

X. Peter Zhang

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A. EDUCATION AND TRAINING

- 1999-2001 Postdoc; Massachusetts Institute of Technology (Advisor: Stephen L. Buchwald)
- 1996-1999 Postdoc; Massachusetts Institute of Technology (Advisor: Stephen J. Lippard)
- 1991-1996 Ph.D.; University of Pennsylvania (Advisor: Bradford B. Wayland)
- 1985-1988 M.S.; Beijing Normal University, China (Advisor: Bo-Li Liu)
- 1981-1985 B.S.; Anhui Normal University, China (Advisor: Huai-Zhu Ma)

B. POSITIONS AND HONORS

Positions and Employments

- 2015-Now Full Professor, Department of Chemistry, Boston College
- 2010-2015 Full Professor, Department of Chemistry, University of South Florida
- 2006-2010 Associate Professor, Department of Chemistry, University of South Florida
- 2001-2006 Assistant Professor, Department of Chemistry, University of Tennessee
- 1999-2001 Postdoctoral Associate, Department of Chemistry, MIT
- 1996-1999 NIH Postdoctoral Fellow, Department of Chemistry, MIT

Other Experience and Professional Memberships

- 2023-2023 Member, Chemical Catalysis Panel, National Science Foundation
- 2016-2019 Scientific Consultant, Zafgen, Inc.
- 2016-2019 Scientific Consultant, bioAffinity Technologies, Inc.
- 2018-2018 Member, Chemical Catalysis Panel, National Science Foundation
- 2016-2016 Member, SBCA Study Section, National Institutes of Health
- 2015-2015 Member, SBCA Study Section, National Institutes of Health
- 2010-2010 Charter Member of National Academy of Inventors
- 2002-2003 Member, Catalysis Center Planning Committee, Oak Ridge National Laboratory
- 1990-1991 Visiting Scholar, Department of Radiology, University of Pennsylvania
- 1988-1990 Research Associate, Department of Chemistry, Beijing Normal University

Honors and Awards

- 2009 Thieme Chemistry Journal Award
- 2008 University Research Merit Award, University of South Florida
- 2007 Outstanding Research Achievement Award, University of South Florida
- 2006 NSF CAREER Award
- 2005 Chancellor's Professional Development Award, University of Tennessee
- 2003 ORAU Ralph Powe Junior Faculty Award
- 1996 NIH Postdoctoral Fellowship

C. RESEARCH INTERESTS

- Development of One-Electron Catalytic Approaches for Homolytic Radical Chemistry
- Conceptualization, Formulation and Establishment of Metalloradical Catalysis (MRC)
- Design and Synthesis of Metalloradical-Based Catalysts for Metalloradical Catalysis
- Application of Metalloradical Catalysis for Stereoselective Radical Cyclization Reactions
- Application of Metalloradical Catalysis for Stereoselective Radical C–H Functionalization
- Application of Metalloradical Catalysis for Stereoselective Radical Cascade Processes
- Application of Metalloradical Catalysis for Radical Construction of Complex Molecules

D. SELECTED PAPERS (from a total of 137 publications)

- Xu, H.; Wang, D.-S.; Zhu, Z.-Y.; Deb, A.; Zhang, X. P. “New Mode of Asymmetric Induction for Enantioselective Radical *N*-Heterobicyclization via Kinetically Stable Chiral Radical Center” *Chem* **2023**, *In Revision*.
- Lee, W.-C. C.; Wang, D.-S.; Zhu, Y.-L.; Zhang, X. P. “Iron(III)-Based Metalloradical Catalysis for Asymmetric Cyclopropanation via Stepwise Radical Mechanism” *Nat. Chem.* **2023**, *Accepted*.
- Lee, W.-C. C.; Wang, J.-Y.; Zhu, Y.-L.; Zhang, X. P. “Asymmetric Radical Bicyclization for Stereoselective Construction of Tricyclic Chromanones and Chromanes with Fused Cyclopropanes” *J. Am. Chem. Soc.* **2023**, *145*, 11622–11632. [[Link](#)][[Cover](#)][[Highlight](#)]
- Xu, P.; Xie, J.-J.; Wang, D.-S.; Zhang, X. P. “Metalloradical Approach for Concurrent Control in Intermolecular Radical Allylic C–H Amination” *Nat. Chem.* **2023**, *15*, 498–507. [[Link](#)][[SharedIt](#)]
- Lang, K.; Yang, H.; Lee, W.-C. C.; Zhang, X. P. “Combined Radical and Ionic Approach for The Enantioselective Synthesis of β -Functionalized Amines from Alcohols” *Nat. Synth.* **2022**, *1*, 548–557. [[Link](#)][[Text](#)][[Highlight](#)]
- Ke, J.; Lee, W.-C. C.; Wang, X.-X.; Wang, Y.; Wen, X.; Zhang, X. P. “Metalloradical Activation of In Situ-Generated α -Alkynyldiazomethanes for Asymmetric Radical Cyclopropanation of Alkenes” *J. Am. Chem. Soc.* **2022**, *144*, 2368–2378. [[Link](#)]
- Wang, J.-Y.; Xie, J.-J.; Lee, W.-C. C.; Wang, D.-S.; Zhang, X. P. “Radical Differentiation of Two Ester Groups in Unsymmetrical Diazomalonates for Highly Asymmetric Olefin Cyclopropanation” *Chem Catal.* **2022**, *2*, 330–344. [[Link](#)][[Highlight](#)][[SynForm](#)]
- Xie, J.-J.; Xu, P.; Zhu, Y.-L.; Wang, J.-Y.; Lee, W.-C. C.; Zhang, X. P. “New Catalytic Radical Process Involving 1,4-Hydrogen Atom Abstraction: Asymmetric Construction of Cyclobutanones” *J. Am. Chem. Soc.* **2021**, *143*, 111670–111678. [[Link](#)]
- Wang, X.-X.; Ke, J.; Zhu, Y.-L.; Deb, A.; Xu, Y.-J.; Zhang, X. P. “Asymmetric Radical Process for General Synthesis of Chiral Heteroaryl Cyclopropanes” *J. Am. Chem. Soc.* **2021**, *143*, 11121–11129. [[Link](#)]
- Zhang, C.-Z.; Wang, D.-S.; Lee, W.-C. C.; McKillop, A. M.; Zhang, X. P. “Controlling Enantioselectivity and Diastereoselectivity in Radical Cascade Cyclization for Construction of Bicyclic Structures” *J. Am. Chem. Soc.* **2021**, *143*, 11130–11140. [[Link](#)]
- Lee, W.-C. C.; Wang, D.-S.; Zhang, C.-Z.; Xie, J.-J.; Li, B.; Zhang, X. P. “Asymmetric Radical Cyclopropanation of Dehydroaminocarboxylates: Stereoselective Synthesis of Cyclopropyl α -Amino Acids” *Chem* **2021**, *7*, 1588–1601. [[Link](#)]

- Riart-Ferrer, X.; Sang, P.; Tao, J.-R.; Xu, H.; Jin, L.-M.; Lu, H.-J.; Cui, X.; Wojtas, L.; Zhang, X. P. "Metalloradical Activation of Carbonyl Azides for Enantioselective Radical Aziridination" *Chem* **2021**, *7*, 1120–1134. [\[Link\]](#)
- Lang, K.; Li, C.-Q.; Kim, I.; Zhang, X. P. "Enantioconvergent Amination of Racemic Tertiary C–H Bonds" *J. Am. Chem. Soc.* **2020**, *142*, 20902–20911. [\[Link\]](#)
- Jin, L.-M.; Xu, P.; Xie, J.-J.; Zhang, X. P. "Enantioselective Intermolecular Radical C–H Amination" *J. Am. Chem. Soc.* **2020**, *142*, 20828–20836. [\[Link\]](#)
- Hu, Y.; Lang, K.; Li, C.-Q.; Gill, J. B.; Kim, I.; Lu, H.-J.; Fields, K. B.; Marshall, M. K.; Cheng, Q.-G.; Cui, X.; Wojtas, L.; Zhang, X. P. "Enantioselective Radical Construction of 5-Membered Cyclic Sulfonamides by Metalloradical C–H Amination" *J. Am. Chem. Soc.* **2019**, *141*, 18160–18169. [\[Link\]](#)
- Lang, K.; Torker, S.; Wojtas, L.; Zhang, X. P. "Asymmetric Induction and Enantiodivergence in Catalytic Radical C–H Amination via Enantiodifferentiative H-Atom Abstraction and Stereoretentive Radical Substitution" *J. Am. Chem. Soc.* **2019**, *141*, 12388–12396. [\[Link\]](#)
- Hu, Y.; Lang, K.; Tao, J.-R.; Marshall, M. K.; Cheng, Q.-G.; Cui, X.; Wojtas, L.; Zhang, X. P. "Next-Generation D_2 -Symmetric Chiral Porphyrins for Cobalt(II)-Based Metalloradical Catalysis: Catalyst Engineering by Distal Bridging" *Angew. Chem. Int. Ed.* **2019**, *58*, 2670–2674. [\[Link\]](#)
- Li, C.-Q.; Lang, K.; Lu, H.-J.; Hu, Y.; Cui, X.; Wojtas, L.; Zhang, X. P. "Catalytic Radical Process for Enantioselective Amination of C(sp³)–H Bonds" *Angew. Chem. Int. Ed.* **2018**, *57*, 16837–16841. [\[Link\]](#)
- Wen, X.; Wang, Y.; Zhang, X. P. "Enantioselective Radical Process for Synthesis of Chiral Indolines by Metalloradical Alkylation of Diverse C(sp³)–H Bonds" *Chem. Sci.* **2018**, *9*, 5082–5086. [\[Link\]](#)
- Wang, Y.; Wen, X.; Cui, X.; Zhang, X. P. "Enantioselective Radical Cyclization for Construction of 5-Membered Ring Structures by Metalloradical C–H Alkylation" *J. Am. Chem. Soc.* **2018**, *140*, 4792–4796. [\[Link\]](#)
- Jiang, H.-L.; Lang, K.; Lu, H.-J.; Wojtas, L.; Zhang, X. P. "Asymmetric Radical Bicyclization of Allyl Azidoformates via Cobalt(II)-Based Metalloradical Catalysis" *J. Am. Chem. Soc.* **2017**, *139*, 9164–9167. [\[Link\]](#)
- Xu, X.; Wang, Y.; Cui, X.; Wojtas, L.; Zhang, X. P. "Metalloradical Activation of α -Formyldiazoacetates for Catalytic Asymmetric Radical Cyclopropanation of Alkenes" *Chem. Sci.* **2017**, *8*, 4347–4351. [\[Link\]](#)
- Wang, Y.; Wen, X.; Cui, X.; Wojtas, L.; Zhang, X. P. "Asymmetric Radical Cyclopropanation of Alkenes with In Situ-Generated Donor-Substituted Diazo Reagents via Co(II)-Based Metalloradical Catalysis" *J. Am. Chem. Soc.* **2017**, *139*, 1049–1052. [\[Link\]](#)
- Pegis, M. L.; McKeown, B. A.; Kumar, N.; Lang, K.; Wasylenko, D. J.; Zhang, X. P.; Raugei, S.; Mayer, J. M. "Homogenous Electrocatalytic Oxygen Reduction Rates Correlate with Reaction Overpotential in Acidic Organic Solutions" *ACS Cent. Sci.* **2016**, *2*, 850–856. [\[Link\]](#)
- Jiang, H.-L.; Lang, K.; Lu, H.-J.; Wojtas, L.; Zhang, X. P. "Intramolecular Radical Aziridination of Allylic Sulfamoyl Azides via Co(II)-Based Metalloradical Catalysis: Effective

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 - Lu, H.-J.; Li, C.-Q.; Jiang, H.-L.; Lizardi, C. L.; Zhang, X. P. “Chemoselective Amination of Propargylic C(sp³)-H Bonds via Co(II)-Based Metalloradical Catalysis” *Angew. Chem. Int. Ed.* **2014**, *53*, 7028–7032. [\[Link\]](#)
 - Paul, N. D.; Mandal, S.; Otte, M.; Cui, X.; Zhang, X. P.; de Bruin, B. “A Metalloradical Approach to 2H-Chromenes” *J. Am. Chem. Soc.* **2014**, *136*, 1090–1096. [\[Link\]](#)
 - Jin, L.-M.; Lu, H.-J.; Cui, Y.; Lizardi, C. L.; Arzua, T. N.; Wojtas, L.; Cui, X.; Zhang, X. P. “Selective Radical Amination of Aldehydic C(sp²)-H Bonds with Fluoroaryl Azides via Co(II)-Based Metalloradical Catalysis: Synthesis of N-Fluoroaryl Amides from Aldehydes under Neutral and Nonoxidative Conditions” *Chem. Sci.* **2014**, *5*, 2422–2427. [\[Link\]](#)
 - Xu, X.; Zhu, S.-F.; Cui, X.; Wojtas, L.; Zhang, X. P. “Cobalt(II)-Catalyzed Asymmetric Olefin Cyclopropanation with α -Ketodiazoacetates” *Angew. Chem. Int. Ed.* **2013**, *52*, 11857–11861. [\[Link\]](#)
 - Jin, L.-M.; Xu, X.; Lu, H.; Cui, X.; Wojtas, L.; Zhang, X. P. “Effective Synthesis of Chiral N-Fluoroaryl Aziridines via Enantioselective Aziridination of Alkenes with Fluoroaryl Azides” *Angew. Chem. Int. Ed.* **2013**, *52*, 5309–5313. [\[Link\]](#)
 - Cui, X.; Xu, X.; Wojtas, L.; Kim, M. M.; Zhang, X. P. “Regioselective Synthesis of Multisubstituted Furans via Metalloradical Cyclization of Alkynes with α -Diazocarbonyls: Construction of Functionalized α -Oligofurans” *J. Am. Chem. Soc.* **2012**, *134*, 19981–19984. [\[Link\]](#)
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 - Lu, H.-J.; Jiang, H.-L.; Hu, Y.; Wojtas, L.; Zhang, X. P. “Stereoselective Radical Amination of Electron-Deficient C–H Bonds by Co(II)-Based Metalloradical Catalysis: Synthesis of α -Amino Acid Derivatives via α -C–H Amination of Esters and Amides” *Org. Lett.* **2012**, *14*, 5158–5161. [\[Link\]](#)

- Xu, X.; Lu, H.-J.; Ruppel, J. V.; Cui, X.; de Mesa, S. L.; Wojtas, L.; Zhang, X. P. "Highly Asymmetric Intramolecular Cyclopropanation of Acceptor-Substituted Diazoacetates by Co(II)-Based Metalloradical Catalysis: Iterative Approach for Development of New Generation Catalysts" *J. Am. Chem. Soc.* **2011**, *133*, 15292–15295. [[Link](#)]
- Lyaskovskyy, V.; Suarez, A. I. O.; Lu, H.-J.; Jiang, H.-L.; Zhang, X. P.; de Bruin, B. "Mechanism of Cobalt(II) Porphyrin-Catalyzed C–H Amination with Organic Azides: Radical Nature and H-Atom Abstraction Ability of Cobalt(III)-Nitrene Key Intermediates" *J. Am. Chem. Soc.* **2011**, *133*, 12264–12273. [[Link](#)]
- Lu, H.-J.; Dzik, W. I.; Xu, X.; Wojtas, L.; de Bruin, B.; Zhang, X. P. "Experimental Evidence for Cobalt(III)-Carbene Radicals: Key Intermediates in Cobalt(II)-Based Metalloradical Cyclopropanation" *J. Am. Chem. Soc.* **2011**, *133*, 8518–8521. [[Link](#)]
- Cui, X.; Xu, X.; Lu, H.-J.; Zhu, S.-F.; Wojtas, L.; Zhang, X. P. "Enantioselective Cyclopropanation of Alkynes with Acceptor/Acceptor-Substituted Diazo Reagents via Co(II)-Based Metalloradical Catalysis" *J. Am. Chem. Soc.* **2011**, *133*, 3304–3307. [[Link](#)]
- Wang, X.-S.; Meng, L.; Cheng, Q.-G.; Kim, C.-S.; Wojtas, L.; Chrzanowski, M.; Chen, Y.-S.; Zhang, X. P.; Ma, S.-Q. "A Three-Dimensional Porous Metal-Metalloporphyrin Framework Consisting of Nanoscopic Polyhedral Cages with a High Density of Open Metal Sites" *J. Am. Chem. Soc.* **2011**, *133*, 16322–16325. [[Link](#)]
- Lu, H.-J.; Jiang, H.-L.; Hu, Y.; Wojtas, L.; Zhang, X. P. "Chemoselective Intramolecular Allylic C–H Amination over C=C Aziridination through Co(II)-Based Metalloradical Catalysis" *Chem. Sci.* **2011**, *2*, 2361–2366. [[Link](#)]
- Lu, H.-J.; Zhang, X. P. "Catalytic C–H Functionalization by Metalloporphyrins: Recent Development and Future Directions" *Chem. Soc. Rev.* **2011**, *40*, 1899–1909. [[Link](#)]
- Lu, H.-J.; Jiang, H.-L.; Wojtas, L.; Zhang, X. P. "Selective Intramolecular C–H Amination via Metalloradical Activation of Azides: Synthesis of 1,3-Diamines under Neutral and Nonoxidative Conditions" *Angew. Chem. Int. Ed.* **2010**, *49*, 10192–10196. [[Link](#)]
- Zhu, S.-F.; Xu, X.; Perman, J. A.; Zhang, X. P. "A General and Efficient Cobalt(II)-Based Catalytic System for Highly Stereoselective Cyclopropanation of Alkenes with α -Cyano-Diazoacetates" *J. Am. Chem. Soc.* **2010**, *132*, 12796–12799. [[Link](#)]
- Dzik, W. I.; Xu, X.; Zhang, X. P.; Reek, J. N. H.; de Bruin, B. "Carbene Radicals' in Co^{II}(por)-Catalyzed Olefin Cyclopropanation" *J. Am. Chem. Soc.* **2010**, *132*, 10891–10902. [[Link](#)]
- Lu, H.-J.; Tao, J.-R.; Jones, J. E.; Wojtas, L.; Zhang, X. P. "Co(II)-Catalyzed Intramolecular C–H Amination of Phosphoryl Azides: Formation of 6- and 7-Membered Cyclophosphoramidates" *Org. Lett.* **2010**, *12*, 1248–1251. [[Link](#)]
- Subbarayan, V.; Ruppel, J. V.; Zhu, S.-F.; Perman, J. A.; Zhang, X. P. "Highly Asymmetric Cobalt-Catalyzed Aziridination of Alkenes with Trichloroethoxysulfonyl Azide (TcesN₃)" *Chem. Commun.* **2009**, 4266–4268. [[Link](#)]
- Ruppel, J. V.; Gauthier, T. J.; Snyder, N. L.; Perman, J. A.; Zhang, X. P. "Asymmetric Cobalt-Catalyzed Cyclopropanation with Succinimidyl Diazoacetate: General Synthesis of Optically Active Cyclopropyl Carboxamides" *Org. Lett.* **2009**, *11*, 2273–2276. [[Link](#)]

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- Zhu, S.; Ruppel, J. V.; Lu, H.; Wojtas, L.; Zhang, X. P. "Cobalt-Catalyzed Asymmetric Cyclopropanation with Diazosulfones: Rigidification and Polarization of Ligand Chiral Environment via Hydrogen Bonding and Cyclization" *J. Am. Chem. Soc.* **2008**, 130, 5042–5043. [[Link](#)]
- Ruppel, J. V.; Jones, J. E.; Huff, C. A.; Kamble, R. M.; Chen, Y.; Zhang, X. P. "A Highly Effective Cobalt Catalyst for Olefin Aziridination with Azides: Hydrogen Bonding-Guided Catalyst Design" *Org. Lett.* **2008**, 10, 1995–1998. [[Link](#)]
- Chen, Y.; Ruppel, J. V.; Zhang, X. P. "Cobalt-Catalyzed Asymmetric Cyclopropanation of Electron-Deficient Olefins" *J. Am. Chem. Soc.* **2007**, 129, 12074–12075. [[Link](#)]
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E. FULL LIST OF RESEARCH PUBLICATIONS

1. Xu, H.; Wang, D.-S.; Zhu, Z.-Y.; Deb, A.; Zhang, X. P. "New Mode of Asymmetric Induction for Enantioselective Radical *N*-Heterobicyclization via Kinetically Stable Chiral Radical Center" *Chem* **2023**, In Revision. [[Link](#)]
2. Lee, W.-C. C.; Zhang, X. P. "Iron(III) Porphyrin Complexes as Metalloradical Catalysts" *Nat. Chem.* **2023**, Accepted. [[Link](#)]
3. Lee, W.-C. C.; Wang, D.-S.; Zhu, Y.-L.; Zhang, X. P. "Iron(III)-Based Metalloradical Catalysis for Asymmetric Cyclopropanation via Stepwise Radical Mechanism" *Nat. Chem.* **2023**, Accepted. [[Link](#)]
4. Lee, W.-C. C.; Wang, J.-Y.; Zhu, Y.-L.; Zhang, X. P. "Asymmetric Radical Bicyclization for Stereoselective Construction of Tricyclic Chromanones and Chromanes with Fused Cyclopropanes" *J. Am. Chem. Soc.* **2023**, 145, 11622–11632. [[Link](#)][[Cover](#)][[Highlight](#)]
5. Xu, P.; Xie, J.-J.; Wang, D.-S.; Zhang, X. P. "Metalloradical Approach for Concurrent Control in Intermolecular Radical Allylic C–H Amination" *Nat. Chem.* **2023**, 15, 498–507. [[Link](#)][[SharedIt](#)]
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7. Novaes, L. F. T.; Wang, Y.; Liu, J.-J.; Riart-Ferrer, X.; Lee, W.-C. C.; Fu, N.-K.; Zhang, X. P.; Lin, S. "Electrochemical Diazidation of Alkenes Catalyzed by Manganese Porphyrin Complexes with Second-Sphere Hydrogen-Bond Donors" *ACS Catal.* **2022**, 12, 14106–14112. [[Link](#)]

8. Lang, K.; Yang, H.; Lee, W.-C. C.; Zhang, X. P. "Combined Radical and Ionic Approach for The Enantioselective Synthesis of β -Functionalized Amines from Alcohols" *Nat. Synth.* **2022**, *1*, 548–557. [\[Link\]](#)[\[SharedIt\]](#)[\[Highlight\]](#)
9. Lee, W.-C. C.; Zhang, X. P. "Asymmetric Radical Cyclopropanation of Alkenes" *Trends Chem.* **2022**, *4*, 850–851. [\[Link\]](#)
10. Ke, J.; Lee, W.-C. C.; Wang, X.-X.; Wang, Y.; Wen, X.; Zhang, X. P. "Metalloradical Activation of In Situ-Generated α -Alkynyldiazomethanes for Asymmetric Radical Cyclopropanation of Alkenes" *J. Am. Chem. Soc.* **2022**, *144*, 2368–2378. [\[Link\]](#)
11. Wang, X.-X.; Zhang, X. P. "Catalytic Radical Approach for Selective Carbene Transfers via Cobalt(II)-Based Metalloradical Catalysis" In *Transition Metal-Catalyzed Carbene Transformations*; eds. Wang, J.-B.; Che, C.-M.; Doyle, M. P. John Wiley & Sons, **2022**, Chapter 2, 25–66. [\[Link\]](#)
12. Wang, J.-Y.; Xie, J.-J.; Lee, W.-C. C.; Wang, D.-S.; Zhang, X. P. "Radical Differentiation of Two Ester Groups in Unsymmetrical Diazomalonates for Highly Asymmetric Olefin Cyclopropanation" *Chem Catal.* **2022**, *2*, 330–344. [\[Link\]](#)[\[Highlight\]](#)[\[SynForm\]](#)
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14. Xie, J.-J.; Xu, P.; Zhu, Y.-L.; Wang, J.-Y.; Lee, W.-C. C.; Zhang, X. P. "New Catalytic Radical Process Involving 1,4-Hydrogen Atom Abstraction: Asymmetric Construction of Cyclobutanones" *J. Am. Chem. Soc.* **2021**, *143*, 111670–111678. [\[Link\]](#)
15. Wang, X.-X.; Ke, J.; Zhu, Y.-L.; Deb, A.; Xu, Y.-J.; Zhang, X. P. "Asymmetric Radical Process for General Synthesis of Chiral Heteroaryl Cyclopropanes" *J. Am. Chem. Soc.* **2021**, *143*, 11121–11129. [\[Link\]](#)
16. Zhang, C.-Z.; Wang, D.-S.; Lee, W.-C. C.; McKillop, A. M.; Zhang, X. P. "Controlling Enantioselectivity and Diastereoselectivity in Radical Cascade Cyclization for Construction of Bicyclic Structures" *J. Am. Chem. Soc.* **2021**, *143*, 11130–11140. [\[Link\]](#)
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19. Magnuson, Z. L.; Cheng, Q.-G.; Zhang, W.-J.; Chen, Y.-S.; Wojtas, L.; Nafady, A.; Al-Enizi, A. M.; Larsen, R. W.; Zhang, X. P.; Ma, S.-Q. "Two Manganese Metalloporphyrin Frameworks Constructed from a Custom-Designed Porphyrin Ligand Exhibiting Selective Uptake of CO₂ over CH₄ and Catalytic Activity for CO₂ Fixation" *Cryst. Growth Des.* **2021**, *21*, 2786–2792. [\[Link\]](#)
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113. Gao, G.-Y.; Colvin, A. J.; Chen, Y.; Zhang, X. P. "Versatile Synthesis of *meso*-Aryloxy- and Alkoxy-Substituted Porphyrins via Palladium-Catalyzed C–O Cross-Coupling Reactions" *Org. Lett.* **2003**, *5*, 3261–3264. [[Link](#)]
114. Gao, G.-Y.; Chen, Y.; Zhang, X. P. "General and Efficient Synthesis of Arylamino- and Alkylamino-Substituted Diphenylporphyrins and Tetraphenylporphyrins via Palladium-Catalyzed Multiple Amination Reactions" *J. Org. Chem.* **2003**, *68*, 6215–6221. [[Link](#)]
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125. Zhang, X.-X.; Sadighi, J. P.; Mackewitz, T. W.; Buchwald, S. L. "Efficient Synthesis of Well-Defined, High Molecular Weight, and Processible Polyanilines under Mild Conditions via Palladium-Catalyzed Amination" *J. Am. Chem. Soc.* **2000**, *122*, 7606–7607. [\[Link\]](#)
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- Technetium-99m Complexes of a Novel Bis(aminoethanethiol) Ligand” *J. Med. Chem.* **1994**, *37*, 3282–3288. [[Link](#)]
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134. Zhang, X.-X.; Liu, B.-L. “New Cholesterol Analog as Adrenal Imaging Agent-Synthesis and Tissue Distribution of Bromine-82 Labeled 6-Bromomethylcholesterol” *J. Nucl. Radiochem.* **1991**, *13*, 49. [[Link](#)]
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136. Zhang, X.-X.; Liu, B.-L.; Jin, Y.-T.; Kung, H. F. “Development of Tc-99m-ECD as a New Brain Imaging Agent I. Synthesis and Labeling” *J. Isotopes* **1990**, *3*, 73. [[Link](#)]
137. Pan, Z.-Y.; Jin, Y.-T.; Liu, B.-L.; Zhang, X.-X. “Monkey and Human SPECT rCBF Imaging with Tc-99m-ECD” *J. Nucl. Med.* **1989**, *9*, 210. [[Link](#)]

F. ISSUED PATENTS

1. Zhang, X. X.; Lang, K. “Catalytic Systems for Stereoselective Synthesis of Chiral Amines by Enantiodivergent Radical C–H Amination” *U.S. Patent 11,161,827* (November 2, **2021**).
2. Zhang, X. P.; Hu, Y. “Compositions and Methods for Catalysts Based on Bridged Chiral Amidoporphyrins and Their Metal Complexes” *U.S. Patent 11,117,123* (September 14, **2021**).
3. Zhang, X. P.; Zhu, S.-F. “Cobalt-Catalyzed Asymmetric Cyclopropanation of Alkenes with alpha-Nitro-Diazoacetates” *U.S. Patent 8,110,699* (February 7, **2012**).
4. Zhang, X. P.; Ruppel, J. V. “Intramolecular C–H Amidation with Sulfonyl Azides” *U.S. Patent 7,956,193* (June 7, **2011**).
5. Zhang, X. P. “Cobalt-Catalyzed Asymmetric Cyclopropanation of Electron-Deficient Olefins” *U.S. Patent 7,847,041* (December 7, **2010**).
6. Zhang, X. P.; Chen, Y.; Gao, G.-Y. “Chiral Porphyrins, Chiral Metalloporphyrins, and Methods for Synthesis of The Same” *U.S. Patent 7,417,142* (August 26, **2008**).
7. Zhang, X. P.; Chen, Y.; Gao, G.-Y.; Colvin, A. J. “Heteroatom-Substituted Porphyrins and Methods for Synthesis of The Same” *U.S. Patent 6,951,935* (October 04, **2005**).

G. INVITED SEMINARS & TALKS

1. 4th International Symposium of Carbene and Nitrene Chemistry; Amsterdam, Netherlands; July 25-28, **2023**.
2. Department of Nature Science, Southeastern University; Lakeland, FL; February 22, **2023**.
3. College of Chemistry, Central China Normal University; Jinan, China; November 20, **2022**.
4. Vistas in Catalysis; Innovations in Catalysis to Address Modern Challenges; The National Academics Chemical Science Roundtable; October 24-25, **2022**.

5. France-USA Joint Virtual Symposium on Catalysis with Earth-Abundant Elements; October 11 and 13, **2022**.
6. 28th International Society of Heterocyclic Chemistry Congress; Santa Barbara, CA; August 28-September 2, **2022**.
7. 38th Reaction Mechanisms Conference (Plenary Speaker); Boulder, CO; June 12-15, **2022**.
8. School of Chemistry and Chemical Engineering, Shandong University; Jinan, China; May 31, **2022**.
9. Department of Chemistry, University of North Texas; Denton, TX; April 8, **2022**.
10. Department of Chemistry, University of Tennessee; Knoxville, TN; March 10, **2022**.
11. Recent Trends in Amination Chemistry, International Chemical Congress of Pacific Basin Society (Pacifichem); Honolulu, Hawaii; December 16-21, **2021**.
12. Advances in C–H Functionalization, International Chemical Congress of Pacific Basin Society (Pacifichem); Honolulu, Hawaii; December 16-21, **2021**.
13. Department of Chemistry, Physics, Atmospheric Sciences, Jackson State University; Jackson, MS; November 5, **2021**.
14. 32nd Annual Conference of Chinese Chemical Society; Zhuhai, China; April 19-22, **2021**.
15. Department of Chemistry and Biochemistry, University of Arkansas; Fayetteville, AR; March 29, **2021**.
16. Department of Chemistry and Biochemistry, San Diego State University; San Diego, CA; February 26, **2021**.
17. Bristol-Myers Squibb; Cambridge, MA; September 17, **2020**.
18. Department of Chemistry, University of Minnesota; Minneapolis, MN; March 3, **2020**.
19. 3rd Symposium of Carbene and Nitrene Chemistry; San Antonio, Texas; February 5-7, **2020**.
20. Gordon Research Conference on Organometallic Chemistry; New Port, RI, July 7-12, **2019**.
21. Department of Chemistry, University of Massachusetts; Lowell, MA; March 29, **2019**.
22. Amgen; Cambridge, MA; March 14, **2019**.
23. Department of Chemistry, University of Vermont; Burlington, VT; January 16, **2019**.
24. Department of Chemistry, University California at Riverside; Riverside, CA; October 12, **2018**.
25. Department of Chemistry & Biochemistry, University California at Santa Barbara; Santa Barbara, CA; October 10, **2018**.
26. Department of Chemistry, University of Southern California; Los Angeles, CA; October 8, **2018**.
27. Firmenich SA; Geneva, Switzerland; June 22, **2018**.
28. EuCheMS Conference on Organic Free Radicals (ECOFR 2018); Marseille, France; June 17–20, **2018**.
29. 2nd Symposium of Metal-Carbene Consortium; Beijing, China; June 6-9, **2018**.
30. School of Chemistry and Chemical Engineering, South China University of Technology, Guangzhou, China; June 5, **2018**.

31. Department of Chemistry, Peking University Shenzhen Graduate School; Shenzhen, China; June 4, **2018**.
32. Department of Chemistry, Shenzhen University; Shenzhen, China; June 2, **2018**.
33. Department of Chemistry, South University of Science and Technology of China; Shenzhen, China; June 1, **2018**.
34. Department of Chemistry, Columbia University; New York, NY; March 8, **2018**.
35. Department of Chemistry, University of Wisconsin-Madison; Madison, WI; November 7, **2017**.
36. Bristol-Myers Squibb; New Brunswick, NJ; October 5, 2017.
37. Department of Chemistry, North Carolina State University; Raleigh, NC; September 11, **2017**.
38. College of Chemistry, Nanjing University of Science and Technology; Nanjing, China; July 18, **2017**.
39. College of Chemistry, Nanjing University; Nanjing, China; July 18, **2017**.
40. 4th EOC Symposium, College of Chemistry, Nankai University; Tianjin, China; July 15, **2017**.
41. School of Pharmaceutical Sciences, Tsinghua University; Beijing, China; July 13, **2017**.
42. Organic Synthesis Lecture; Department of Chemistry, MIT; Cambridge, MA; May 15, **2017**.
43. 8th CGCC Annual Meeting; Department of Chemistry, McGill University; Montreal, QC, Canada; May 15, **2017**.
44. Department of Chemistry, National Sun Yat-sen University; Kaohsiung, Taiwan; May 9, **2017**.
45. Department of Chemistry, National Tsing Hua University; Hsinchu, Taiwan; May 8, **2017**.
46. Department of Chemistry, National Taiwan University; Taipei, Taiwan; May 5, **2017**.
47. BRIC; Department of Chemistry, Harvard University; Cambridge, MA; April 29, **2017**.
48. School of Pharmacy, University of Iowa; Iowa City, IA; April 18, **2017**.
49. Department of Chemistry, University of Connecticut; Storrs, CT; March 29, **2017**.
50. The 6th CCHF Virtual C-H Functionalization Symposium; Atlanta, GA; March 28, **2017**.
51. Department of Chemistry & Biochemistry, Florida State University; Tallahassee, FL; March 9, **2017**.
52. Department of Chemistry, Trinity College; Hartford, CT; March 3, **2017**.
53. Department of Chemistry & Biochemistry, Worcester Polytechnic Institute; Worcester, MA; February 15, **2017**.
54. 14th International Symposium for Chinese Organic Chemists (ISCOC-14); Singapore; December 8–10, **2016**. (Keynote Speaker)
55. Department of Chemistry, University of Illinois at Chicago; Chicago, IL; November 8, **2016**.
56. 12th International Symposium on Organic Free Radicals (ISOFR-12); Shanghai, China; October 9–14, **2016**.
57. Department of Chemistry, Duke University; Durham, NC; September 6, **2016**.
58. Merck & Co., Inc., Boston, MA; August 11, **2016**.
59. Gordon Research Conference on Stereochemistry; New Port, RI, July 24-29, **2016**.

60. Symposium on Metalloporphyrinoids: Design, Spectroscopy and Application, 9th *International Conference on Porphyrins and Phthalocyanines (ICPP-9)*; Nanjing, China; July 3-8, **2016**.
61. 2016 International Symposium for Metal Porphyrins and Phthalocyanines; Beijing, China; July 1-2, **2016**.
62. Boehringer Ingelheim Pharmaceuticals, Inc.; Ridgefield, CT; April 1, **2016**.
63. Department of Chemistry, University of South Dakota; Vermillion, SD; March 21, **2016**.
64. Department of Chemistry, Brandeis University; Waltham, MA; March 7, **2016**.
65. Department of Chemistry & Biochemistry, Old Dominion University; Norfolk, VA; February 26, **2016**.
66. Application of C–H Functionalization, International Chemical Congress of Pacific Basin Society (Pacifichem); Honolulu, Hawaii; December 15-20, **2015**.
67. Asymmetric Supramolecular Catalysis, International Chemical Congress of Pacific Basin Society (Pacifichem); Honolulu, Hawaii; December 15-20, **2015**.
68. Department of Chemistry, University of Chicago; Chicago, IL; November 19, **2015**.
69. GlaxoSmithKline MDR-Boston; Waltham, MA; October 28, **2015**.
70. Firmenich SA; Geneva, Switzerland; September 24, **2015**.
71. Institute of Chemical Sciences and Engineering; Ecole Polytechnique Federale de Lausanne (EPFL); Lausanne, Switzerland; September 23, **2015**.
72. Ecole Polytechnique, Palaiseau, France; September 22, **2015**.
73. Pierre and Marie Curie University (UPMC); Paris, France; September 21, **2015**.
74. Department of Chemistry, Boston College, Chestnut Hill, MA; May 21, **2015**.
75. Florida Award Session, 91st Florida Annual Meeting and Exposition (FAME 2015), Innisbrook, FL; May 7-9, **2015**.
76. Organic Chemistry Session, 91st Florida Annual Meeting and Exposition (FAME 2015), Innisbrook, FL; May 7-9, **2015**.
77. Pfizer Global Research & Development, Groton, CT; April 23, **2015**.
78. Division of Chemistry and Biological Chemistry, Nanyang Technological University, Singapore; December 17, **2014**.
79. 8th Singapore International Chemistry Conference, National University of Singapore, Singapore; December 14-17, **2014**.
80. Department of Chemistry, Hong Kong University of Science and Technology, Hong Kong, China; December 12, **2014**.
81. Department of Chemistry, Boston College, Chestnut Hill, MA; November 14, **2014**.
82. Brad Wayland 50th Anniversary Symposium, Temple University, Philadelphia, PA; October 11, **2014**.
83. Chiral China 2014, Hefei, China; September 28-October 1, **2014**. (Plenary Speaker)
84. Merck Sharp & Dohme Corp, Rahway, NJ; July 23, **2014**.
85. The Future of Asymmetric Catalysis, Telluride Conference, Telluride, CO; June 24-28, **2014**.
86. Department of Chemistry & Biochemistry, University of Texas at Austin, Austin, TX; November 8, **2013**.

87. Department of Chemistry, Chemical Biology, & Biomedical Engineering, Stevens Institute of Technology, Hoboken, NJ; October 23, **2013**.
88. New Directions in Chemistry of Heterocyclic Compounds, *3rd International Conference for the Chemistry of Heterocyclic Compounds* (NDCHC-2013); Pyatigorsk, Russia; September 17-21, **2013**. (Keynote Speaker)
89. Pharmaron, Beijing, China; August 2, **2013**.
90. College of Chemistry and Molecular Engineering, Peking University, Beijing, China; August 1, **2013**.
91. College of Chemistry and Biological Engineering, University of Science and Technology Beijing, Beijing, China; July 30, **2013**.
92. Frontier Institute of Science and Technology, Xi'an Jiaotong University, Xi'an, China; July 23, **2013**.
93. Department of Chemistry, Nanjing University, Nanjing, China; December 14, **2012**.
94. Department of Chemistry, University of Minnesota, Minneapolis, MN; September 20, **2012**.
95. Symposium on Metalloporphyrin-Based Catalytic Processes, *7th International Conference on Porphyrins and Phthalocyanines* (ICPP-7); Jeju, Korea; July 1-6, **2012**.
96. Department of Chemistry and Biochemistry, University of Maryland, College Park, MD; March 1, **2012**.
97. Department of Chemistry, Temple University, Philadelphia, PA; February 15, **2012**.
98. Department of Chemistry, University of Pennsylvania, Philadelphia, PA; February 14, **2012**.
99. Department of Chemistry, Drexel University, Philadelphia, PA; February 13, **2012**.
100. Department of Chemistry, Shanghai Jiaotong University, Shanghai, China; December 21, **2011**.
101. Department of Chemistry, East China Normal University, Shanghai, China; December 20, **2011**.
102. Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, Shanghai, China; December 19, **2011**.
103. Department of Chemistry, Anhui Normal University, Wuhu, China; December 16, **2011**.
104. Department of Chemistry, Fudan University, Shanghai, China; December 8, **2011**.
105. Department of Chemistry, Ohio State University, Columbus, OH; October 6, **2011**.
106. USF-KAUST Symposium "New Horizon in Molecular Science 2011: Design and Application of Porous Frameworks" Department of Chemistry, University of South Florida, Tampa, FL; June 21, **2011**.
107. Department of Chemistry, Dartmouth College, Hanover, NH; May 3, **2011**.
108. Department of Chemistry, Georgia State University, Atlanta, GA; April 28, **2011**.
109. Emerson Center Lectureship Symposium "*Revolutionizing Strategies for the Carbon-Carbon and Carbon-Heteroatom Bond Formation: Interplay of Theory and Experiment*", Cherry L. Emerson Center for Scientific Computation, Emory University, Atlanta, GA; April 27, **2011**.
110. Department of Chemistry, University of Kansas; Lawrence, KS; March 17, **2011**.
111. Department of Chemistry and Biochemistry, North Dakota State University; Fargo, ND; March 10, **2011**.

112. Department of Homogeneous and Supramolecular Catalysis, Van 't Hoff Institute for Molecular Sciences (HIMS), University of Amsterdam; Amsterdam, The Netherlands; January 9–12, **2011**.
113. Department of Chemistry and Chemical Biology, University of New Mexico; Albuquerque, NM; November 5, **2010**.
114. Department of Chemistry and Biochemistry, of New Mexico State University; Las Cruces, NM; November 4, **2010**.
115. Department of Chemistry, University of Florida; Gainesville, FL; September 13, **2010**.
116. Symposium on Functionalization of Tetrapyrroles, *6th International Conference on Porphyrins and Phthalocyanines*; Santa Ana Pueblo, NM; July 4-9, **2010**.
117. Symposium on Metalloporphyrin-Catalyzed Selective Organic Synthesis, *6th International Conference on Porphyrins and Phthalocyanines*; Santa Ana Pueblo, NM; July 4-9, **2010**.
118. 86th ACS Florida Section 83rd Annual Florida Meeting and Exposition (FAME 2010), Innisbrook, FL; May 13-15, **2010**.
119. Department of Chemistry, West Virginia University; Morgantown, WV; October 7, **2009**.
120. Department of Chemistry and Biochemistry, Miami University; Oxford, OH; September 24, **2009**.
121. 1st Chinese-American Chemistry & Chemical Biology Professors Association (CAPA) Annual Conference, Hilton Head Island, SC; July 31-August 2, **2009**.
122. 5th Sino-US Symposium on Organic Chemistry, Lanzhou University, Lanzhou, China; June 29-30, **2009**.
123. Department of Biology and Chemistry, City University of Hong Kong, Hong Kong, China; June 26, **2009**.
124. Department of Chemistry, University of Hong Kong, Hong Kong, China; June 25, **2009**.
125. Department of Applied Biology and Chemical Technology, Hong Kong Polytechnic University, Hong Kong, China; June 24, **2009**.
126. Department of Chemistry, Chinese University of Hong Kong, Hong Kong, China; June 24, **2009**.
127. School of Chemistry and Chemical Engineering, South China University of Technology, Guangzhou, China; June 23, **2009**.
128. Dalian Institute of Chemical Physics, Chinese Academy of Sciences, Dalian, China; June 19, **2009**.
129. Department of Catalysis Chemistry and Engineering, Dalian University of Technology, Dalian, China; June 19, **2009**.
130. *Catalysis Processes*, 5th International Conference on Porphyrins and Phthalocyanines, Moscow, Russia; July 6-11, **2008**.
131. Department of Chemistry, Peking University, Beijing, China; January 4, **2008**.
132. Department of Chemistry, Tsinghua University, Beijing, China; January 4, **2008**.
133. Department of Chemistry, Beijing Normal University, Beijing, China; January 3, **2008**.
134. Institute of Chemistry, Chinese Academy of Sciences, Beijing, China; January 2, **2008**.
135. Department of Chemistry, Anhui Normal University, Wuhu, China; December 28, **2007**.
136. Department of Chemistry, Shanghai Jiaotong University, Shanghai, China; December 27, **2007**.

137. Department of Chemistry, Tongji University, Shanghai, China; December 26, **2007**.
138. Department of Chemistry, Fudan University, Shanghai, China; December 26, **2007**.
139. Department of Chemistry, East-China University of Science and Technology, Shanghai, China; December 25, **2007**.
140. Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, Shanghai, China; December 25, **2007**.
141. Department of Chemistry, Hamilton College, Clinton, NY; October 19, **2007**.
142. Drug Discovery Colloquium, Department of Chemistry, University of South Florida, Tampa, FL; October 16, **2007**.
143. ACS Florida Section 83rd Annual Florida Meeting and Exposition (FAME 2007), Orlando, FL; May 10-12, **2007**.
144. World Precision Instruments, Inc., Sarasota, FL; April 3, **2007**.
145. Department of Chemistry, Central Michigan University, Mt. Pleasant, MI; March 19, **2007**.
146. Symposium on Chiral Porphyrins for Self-Assembly and Catalysis, *4th International Conference on Porphyrins and Phthalocyanines*, Rome, Italy; July 2-7, **2006**.
147. *National Science Foundation Inorganic Chemistry Workshop*, Blaine, WA; June 6-9, **2006**.
148. Department of Chemistry, University of South Florida, Tampa, FL; March 10, **2006**.
149. Department of Chemistry, Georgia State University, Atlanta, GA; March 1, **2006**.
150. Department of Chemistry and Biochemistry, University of Texas at Arlington, Arlington, TX; February 3, **2006**.
151. Department of Chemistry, Texas Christian University, Fort Worth, TX; February 2, **2006**.
152. Department of Chemistry and Biochemistry, Texas Tech University, Lubbock, TX; February 1, **2006**.
153. Department of Chemistry, University of Georgia, Athens, GA; December 9, **2005**.
154. School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA; December 8, **2005**.
155. Department of Chemistry, Emory University, Atlanta, GA; December 7, **2005**.
156. Department of Chemistry and Biochemistry, University of California at San Diego, La Jolla, CA; December 2, **2005**.
157. Department of Chemistry, University of California at Irvine, Irvine, CA; December 1, **2005**.
158. Department of Chemistry, University of Southern California, Los Angeles, CA; November 29, **2005**.
159. Division of Chemistry and Chemical Engineering, California Institute of Technology, Pasadena, CA; November 28, **2005**.
160. Department of Chemistry, University of Akron, Akron, OH; November 22, **2005**.
161. Department of Chemistry, Case Western Reserve University, Cleveland, OH; November 21, **2005**.
162. Department of Chemistry, University of Kentucky, Lexington, KY; November 18, **2005**.
163. Department of Chemistry, Indiana University, Bloomington, IN; November 10, **2005**.
164. Department of Chemistry, Purdue University, West Lafayette, IN; November 8, **2005**.
165. Department of Chemistry, East Carolina University, Greenville, NC; October 28, **2005**.
166. Department of Chemistry and Biochemistry, Miami University, Oxford, OH; October 20, **2005**.

167. Department of Chemistry, Duke University, Durham, NC; October 18, **2005**.
168. Department of Chemistry, University of Tennessee at Chattanooga, Chattanooga, TN; October 14, **2005**.
169. Department of Chemistry, University of Alabama, Tuscaloosa, AL; October 6, **2005**.
170. Department of Chemistry, Georgia State University, Atlanta, GA; September 30, **2005**.
171. Department of Chemistry and Biochemistry, University of Delaware, Newark, DE; September 22, **2005**.
172. Department of Chemistry, University of Pennsylvania, Philadelphia, PA; September 20, **2005**.
173. Chemical Science Division, Oak Ridge National Laboratory, Oak Ridge, TN; September 15, **2005**.
174. Department of Chemistry, State University of New York at Buffalo, Buffalo, NY; September 7, **2005**.
175. Department of Chemistry, Virginia Polytechnic Institute and State University, Blacksburg, VA; August 26, **2005**.
176. Department of Chemistry, Fudan University, Shanghai, China; August 4, **2005**.
177. Department of Chemistry, Shanghai Jiaotong University, Shanghai, China; August 3, **2005**.
178. Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, Shanghai, China; August 2, **2005**.
179. Department of Chemistry, Peking University, Beijing, China; July 27, **2005**.
180. Institute of Chemistry, Chinese Academy of Sciences, Beijing, China; July 26, **2005**.
181. Department of Chemistry, Beijing Normal University, Beijing, China; July 25, **2005**.
182. *Gordon Research Conference on Organometallic Chemistry*, New Port, RI, July 10-15, **2005**.
183. Department of Chemistry, University of Chicago, Chicago, IL; May 27, **2005**.
184. Department of Chemistry and Biochemistry, University of Mississippi, Oxford, MS; March 24, **2005**.
185. Department of Chemical Engineering, University of Tennessee, Knoxville, TN; October 26, **2004**.
186. Symposium on Organometallic and Materials Chemistry in the Southeast, *55th Southeast Regional Meeting of the American Chemical Society*, Atlanta, GA; November 16-19, **2003**.
187. Department of Chemistry, West Kentucky University, Bowling Green, KY; November 1, **2002**.
188. Department of Chemistry, University of West Florida, Pensacola, FL; February 8, **2002**.
189. Shanghai Institute of Organic Chemistry, Chinese Academy of Sciences, Shanghai, China; July 20, **2001**.
190. Department of Chemistry, Anhui Normal University, Wuhu, China; July 16, **2001**.
191. Department of Chemistry, Michigan State University, East Lansing, MI; January 18, **2001**.
192. Department of Chemistry, North Carolina State University, Raleigh, NC; January 16, **2001**.
193. Department of Chemistry, University of Tennessee, Knoxville, TN; January 12, **2001**.
194. Department of Chemistry and Biochemistry, Ohio University, Athens, OH, January 8, **2001**.

195. Department of Chemistry, New York University, New York, NY; January 4, **2001**.
196. Department of Chemistry, University of Rochester, Rochester, NY; December 11, **2000**.
197. Department of Chemistry, University of Toronto, Toronto, Canada; December 7, **2000**.
198. Department of Chemistry, University of Nevada, Reno, NV; December 4, **2000**.
199. School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA; November 30, **2000**.
200. Department of Chemistry, University of Hawaii, Honolulu, HI; November 20, **2000**.
201. Department of Chemistry, Boston University, Boston, MA; November 9, **2000**.
202. Department of Chemistry, Wayne State University, Detroit, MI; November 7, **2000**.
203. Department of Chemistry, University of Michigan, Ann Arbor, MI; October 30, **2000**.
204. Department of Chemistry and Biochemistry, University of Colorado, Boulder, CO; January 20, **1999**.
205. Department of Chemistry, University of Texas, Dallas, TX; November 25, **1998**.
206. Department of Chemistry, New York State University, Binghamton, NY, November 20, **1998**.
207. School of Chemistry and Biochemistry, Georgia Institute of Technology, Atlanta, GA, November 16, **1998**.