S. J.; Sliger, M. D., 14th International Symposium on Homogeneous Catalysis, Munich, Germany, July 5-9th, 2004, P-0153.
 13. "Ionic Liquid Solvent Effects on Fundamental Organometallic Reactions." Shaughnessy, K. H.; P'Pool, S. J.; Sliger, M. D., 227th National Meeting of the ACS, Anaheim, CA, April 1st, 2004, INOR-943.
 12. "Sterically Demanding, Water-Soluble Alkylphosphines: Coordination Chemistry and Applications to Pd-Catalyzed Cross-Coupling." Shaughnessy, K. H.; Booth, R. S., 227th National Meeting of the ACS, Anaheim, CA, March 31st, 2004, INOR-826.
 11. "Sterically Demanding, Water-Soluble Alkylphosphines: Fundamental Studies and Applications," Shaughnessy, K. H., Organometallic Gordon Conference (Poster), Newport, RI, July 23rd-24th, 2003.
 10. "Ionic Liquid Solvent Effect on Organometallic Reactions," Shaughnessy, K. H., Organometallic Gordon Conference (Poster), Newport, RI, July 23rd-24th, 2003.
 9. "New Ligands for Aqueous-Phase Palladium Catalyzed Cross-Couplings: Catalytic Activity and Applications to Biomolecule Modification." Shaughnessy, K. H.; Booth, R. S.; Western, E. C.; Sliger, M. D.; Moore, L. R. 225th ACS National Meeting, New Orleans, LA, March 23rd, 2003, ORGN-55.
 8. "Metal-Catalyzed Olefin Polymerization in Polar, Non-Coordinating Ionic Liquids," Shaughnessy, K. H.; P'Pool, S. J.; Klingshirn, M. A.; Holbrey, J. D.; Rogers, R. D. 224th ACS National Meeting, Boston, MA, August 20th, 2002, INOR-524.
 7. "Modification of Unprotected Nucleosides using Water-Soluble Palladium Catalysts," Shaughnessy, K. H.; Western, E. C.; Gannett, P. M.; Daft, J. R.; Johnson II, E. M. 224th ACS National Meeting, Boston, MA, August 20th, 2002, ORGN-649.
 6. "Synthesis of Bulky, Water-Soluble Alkylphosphines: Properties and Application to Palladium-Catalyzed Coupling Reactions." Shaughnessy, K. H.; Booth, R. S., and Ricketts, J. I., 53rd Southeast ACS Regional Meeting, Savannah, GA, September 2001, Paper 288.
 5. "Bulky Water-Soluble Alkylphosphines for High-Activity Palladium-Catalyzed Coupling Reactions in Aqueous Solvents." Shaughnessy, K. H.; Booth, R. S.; and Ricketts, J. I., 53rd Southeast ACS Regional Meeting, Savannah, GA, September 2001, Paper 408.

4. "Bulky Water-Soluble Alkylphosphines for High-Activity Palladium-Catalyzed Coupling Reactions in Aqueous Solvents." Shaughnessy, K. H. and Booth, R. S., 222nd ACS National Meeting, Chicago, IL, August 2001, ORGN-604.
3. "Synthesis, Reactivity, and Application of Bulky, Water-Soluble Alkylphosphines." Shaughnessy, K. H. and Booth, R. S., 222nd ACS National Meeting, Chicago, IL, August 2001, INOR-477.
2. "Palladium Complexes of Water-Soluble Sterically Demanding Alkylphosphines: Structure and Aqueous-Phase Catalytic Activity." Shaughnessy, K. H. and Booth, R. S., Organometallic Gordon Research Conference, Newport, RI, July 2001.
1. "Synthesis and Application of Bulky, Water-Soluble Trialkylphosphines to Palladium-Catalyzed C-C Bond Forming Reactions." Shaughnessy, K. H., 52nd Southeast/56th Southwest Combined ACS Regional Meeting, New Orleans, LA, December 2000.

Contributed Talks Presented by Collaborators and Student Co-Authors:

86. "The E-Factor of the Thin Film and Its Characterization to Understand Why Water Influences a Heck Alkynylation," Hu, C.; Shaughnessy, K. H.; Hartman, R. L.* American Institute of Chemical Engineers National Meeting, San Francisco, CA, November 13-18, 2016.
85. "Mechanistic study of the effect of aryl halide and aryl amine steric properties on Pd(PNP₃)₂ catalyzed Buchwald-Hartwig amination," Hu, H., Shaughnessy, K. H. 68th Southeastern Regional Meeting of the American Chemical Society, Columbia, S. C., October 24-26th, 2016. Paper 1125
84. "Trialkylphosphines-derived palladacycle as a catalyst in the selective cross-dimerization of two terminal alkynes," Lauer, M. G.; Gobble, O.; Shaughnessy, K. H.* 250th National Meeting of the American Chemical Society, Boston, MA, August 16th-20th, 2015. AEI-72.
83. "Palladium Theory for Aqueous-Phase Catalyzed Cu-Free Sonogashira Couplings," Domier, R. C.; Alaniz, S.; Moore, J. N.; Shaughnessy, K. H.; Hartman, R. L.* American Institute of Chemical Engineers National Meeting, Atlanta, GA, November 16-21st, 2014. Paper 385710.
82. "Synthesis of air-stable monoligated palladium precatalysts and their applications in cross-coupling reactions," Barnett, K. L.; Pierce, H.; Wang, J.; Shaughnessy, K. H.* 248th National Meeting of the American Chemical Society, San Francisco, CA, August 10-14th, 2014. ORGN 0532.
81. "Utilizing neopentylphosphine ligands to control regioselectivity in the palladium-catalyzed Heck reaction of cyclic olefins," Lauer, M. G.; Shaughnessy, K. H.* 248th National Meeting of the American Chemical Society, San Francisco, CA, August 10-14th, 2014. ORGN 0084.
80. "Ortho-alkoxylation of diaryl ketoxime ethers," Kimball, E.; Pandey, A.; Dolliver, D. D.*; Shaughnessy, K. H.; Snowden, T. S. 247th National Meeting of the American Chemical Society, Dallas, TX, March 16-20th, 2014. CHED 1034.
79. "Continuous Fine Chemicals Processing With Aqueous Phase Organic Synthesis," Hartman, R. L.*; Flowers, B.; Domier, R. C.; Moore, J. N.; Shaughnessy, K. H.; American Institute of Chemical Engineers National Meeting, San Francisco, CA, November 3rd-8th, 2013. Paper 330917.
78. "Structural studies and activation mechanisms for air-stable neopentylphosphine palladium pre-catalysts," Welch, C. N.; Shaughnessy, K. H.* 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7th-11th, 2013. INOR 1327

77. "Use of 2, 3, and 4 coordinate oxo-ligands in modeling the semiconductor interface of TiO₂ based dye-sensitized solar cells," Fraser, D. D.; Shaughnessy, K. H.* 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7th-11th, 2013. INOR 1334
76. "Application of conformationally flexible neopentylphosphine ligands to palladium-catalyzed cross-coupling reactions of malonates with aryl halides," Semmes, J. G.; Shaughnessy, K. H.* 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7th-11th, 2013. ORGN 574
75. "Air-stable trialkylphosphine palladium complexes as precatalysts for cross-coupling reactions," Welch, C. N.; Shaughnessy, K. H.* 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7th-11th, 2013. ORGN 450.
74. "Synthesis of new neophylphosphine palladium complexes and their use in Pd-catalyzed cross-coupling reactions," Jones, J. M.; Raders, S. M.; Shaughnessy, K. H.* 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7th-11th, 2013. CHED 997
73. "Neophylphosphine-supported palladium catalysts for cross-coupling reactions," Thompson, M. K.; Raders, S. M.; Shaughnessy, K. H.* 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7th-11th, 2013. CHED 993
72. "Synthesis of tridentate and tetradentate oxo-ligands used in octahedral titanium(IV) complexes," Brechtelsbauer, L. D.; Fraser, D. D.; Shaughnessy, K. H.* 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7th-11th, 2013. CHED 1044
71. "Stereospecific Suzuki coupling reactions of *N*-alkoxyimidoyl iodides," Bhattacharai, B. T.; Pandey, A.; Lanier, M. L.; Bordelon, A. S.; Adhikari, S.; Dinser, J. A.; Flower, P. F.; Wills, V. S.; Schneider, C. L. Dolliver, D. D.*; Shaughnessy, K. H.; Moore, J. N.; Raders, S. M.; Snowden, T. S.; McKim, A. S.; Fronczek, F. R. 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7th-11th, 2013. CHED 932.
70. "Sonogashira coupling reactions of *N*-alkoxybenzimidoyl iodides and bromides," Pandey, A.; Bhattacharai, B. T.; Adhikari, S.; Dolliver, D. D.*; Shaughnessy, K. H.; Moore, J. N.; Raders, S. M.; Snowden, T. S.; McKim, A. S.; Fronczek, F. R. 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7th-11th, 2013. CHED 933.
69. "Negishi coupling reactions of *N*-alkoxybenzimidoyl iodides and bromides," Adhikari, S.; Bhattacharai, B. T.; Pandey, A.; Dolliver, D. D.*; Shaughnessy, K. H.; Moore, J. N.; Raders, S. M.; Snowden, T. S.; McKim, A. S. 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7th-11th, 2013. CHED 934.
68. "Application of new water-soluble phosphine ligands in palladium-catalyzed coupling reactions," Laskay, N. M.; Duque, K. S.; Moore, J. N.; Shaughnessy, K. H.* 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7th-11th, 2013. CHED 994
67. "Synthesis and application of new water-soluble phosphine ligands in palladium-catalyzed reactions," Moore, J. N.; Shaughnessy, K. H.*; Duque, K. S.; Laskay, N. M.; 245th National Meeting of the American Chemical Society, New Orleans, LA, April 7th-11th, 2013. ORGN 110
66. "Formation of Hierarchically Porous Carbons and Application as Catalyst Supports." Yue, S.; Sayler, F. M.; Wiggins, C.; Raders, S. M.; Shaughnessy, K. H.; Bakker, M. G.*

- 64th Southeast Regional Meeting of the American Chemical Society, Raleigh, NC, November 14th-17th, 2012. Talk #574
65. "Heck Coupling Reactions on a Novel Palladium Catalyst" Wiggins, C.; Sayler, F. M.; Raders, S. M.; Yue, S.; Spear, S.; Bakker, M. G.*; Shaughnessy, K. H.* 64th Southeast Regional Meeting of the American Chemical Society, Raleigh, NC, November 14th-17th, 2012. Talk #321
64. "Novel Porous Materials as Catalysts and Catalyst Supports: Improving Heterogeneous Catalysis through Higher Surface Area and More Efficient Mass Transport" Sayler, F. M.; Spear, S.; Shaughnessy, K. H.; Scogin, W.; Wiggins, C.; Raders, S. M.; Yue, S.; Bakker, M. G.* 64th Southeast Regional Meeting of the American Chemical Society, Raleigh, NC, November 14th-17th, 2012. Talk #185
63. "Novel Porous Materials as Catalysts and Catalyst Supports: Improving Heterogeneous Catalysis through Higher Surface Area and More Efficient Mass Transport" Bakker, M. G.*; Sayler, F. M.; Spear, S.; Shaughnessy, K. H.; Scogin, W.; Wiggins, C.; Raders, S. M.; Yue, S. 68th Southwest Regional Meeting of the American Chemical Society, Baton Rouge, LA, November 4th-6th, 2012. Talk #310
62. "Heck Coupling Reactions on a Novel Palladium Catalyst" Wiggins, C.; Sayler, F. M.; Raders, S. M.; Yue, S.; Spear, S.; Bakker, M. G.*; Shaughnessy, K. H.* 68th Southwest Regional Meeting of the American Chemical Society, Baton Rouge, LA, November 4th-6th, 2012. Talk #310
61. "Negishi reaction of N-alkoxybenzimidoyl halides" Adhikari, S.; Bhattarai, B. T.; Pandey, A; Dolliver, D. D.*; Shaughnessy, K. H.; Moore, J. N.; McKim, A S. 68th Southwest Regional Meeting of the American Chemical Society, Baton Rouge, LA, November 4th-6th, 2012. Talk #81
60. "Sonogashira reactions of O-alkylbenzimidoyl iodides and bromides" Pandey, A.; Bhattarai, B. T.; Adhikari, S.; Dolliver, D. D.*; Shaughnessy, K. H.; Moore, J. N.; McKim, A S. 68th Southwest Regional Meeting of the American Chemical Society, Baton Rouge, LA, November 4th-6th, 2012. Talk #80
59. "Synthesis of single geometric isomers of oxime ethers through palladium-catalyzed Suzuki cross coupling reactions" Bhattarai, B. T.; Pandey, A; Adhikari, S.; Dolliver, D. D.*; Shaughnessy, K. H.; Moore, J. N.; McKim, A S. 68th Southwest Regional Meeting of the American Chemical Society, Baton Rouge, LA, November 4th-6th, 2012. Talk #80
58. "Synthesis of new bisphosphine ligands and their use in various palladium-catalyzed cross-coupling reactions," Raders, S. M.; Semmes, J. G.; Bevans, S. L.; Shaughnessy, K. H.* 244th National Meeting of the American Chemical Society, Philadelphia, PA, August 20th-24th, 2012. ORGN 727.
57. "Synthesis of (*t*-Bu₂PNeophyl)Pd(allyl)Cl and its use in palladium-catalyzed cross-coupling reactions," Raders, S. M.; Jones, J. M.; Shaughnessy, K. H.* 244th National Meeting of the American Chemical Society, Philadelphia, PA, August 20th-24th, 2012. ORGN 679.
56. "Synthesis of New Water-Soluble Phosphine Ligands for Environmentally Benign Reactions" Moore, J. N.; Catt, E. J.; Hamilton, A.; and Shaughnessy, K. H.* 243rd National Meeting of the American Chemical Society, San Diego, CA, March 25th-29th, 2012. ORGN 705.
55. "Organometallic Models of the Semiconductor Interface of TiO₂-Based Dye Sensitized Solar Cells" Fraser, D. D.; and Shaughnessy, K. H.* 243rd National Meeting of the

- American Chemical Society, San Diego, CA, March 25th-29th, 2012. INOR 1043.
54. "3-(Di-*tert*-butylphosphonium)propane sulfonate as a recyclable ligand for palladium-catalyzed cross-coupling reactions of aryl bromides and chlorides" Mustain, R. T.; Moore, J. N.; and Shaughnessy, K. H.* 243rd National Meeting of the American Chemical Society, San Diego, CA, March 25th-29th, 2012. CHED-961.
53. "Synthesis of new sterically-demanding, flexible neophyl phosphines and their use in palladium-catalyzed cross-coupling reactions," Raders, S. M.; Miller, A. D.; Coleman, K. M.; and Shaughnessy, K. H.* 242nd National Meeting of the American Chemical Society, Denver, CO, August 28th-September 1st, 2011. ORGN 268.
52. "Synthesis of ferrocenyl phosphines for the use in transition-metal catalyzed reactions," Raders, S. M. and Shaughnessy, K. H.* 242nd National Meeting of the American Chemical Society, Denver, CO, August 28th-September 1st, 2011. ORGN 259.
51. "Synthesis of air-stable palladium precatalysts and their reactivity in cross-coupling reactions," Welch, C. N. and Shaughnessy, K. H.* 242nd National Meeting of the American Chemical Society, Denver, CO, August 28th-September 1st, 2011. ORGN 231.
50. "Use of neopentylphosphines as efficient ligands in the palladium-catalyzed α -arylation of aryl bromides and chlorides with ketones," Raders, S. M.; Jones, J. M.; Shaughnessy, K. H.* , 66th Southwest and 62nd Southeast Regional Meeting of the American Chemical Society, New Orleans, LA, November 30th-December 1st, 2010. Talk # 634
49. "Use of trineopentylphosphine in the formation of sterically hindered diaryl amines in the Buchwald-Hartwig amination," Raders, S. M.; Parks, J. K.; Leißing, T. M.; Shaughnessy, K. H.* , 66th Southwest and 62nd Southeast Regional Meeting of the American Chemical Society, New Orleans, LA, November 30th-December 1st, 2010. Talk # 633
48. "Suzuki coupling of sterically hindered substrates using alkyl phosphine ligands: How conformational flexibility and steric factors can influence catalytic ability," Moore, J. N.; Shaughnessy, K. H.* , 66th Southwest and 62nd Southeast Regional Meeting of the American Chemical Society, New Orleans, LA, November 30th-December 1st, 2010. Poster # 543
47. "Syntheses of organometallic complexes that model the semiconductor interface of TiO₂ based dye-sensitized solar cells" Fraser, D. D.; Shaughnessy, K. H.* , 66th Southwest and 62nd Southeast Regional Meeting of the American Chemical Society, New Orleans, LA, November 30th-December 1st, 2010. Poster # 542
46. "Synthesis and Reactivity of Neopentylphosphine Palladium Dichloride Dimers," Welch, C. N.; Shaughnessy, K. H.* , 66th Southwest and 62nd Southeast Regional Meeting of the American Chemical Society, New Orleans, LA, November 30th-December 1st, 2010. Poster # 237
45. "Development of highly active palladium complexes for organic cross-coupling reactions" Corbin, W. C.; Shaughnessy, K. H.* , 239th National Meeting of the American Chemical Society, San Francisco, CA, March 21-25th, 2010. CHED-815
44. "Palladium-Catalyzed Carbonylation of Trifluoromethylated Arenes and Heteroarenes using an Water-Soluble, Air-Stable Phosphine Ligand System," Hennek, M. D.; Brown, W. S.; Pair, E. S.; Sonnier, M. Q.; Khan, M.; Thrasher, J. S.; Shaughnessy, K. H.* 19th International Symposium on Fluorine Chemistry, Jackson Hole, WY, August 26th, 2009.
43. "Synthesis of Water-Soluble Phosphines and Their Application to Recyclable, Aqueous-Phase Palladium Catalysts," Box, H. K.; Shaughnessy, K. H.* 86th Annual Meeting of the Alabama Academy of Science, Livingston, AL, March 25th-27th, 2009. **1st Place**,

Undergraduate Poster Competition, Chemistry Division.

42. "The cyanation of aryl halides under mild conditions using bulky neopentyl phosphine ligands," Hill, L. L.; Shaughnessy, K. H.* 235th National Meeting of the American Chemical Society, New Orleans, LA, April 9th, 2008, ORGN 692.
41. "Palladium catalyzed carbonylation with neopentyl phosphine and water-soluble phosphine ligands to promote activation of aryl halides," Brown, W. S.; Shaughnessy, K. H.* 235th National Meeting of the American Chemical Society, New Orleans, LA, April 9th, 2008, ORGN 637.
40. "Palladium/phosphine catalyzed coupling of aryl bromides with phenyl selenolates: Synthesis of asymmetric diaryl selenides," Brown, F. V.; Shaughnessy, K. H.* 235th National Meeting of the American Chemical Society, New Orleans, LA, April 7th, 2008, CHED 572.
39. "Palladium catalyzed Suzuki coupling with water-soluble phosphine ligands to promote activation of aryl halides," Sonnier, M. Q.; Brown, W. S.; Shaughnessy, K. H.* 235th National Meeting of the American Chemical Society, New Orleans, LA, April 7th, 2008, CHED 569.
38. "Palladium catalyzed Sonogashira coupling with water-soluble phosphine ligands to promote activation of aryl halides," Boykin, D. D.; Brown, W. S.; Shaughnessy, K. H.* 235th National Meeting of the American Chemical Society, New Orleans, LA, April 7th, 2008, CHED 568.
37. "Palladium catalyzed coupling reactions using water-soluble phosphine ligands: DTBPSP and DAPSP and their ability to promote coupling reactions," Killian, M. E.; McLendon, S. E.; Brown, W. S.; Shaughnessy, K. H.* 235th National Meeting of the American Chemical Society, New Orleans, LA, April 7th, 2008, CHED 567.
36. "Investigations of Hartwig-Buchwald amination reactions in air with new bulky neopentyl phosphine palladium catalysts," Crowell, J. L.; Tutwiler, S.; Hill, L. L.; Shaughnessy, K. H.* 235th National Meeting of the American Chemical Society, New Orleans, LA, April 7th, 2008, CHED 537.
35. "Palladium catalyzed coupling reactions using water-soluble phosphine ligands: DTBPSP and DAPSP and their ability to promote Suzuki-Miyaura, Heck, Sonogashira, and Carbonylation reactions," Brown, W. S.; Sonnier, M. Q.; Killian, M. E.; McLendon, S. E.; Boykin, D. D.; Shaughnessy, K. H.* 235th National Meeting of the American Chemical Society, New Orleans, LA, April 7th, 2008, ORGN 253.
34. "Palladium catalyzed Suzuki coupling with water-soluble phosphine ligands to promote activation of aryl halides," Sonnier, M. Q.; Shaughnessy, K. H.* 85th Alabama Academy of Science Meeting, Birmingham, AL, March 20th, 2008. **1st Place, Undergraduate Paper Competition.**
33. "Synthesis and characterization of new palladium complexes containing neopentyl phosphine ligands," Hill, L. L.; Shaughnessy, K. H.* 85th Alabama Academy of Science Meeting, Birmingham, AL, March 20th, 2008. **2nd Place, Poster Competition**
32. "Palladium catalyzed coupling reactions using water-soluble phosphine ligands: DTBPSP and DAPSP and their ability to promote Suzuki-Miyaura, Heck, Sonogashira, and Carbonylation reactions," Brown, W. S.; Sonnier, M. Q.; Killian, M. E.; McLendon, S. E.; Boykin, D. D.; Shaughnessy, K. H.* 85th Alabama Academy of Science Meeting, Birmingham, AL, March 20th, 2008.

31. "Palladium catalyzed coupling reactions using water-soluble phosphine ligands: DTBPSP and DAPSP and their ability to promote coupling reactions," Killian, M. E.; McLendon, S. E.; Brown, W. S.; Shaughnessy, K. H.* 85th Alabama Academy of Science Meeting, Birmingham, AL, March 20th, 2008.
30. "Investigations of cross coupling reactions using new bulky neopentylphosphine ligands," Hill, L. L.; Shaughnessy, K. H.* 234th National Meeting of the American Chemical Society, Boston, MA, August 19-23rd, 2007.
29. "Synthesis and Characterization of New Palladium Complexes Containing Neopentylphosphine Ligands," Hill, L. L.; Shaughnessy, K. H.* 233rd National Meeting of the American Chemical Society, Chicago, IL, March 26th, 2007, INOR-949.
28. "Mechanistic Insight into the Rhodium/Phosphine Catalyzed Coupling of Aldehydes and Phenylboronic Acid Derivatives," Brown, W. S.; Shaughnessy, K. H.* 233rd National Meeting of the American Chemical Society, Chicago, IL, March 26th, 2007, INOR-612.
27. "Palladium-Catalyzed Coupling of Amines and Aryl Halides Using Functionalized Neopentylphosphines," Smith, J. M.; Shaughnessy, K. H.* 233rd National Meeting of the American Chemical Society, Chicago, IL, March 26th, 2007, CHED-767.
26. "Palladium-Catalyzed Suzuki-Miyaura Coupling Reactions using Neopentylphosphines," Brown, W. S.; Pair, E.; Sonnier, M. Q.; Khan, M.; Shaughnessy, K. H.* 233rd National Meeting of the American Chemical Society, Chicago, IL, March 25th, 2007, ORGN-149.
25. "Hartwig-Buchwald Amination under Mild Conditions using Neopentyl Alkylphosphine Ligands." Hill, L. L.; Moore, L. R.; Huang, R.; Shaughnessy, K. H.* 231st National Meeting of the American Chemical Society, Atlanta, GA, March 27th, 2006, ORGN-561.
24. "Design and Applications of Water-Soluble Ligands for Coupling Reactions." Moore, L. R. and Shaughnessy, K. H.* 231st National Meeting of the American Chemical Society, Atlanta, GA, March 27th, 2006, ORGN-453.
23. "Effects of ionic liquids on Oxidative Addition to Square Planar Iridium and Rhodium Complexes." P'Pool, S. J. and Shaughnessy, K. H.* 231st National Meeting of the American Chemical Society, Atlanta, GA, March 29th, 2006, INOR-648.
22. "Studies on the TXPTS-Pd Aqueous-Phase Catalyst System." O'Halloran, K. P. and Shaughnessy, K. H.* 231st National Meeting of the American Chemical Society, Atlanta, GA, March 27th, 2006, CHED-951.
21. "Palladium-Catalyzed Reactions for Nucleoside Modification." Prickett, C. D.; Cho, J.-H.; and Shaughnessy, K. H.* 231st National Meeting of the American Chemical Society, Atlanta, GA, March 27th, 2006, CHED-453.
20. "Evaluation of a Cellulose Supported Palladium Catalyst." Carmichael, F. T. and Shaughnessy, K. H.* 231st National Meeting of the American Chemical Society, Atlanta, GA, March 27th, 2006, CHED-392.
19. "Palladium-Catalyzed Reactions for Nucleoside Modification." Prickett, C. D.; Cho, J.-H.; and Shaughnessy, K. H.* 83rd Meeting of the Alabama Academy of Science, Troy, AL, March 16th, 2006, Chemistry, Section II, #11. **First place, student poster competition.**
18. "Evaluation of a Cellulose Supported Palladium Catalyst." Carmichael, F. T. and Shaughnessy, K. H.* 83rd Meeting of the Alabama Academy of Science, Troy, AL, March 16th, 2006, Chemistry, Section II, #9.

17. "Synthesis of New Water-Soluble Metal-*N*-Heterocyclic Carbene Complexes," Cooks, S. M.; Moore, L. R.; Shaughnessy, K. H.* 229th National Meeting of the American Chemical Society, San Diego, CA, March 14th, 2005.
16. "Synthesis of New Water-Soluble Metal-*N*-Heterocyclic Carbene Complexes," Cooks, S. M.; Moore, L. R.; Shaughnessy, K. H.* 56th Southeast Regional Meeting of the American Chemical Society, Research Park Triangle, NC, November 14th, 2004, Paper #714.
15. "Palladium-Catalyzed Hydroesterification of Styrene in Ionic Liquids." Klingshirn, M. A.; P'Pool, S. J.; Shaughnessy, K. H.*; Rogers, R. D.*, 227th National Meeting of the ACS, Anaheim, CA, March 30th, 2004, INOR-770.
14. "Efficient Palladium-Catalyzed Cross-Coupling Reactions of Halonucleosides in Aqueous Media using Water-Soluble Phosphines." Western, E. C. and Shaughnessy, K. H.*, 55th Regional Meeting of the ACS, Atlanta, GA, November 18th, 2003, Paper #686.
13. "Water-Soluble Palladacycles for Suzuki-Miyaura Cross-Couplings in Water." Huang, R. and Shaughnessy, K. H.*, 55th Regional Meeting of the ACS, Atlanta, GA, November 18th, 2003, Paper #660.
12. "New Applications for Water-Soluble Alkylphosphine Ligands in Palladium-Catalyzed Cross-Coupling Reactions." Booth, R. S. and Shaughnessy, K. H.*, 55th Regional Meeting of the ACS, Atlanta, GA, November 18th, 2003, Paper #654.
11. "Kinetic Study of Oxidative Addition in Ionic Liquids." P'Pool, S. J. and Shaughnessy, K. H.*, 55th Regional Meeting of the ACS, Atlanta, GA, November 18th, 2003, Paper #634.
10. "Palladium-Catalyzed Cross-Coupling Reactions using Water-Soluble, Ortho-Substituted Arylphosphine Ligands." Moore, L. R. and Shaughnessy, K. H.*, 55th Regional Meeting of the ACS, Atlanta, GA, November 18th, 2003, Paper #630.
9. "Structural Investigation of Water-Soluble Alkylphosphines Palladium Catalysts and Applications for Cross-Coupling Reactions." Booth, R. S. and Shaughnessy, K. H.*, 55th Regional Meeting of the ACS, Atlanta, GA, November 17th, 2003, Paper #382.
8. "Di-*tert*-butyl(ferrocenylmethyl)phosphine: Properties and use in Palladium-Catalyzed Cross-Coupling Reactions." Sliger, M. D. and Shaughnessy, K. H.*, 55th Regional Meeting of the ACS, Atlanta, GA, November 17th, 2003, Paper #381.
7. "Synthesis of Novel Chelating Water-Soluble Diphosphines." Sandrock, D. L.; Sliger, M. D.; Shaughnessy, K. H.*, 55th Regional Meeting of the ACS, Atlanta, GA, November 16th, 2003, Paper #935.
6. "Polar, Non-Coordination Ionic Liquids as Solvents for Coordination Polymerization of Olefins," P'Pool, S. J.; Klingshirn, M. A.; Holbrey, J. D.; Rogers, R. D., Shaughnessy, K. H.*, 225th ACS National Meeting, New Orleans, LA, March 23rd, 2003, ORGN-57.
5. "Efficient One-Step Suzuki Arylation of Unprotected Bromonucleosides using Water-soluble Palladium Catalysts," Western, E. C.; Shaughnessy, K. H.*, 225th ACS National Meeting, New Orleans, LA, March 23rd, 2003, ORGN-56.
4. "Water-Soluble Alkylphosphines Ligands for Palladium-Catalyzed Cross-Coupling Reactions," Booth, R. S.; Moore, L. R.; Shaughnessy, K. H.*, 54th Southeast Regional Meeting of the ACS, Charleston, SC, November 14th, 2002, Paper 0277.
3. "Polar, Non-Coordinating Ionic Liquids as Novel Solvents for Coordination Polymerization of Olefins," P'Pool, S. J.; Klingshirn, M. A.; Holbrey, J. D.; Rogers, R. D.; Shaughnessy, K. H.*, 54th Southeast Regional Meeting of the ACS, Charleston, SC, November 14th, 2002, Paper 0275.

2. "Palladium-Catalyzed Cross-Coupling Reactions of Unprotected Halonucleosides using Water-Soluble Phosphines," Western, E. C.; Shaughnessy, K. H.*; 54th Southeast Regional Meeting of the American Chemical Society (ACS), Charleston, SC, November 14th, 2002, Paper 0270.
1. "Palladium-Catalyzed CO/Alkene Copolymerization in Room-Temperature Ionic Liquids." Rogers, R. D.; Klingshirn, M. A.; Broker, G. A.; Holbrey, J. D.; Shaughnessy, K. H.*; 222nd ACS National Meeting, August 2001, Chicago, IL, IEC-21.

Presenting author is underlined and principle investigator is indicated with an asterisk.

General Interest Talks:

4. "Chemistry's Role in a Sustainable Future," UAB Student Chapter of the American Chemical Society, Birmingham, AL, March 16th, 2015
3. "Chemistry's Role in a Sustainable Future," UAB Student Chapter of the American Chemical Society, Birmingham, AL, April 14th, 2014.
2. "Sustainable (Green) Chemistry," UAB Student Chapter of the American Chemical Society, Birmingham, AL, April 15th, 2013.
1. "Chemistry's Role in a Sustainable Future: How to Make the Things We Need With Minimal Environmental Impact," Meeting of the Alabama Section of the American Chemical Society, Birmingham, AL, November 7th, 2007.

Invited Seminars:

50. Tulane University, November 2016
49. Aristotle University, Thessaloniki, Greece, May 2015
48. Truman State University, March 2015
47. Vanderbilt University, September 2014
46. Tennessee Technical University, March 2014
45. Georgia Southern University, February 2014
44. Mississippi State University, April 2013
43. Florida International University, November 2012
42. University of South Alabama, September 2012
41. Spring Hill College, September 2012
40. Ball State University, December 2011
39. Northwest Normal University, Lanzhou China, October 2011
38. State Key Laboratory in Applied Organic Synthesis, Lanzhou University, China, October 2011
37. University of Southern Mississippi, September 2011
36. Auburn University, November 2010
35. University of Mississippi, April 2010
34. Hitachi Maxell, Japan July 2010
33. Mitsubishi Chemical Corporation, Japan July 2010
32. University of Missouri-St. Louis, March 2010
31. Murray State University, February 2010
30. Mercer University, January 2009
29. CCNY-CUNY, October 2008
28. Tennessee State University, March 2008
27. Rose-Hulman Institute of Technology, October 2007

26. University of Illinois-Springfield, October 2007
25. FMC, Lithium Division, September 2007
24. University of Tennessee-Chattanooga, February 2007
23. Union University, April 2006
22. University of Alabama at Huntsville, December 2005
21. Mississippi State University, April 2005
20. University of Delaware, March 2005
19. Shippensburg State University, March 2005
18. Texas A&M University, February 2005
17. University of Kansas, January 2005
16. FMC Lithium Division, November 2004
15. University of Utah, October 2004
14. University of Kansas, October 2004
13. University of Alabama at Birmingham, October 2004
12. University of Southern Mississippi, September 2004
11. College of William and Mary, April 2004
10. Virginia Commonwealth University, April 2004
9. U.S. Naval Academy, April 2004
8. West Virginia University, October 2003
7. University of Nevada-Reno, October 2003
6. University of Nebraska, September 2003
5. The Ohio State University, May 2003
4. Auburn University, November 2002
3. University of Mississippi, October 2002
2. University of South Alabama, October 2001
1. University of Tennessee-Chattanooga, January 2000

Current and Pending Support:

- ThurPore Technology (NSF Subcontract), "Increasing Production of Palladium Supported on Hierarchically Porous Carbon," PI, \$89,000, 10/1/16-9/30/17.
- NSF (DUE-1340069), "Noyce Scholars Program at The University of Alabama," co-PI (PI, Dennis Sunnal), \$1,450,000, 10/1/13-9/30/18.

Prior Research Support:

- NSF (CBET-1264630), "Microreaction Engineering of Aqueous-Phase Metal-Catalyzed Reactions," co-PI (PI, Ryan Hartman), \$353,830, 8/15/13 – 7/31/16.
- ThruPore Technology (NSF subcontract), SBIR Phase 1: Development and Validation Of Palladium Supported On Hierarchically Porous Monolithic Carbon Catalysts," PI, \$26,482, 1/1/14-12/31/14.
- Research Stimulation Program, University of Alabama "Acceleration and Intensification of Microreactor Development and Commercialization," co-PI (PI, Dr. Martin Bakker), \$70,000, 3/1/13-2/28/15.
- NSF (CHE-1058984), "Experimental and Theoretical Study of Ligand Steric Effects in Catalysis," PI (co-PI, David Dixon), \$348,000, 10/1/11-9/30/14.

- NSF (RUI-1111916): Synthesis of Single Geometric Isomers of N-Substituted Ketimines: Starting Materials for the Synthesis of Asymmetric Amines, co-PI (PI, Debra Dolliver, SE Louisiana U), \$218,000, 9/1/11 – 8/31/14.
- College Academy for Research and Creative Activity, "Model Study of Dye-TiO₂ Interactions in Dye-Sensitized Solar Cells," PI, \$11,400.
- College Academy for Improving Student Success, "Pilot Study of Peer-Led Mentoring in CH 101," PI (co-PIs Joseph Thrasher, Thomas Vaid), \$9,000
- NSF-MRI, "Acquisition of a Liquid Chromatograph-Mass Spectrometer," co-PI (PI, Carolyn Cassady), \$348,093, 02/01/07-01/31/09.
- NSF, "REU Site: Research Experiences for Undergraduates in Chemistry at the University of Alabama," program committee (PD, John Vincent and Stephen Woski), \$567,385, 02/01/07 – 01/31/10.
- FMC, Lithium Division, "Synthesis and Catalytic Application of Sterically Demanding, Chelating Diphosphines and Water-Soluble Phosphines," PI, \$49,500, 2/1/08-12/31/09.
- FMC, Lithium Division, "Functionalized Neopentylphosphines as Ligands in Pd-Catalyzed Coupling Reactions," PI, \$22,623, 12/1/06-12/31/07
- UA, Research Activity Council, "Metal-Catalyzed Electrophilic Aromatic Fluorination", PI, \$5,000, 5/1/2006 – 4/31/2008
- NSF—Course, Curriculum, and Laboratory Improvement, "NMR Spectroscopy as a Cornerstone Technique in the Undergraduate Chemistry Curriculum," PI (co-PI, Russell Timkovich), \$120,728, 9/1/03 – 8/31/06.
- FMC, Lithium Division, "Evaluation of Neopentylphosphines as Ligands in Pd-Catalyzed Cross-Coupling Reactions," PI, \$19,500, 8/15/05 – 1/31/06.
- ACS-PRF "Ionic Liquid Solvent Effects on Fundamental Organometallic Transformations," PI, \$40,000, 5/1/04 – 8/31/05
- NSF—Technologies for a Sustainable Environment (CHE-0124255), "High Activity Catalysts for Carbon-Carbon Bond Formation in Water Based on Bulky Water-Soluble Alkylphosphines," PI, \$5,100 (REU supplement), 6/1/04-8/15/04.
- NSF—Technologies for a Sustainable Environment (CHE-0124255), "High Activity Catalysts for Carbon-Carbon Bond Formation in Water Based on Bulky Water-Soluble Alkylphosphines," PI, \$5,100 (REU supplement), 6/1/03-8/15/03.
- NSF—Technologies for a Sustainable Environment (CHE-0124255), "High Activity Catalysts for Carbon-Carbon Bond Formation in Water Based on Bulky Water-Soluble Alkylphosphines," PI, \$336,000, 1/01/02 - 12/31/04.
- Research Corporation, Research Innovation Awards, "Development, and Application to Catalyst Discovery, of a Parallel, High Throughput Assay for Measuring Reaction Yield and Enantioselectivity," PI, \$34,549, 5/1/01-12/31/03.
- University of Alabama—Innovative Instructional Development Program, "Development of Web-Based, Interactive Organic Reaction Mechanism Tutorials," PI, \$4,970, 1/103-8/15/03.
- University of Alabama—School of Mines and Energy Development, "Development of new catalysts for environmentally benign, aqueous-phase reactions," PI, \$19,783, 5/1/01-4/30/02.
- DuPont Corporation, Aid to Education Grant, PI, \$10,000, 5/1/01.
- The University of Alabama Research Activity Council, "Development of a Fluorometric, High-Throughput Assay for Determination of Activity and Enantioselectivity in Metal-Catalyzed Reactions," PI, \$4,790, 4/1/00-3/31/02

Collaborators:

- Martin G. Bakker, Department of Chemistry, The University of Alabama
- Silas C. Blackstock, Department of Chemistry, The University of Alabama
- Thomas Colacot, Johnson-Matthey
- Debra Dolliver, Department of Chemistry, Southeastern Louisiana University
- David A. Dixon, Dept. of Chemistry, The University of Alabama
- JW Harrell, Dept. of Physics, The University of Alabama
- Ryan L. Hartman, Dept. of Chemical and Biological Engineering, The University of Alabama
- Norris W. Hoffman, Department of Chemistry, University of South Alabama
- Robert M. Metzger, Department of Chemistry, The University of Alabama
- Robin D. Rogers, Dept. of Chemistry, The University of Alabama
- Hans-Jörg Schanz, Department of Chemistry, Georgia Southern University
- Patricia Sobecky, , Department of Biological Sciences, The University of Alabama
- Shane C. Street, Department of Chemistry, The University of Alabama
- Cynthia Sunal, College of Education, The University of Alabama
- Dennis Sunal, College of Education, The University of Alabama
- Joseph S. Thrasher, Dept. of Chemistry, Clemson University
- Raymond White, Department of Physics, The University of Alabama
- Christopher J. Woltermann, FMC Lithium, Bessemer City, NC
- Zhijian Wu, , Department of Mathematics, The University of Alabama
- Jeremy Zelkowski, College of Education, The University of Alabama

Students Mentored:

Current:

Graduate (6): Jeffrey Semmes (2011-present), Spencer Alaniz (2013-present), Benjamin Headford (2013-present), Kerry Barnett (2013-present), Huiyuan "Ethan" Hu (2015-present), Corrie Burlas (2016-present)

Undergraduate (7): Olivia Gobble (2015-present), Renee Stullich (2015-016), Jacob Trull (2015-present), Michelle Weyhaupt (2015-present), Connor Franklin (2016-present), James Howard (2016-present), Nathan Smith (2016-present)

Former

- Post-doctoral Associate (3):
 - Dr. Matthew Lauer (2013-2015): PharmAgra Labs, Inc.
 - Dr. Steven Raders (2010-2012): Lubrizol
 - Dr. Michael Sliger (2002-2004): Duracell, Bethell, CT.
- Graduate (12):
 - Dayne Fraser, MS, non-thesis, (2008-2015)
 - Jane N. Moore, MS, PhD (2009-2014): UA School of Dentistry

- *Synthesis and Application of Sterically Flexible and Water-Soluble Phosphine Ligands in Palladium Catalysis*
- Nigel Welch, MS, non-thesis (2008-2013)
- Rambhoopal Kantam, MS, non-thesis (2011-2012): IT Developer, Informatica
- William Scott Brown, PhD (2004-2009): Teacher, Trigg County Public Schools
 - *Design and Synthesis of Phosphine Ligands for Palladium-Catalyzed Coupling Reactions*
- Lensey L. Hill, PhD (2004-2009): Daikin America
 - *Investigations of Cross Coupling Reactions: Synthesis and Scope of New Neopentyl Phosphine Ligands and Pre-formed Palladium Catalysts*
- Joon-Hyung Cho, PhD (2002-2007): Entropy Solutions.
 - Dissertation Title: *Part I. Palladium -Catalyzed Alkenylation and Alkynylation of Nucleosides in Aqueous Media. Part II. Palladium-Catalyzed Carbon-Selenium Bond formation for Unsymmetrical Diselenides*
- Lucas R. Moore, MS, PhD (2002-2006): Manager, Technical Customer Service Group, ArrMaz
 - Dissertation Title: *Ligand Design and Application Toward Palladium-Catalyzed Cross-Coupling Reactions*
- S. Justin P'Pool, MS, PhD (2001-2006): Adjunct Professor, University of Indianapolis
 - Dissertation Title: *Polar, Weakly Coordinating Ionic Liquids as Solvents for Fundamental Organometallic Reactions*
- Elizabeth Western, MS, PhD (2001-2005): Medical Doctor, Druid City Medicine
 - Thesis Title: *Efficient Modification of Halonucleosides Using Suzuki-Miyaura Coupling in Aqueous Media*
 - **College of Arts & Sciences Outstanding Thesis, 2004**
 - Dissertation Title: *Palladium-Catalyzed Modification of Halonucleosides: Methodology Development and Mechanism Determination*
 - **University of Alabama Outstanding Dissertation Award, 2007**
- Rongcai Huang, MS, PhD (2000-2005): Senior Scientist, J&W Pharmalab, LLC
 - Dissertation Title: *Part I. Asymmetric Hydrosilylation of Acetophenone Using Titanium Catalysts; Part II. Synthesis of Water-Soluble Palladacycles and Their Applications to the Suzuki Reaction; Part III. Rhodium-Catalyzed Addition of Aryl and Alkenylboronic Acids to Aldehydes*
- Rebecca B. DeVasher, PhD (2000-2004): Associate Professor, Rose-Hulman Institute, Terre Haute, IN
 - Dissertation Title: *Water-Soluble Alkylphosphines as Ligands in Palladium-Catalyzed Aqueous-Phase Cross-Coupling Reactions: Mechanistic Advances and Catalytic Activity*
- Undergraduate (80):
 - Michael Palmer (2000): Earned MD from UA School of Medicine. Completed residency in internal medicine at Tulane. Currently on fellowship to study gastroenterology at Tulane.
 - Julie Pigza (2000 REU student): Assistant Professor, Dept. of Chemistry, University of Southern Mississippi

- Andrew Reed (2001): Earned masters degree at UA with Prof. Michael Jennings, currently in Naval Officer's Training
- Carrie Freeman (2001): Earned MD at UA School of Medicine. Currently a resident at the University of Arkansas School of Medicine.
- Jennifer Ricketts (2001 REU student): Phillip Morris USA, Richmond, VA
- Ashlie Wrenne (2002 REU student): Earned MS at University of Kentucky, currently teaching at the St. Paul School for Girls in Brooklandville, MD
- Bret Lague (2003): Pursuing MBA at University of South Alabama.
- Heather Scott (2003): Earned MD at University of Alabama School of Medicine
- Deidre Sandrock (2003 REU student): Earned PhD at University of Pennsylvania working under Prof. Gary Molander. Employed at Milliken & Co.
- Marne Harris (2003-2004): Earned chemistry degree from UA
- Jason Spruell (2004): PhD with Fraser Stoddardt, Northwestern; post-doc with Craig Hawker, UCSB; employed at Milliken & Co.
- Alan Allgood (2004): Earned DMD at University of Alabama, School of Dentistry
- Sheritta Cooks (2004 REU student): Earned PhD in Integrative Biosciences Program at Tuskegee University.
- Patricia Moore (2004-2005): Earned chemistry degree at UA in 2007.
- Kevin O'Halloran (2005 REU student): PhD, Emory University; assistant professor at Georgia Gwinnett College
- Benjamin Self (2005): Unknown
- Fatima Carmichael (2005-2006): High school chemistry teacher
- Maryam Khan (2005-2006): Physicians assistant
- Emily Pair (2005-2006): Earned DO degree at Lincoln Memorial University
- Jake Porter (2006): Employed by Pine Cove Christian Camps
- Brent Graves (2006): Entered Pikeville School of Osteopathic Medicine
- Joanna Smith (2006-2007, 2006 REU): Earned PharmD at Samford University
- Caitlin Prickett (2004-2007): Earned MS degree at Philadelphia College of Osteopathic Medicine in Atlanta. Earned DO degree at William Carey University School of Osteopathic Medicine.
- Paul Guevara (2007): Earned MBA at UA
- Jason Crowell (2007-2008): Entered MD program at UA School of Medicine
- Ellie Killian (2007-2008): Earned MD at University of Alabama, School of Medicine
- Strudwick Tutwiler (2007-2008): Earned DMD at University of Alabama, School of Dentistry
- Nick Massie (2008): Attending Harrison School of Pharmacy at Auburn
- Jane Moore (2008 REU student): Entered PhD in chemistry at UA
- Quentin Sonnier (2006-2008): Student in the graduate program in Biomedical Sciences at Philadelphia College of Osteopathic Medicine in Atlanta
- Fallon Brown (2006-2008): Earned DO Philadelphia College of Medicine, Atlanta; resident at LSU Health Science Center
- Sarabeth McLendon (2007-2008): Graduated with chemistry degree at UA
- William Clark (2008): unknown

- Denise Boykin (2007-2009): Earned MD at UA School of Medicine, medical resident
- Joel Schoenberg (2008-2009): Earned DO degree at Nova Southeastern University
- Tyler James (2008-2009): Graduated with Biology degree, spring 2009
- Dana Suich (2009): PharmD at ETSU. Pharmacist at Mercy Health in TN
- Cody Corbin (REU 2009): PhD candidate, University of Arizona Chemistry Dept.
- Emily Wayman (2008-2009 ESP): Enrolled in PhD program in biomedicine at University of Cincinnati
- Austin Doss (2009): Earned MD at UA School of Medicine
- Jordan Entekin (2009): Earned PhD in Chemistry at UA.
- Joseph Randall (2009): Pursuing DMD
- Hannah Box (2008-2010): PhD student in chemistry at Mississippi State
- Zachary Hawkins (2008-2010 ESP): Completing chemistry degree at UA
- Jackie Parks (2009-2010): Earned MD at UA School of Medicine
- Hanna Welch (2009-2010): Attending University of Michigan School of Pharmacy
- Zane Hyde (2009-2010): Pursuing MD at UA School of Medicine
- David Beasley (2009-2010): Enrolled in UA School of Law
- Duncan Harmon (2009-2010): Earned MD at UA School of Medicine
- Thomas Leißing (2010, DAAD RISE): Completing masters degree in chemistry at TU-Munich
- Kristy Bearden (2009-2010): Attending Philadelphia College of Medicine, Atlanta
- Ashley Miller (2009-2011): Working as a chemist at TTL, Inc
- Rachel Mustain (2011 REU): Earned BS in chemistry at Mississippi State University
- Will Scogin (2011 REU): Studied Physical Therapy at UAB
- Phuong "John" Nguyen (2011): Completed chemistry degree at UA
- Kali Coleman (2011-2012 ESP): Attending UA School of Physical Therapy
- Emma Catt (2011-2012): Nurse at Children's Hospital of Alabama
- Aaron Coleman (2011-2012): South Alabama School of Medicine
- Bhijay Bhattarai (2012 RUI): PhD program in chemistry at the University of Michigan
- Arjun Pandey (2012 RUI): Earned BS chemistry degree at SELU.
- Alfred Hamilton IV (2011-2012): Completing Biology degree at UA
- Mallory Thompson (2012): Registered nurse
- Jessica Jones (2010-2013, ESP): Applying to medical school
- Luke Brechtelsbauer (2011-2013): PhD program in Chemical Engineering at MIT
- Sarju Adhikari (2012, 2013 RUI): Completing BS chemistry degree at SELU
- Elizabeth Kimball (2013 RUI): PhD program in chemistry at LSU
- Apsana Shrestha (2013 RUI): Completing BS chemistry degree at SELU
- Stephanie Bevans (2011-2013): Attending UA School of Medicine
- Kevin Duque (2012-2013): Attending University of Puerto Rico School of Dentistry
- Nicholas Laskay (2012-2013): Attending UA School of Medicine
- Jason Wang (2011-2013): Attending UA School of Medicine
- Hudson Pierce (2012-2013): Attending medical school at Cornell University
- Sara Frese (2014)
- Megan Johnston (2013-2015 ESP): Earned BS Chemistry degree at UA

- Jordan Kurdi (2014-2015 ESP): Completing Chemistry degree at UA
- Rachel VanOsdol (2015, REU): Completing Chemistry degree at Fairmont State (WV)
- Haddon Mullins (2013-2016): Attending UA School of Medicine
- Russell Macoon (2014-2016): Pursuing PhD in Medicinal Chemistry at the University of Florida
- Adam Shipley (2014-2016): Enrolled at UA School of Medicine
- Colin Treager (2015-present): Enrolled in MBA program at UA