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Appointment

Jul 2017-	Associate Professor of Chemistry National University of Singapore
Aug 2011-Jun 2017	Assistant Professor of Chemistry National University of Singapore

Education and Professional Experience

2008- 2011	Postdoctoral associate with Prof. Richard R. Schrock **Massachusetts Institute of Technology**, Cambridge, MA, USA
2002- 2008	Ph.D. in Organic Chemistry with Prof. Marc L. Snapper & Prof. Amir H. Hoveyda **Boston College**, Chestnut Hill, MA, USA
1998- 2002	B.S. in Chemistry with Prof. Limin Qi **Peking University**, Beijing, P. R. China

Awards

- 2017 **Outstanding Chemist Award**, Department of Chemistry, NUS
- 2016 **Thieme Chemistry Journal Award**
- 2015 **Young Scientist Award**, Faculty of Science, NUS
- 2015 **Young Chemist Award**, Department of Chemistry, NUS
- 2015 **Asian Core Program Lectureship Award** from Japan and Hong Kong
- 2014 **Asian Core Program Lectureship Award** from Taiwan and Thailand
- 2013 **Asian Core Program Lectureship Award** from China and South Korea
- 2011-2016 **Singapore National Research Foundation Fellowship**, Singapore
- 2006-2007 **John LaMattina Graduate Student Fellowship**, Boston College
- 1998-1999 **Guanghua Scholarship**, Peking University

Publications

1. "$FeCl_3$-Catalyzed Dimerization/Elimination of 1,1-Diarylalkenes: Efficient Synthesis of Functionalized 4H-Chromenes," Ma, C;* Zhao, Y.* *Org. Biomol. Chem*. **2018**, *16*, 703-706.

2. "Highly Regio- and Stereodivergent Access to 1,2-Amino Alcohols or 1,4-Fluoro Alcohols by NHC-Catalyzed Ring Opening of Epoxy enals," Poh, S. B.; Ong, J. Y.; Lu, S.;* Zhao, Y.* *Angew. Chem. Int. Ed.* **2018**, *57*, 1645-1649.

3. "Pd-Catalyzed Enantioselective [6+4] Cycloaddition of Vinyl Oxetanes with Azadienes to Access Ten-

Membered Heterocycles," Wang, Y. N.;† Yang, L. C.;† Rong, Z.-Q.; Liu, T.-L.; Liu, R.; Zhao, Y. *Angew. Chem. Int. Ed.* **2018**, *57*, 1596-1600.

4. "Nickel-catalyzed Difunctionalization of Allyl Moieties Using Organoboronic Acids and Halides with Divergent Regioselectivities," Li, W.; Boon, J. K.; Zhao, Y. *Chem. Sci.* **2018**, *9*, 600-607.

5. "Nine-Membered Benzofuran-Fused Heterocycles: Enantioselective Synthesis by Pd-Catalysis and Rearrangement via Transannular Bond Formation," Rong, Z.-Q.;† Yang, L.-C.;† Liu, S.; Yu, Z.; Wang, Y.-N.; Tan, Z. Y.; Huang, R.-Z.; Lan, Y.;* Zhao, Y.* *J. Am. Chem. Soc.* **2017**, *139*, 15304-15307.

6. "Catalyst-Enabled Scaffold Diversity: Highly Chemo- and Stereoselective Synthesis of Tricyclic Ketals and Triarylmethanes," Liao, J.-Y.; Ni, Q.; Zhao, Y. *Org. Lett.* **2017**, *19*, 4074-4077.

7. "Three-Component Reactions of Isocyanoacetates, Amines and 3-Formylchromones Initiated by an Unexpected *aza*-Michael Addition," Liao, J.-Y.; Yap, W. J.; Wu, J.; Wong, M. W.;* Zhao, Y.* *Chem. Commun. accepted*.

8. "Enantioselective Synthesis of Tetrahydroquinolines Using Borrowing Hydrogen: Cooperative Catalysis by Achiral Iridacycle and Chiral Phosphoric Acid," Lim, C. S.; Quach, T. T.; Zhao, Y. *Angew. Chem. Int. Ed.* **2017**, *56*, 7176-7180 (**VIP**).

9. "Divergent Reactivities in Fluoronation of Allylic Alcohols: Synthesis of Z-Fluoroalkenes via Carbon-Carbon Bond Cleavage," Liu, T.-L.; Wu, J.; Zhao, Y. *Chem. Sci.* **2017**, *8*, 3885-3890.

10. "Rhodium-Catalyzed Enantioselective Isomerization of Secondary Allylic Alcohols," Liu, T.-L.; Ng, T. W.; Zhao, Y. *J. Am. Chem. Soc.* **2017**, *139*, 3643-3646.

11. "Construction of Nine-Membered Heterocycles through Palladium-Catalyzed Formal [5 + 4] Cycloaddition," Yang, L.-C.;† Rong, Z.-Q.;† Wang, Y.-N.; Tan, Z. Y.; Wang, M. Zhao, Y. *Angew. Chem. Int. Ed*. **2017**, *56*, 2927-2931.

12. "Access to Enantiopure Triarylmethanes and 1,1-Diarylalkanes by NHC-Catalyzed Acylative Desymmetrization," Lu, S.;† Song, X.;† Poh, S. B.; Yang, H.; Wong, M. W.;* Zhao, Y.* *Chem. Eur. J.* **2017**, *23*, 2275-2281).

13. "Acid-Assisted Ru-Catalyzed Enantioselective Amination of 1,2-Diols through Borrowing Hydrogen," Yang, L.-C.; Wang, Y.-N.; Zhang, Y.;* Zhao, Y.* *ACS Catal.* **2017**, *7*, 93–97.

14. "Formal [3 + 2] cycloaddition of α-unsubstituted isocyanoacetates and methyleneindolinones: enantioselective synthesis of spirooxindoles," Peng, X.-J.; Ho, Y. A.; Wang, Z.-P.; Shao, P.-L.;* Zhao, Y.;* He, Y.* *Org. Chem. Front.* **2017**, *4*, 81–85.

15. "Access to Acyclic (*Z*)-Enediynes via Alkyne Trimerization: Cooperative Bimetallic Catalysis Using Air as the Oxidant," Lee, J. T. D.; Zhao, Y. *Angew. Chem. Int. Ed*. **2016**, *55*, 13872–13876.

16. "Stereoselective 1,6-Conjugate Addition/Annulation of Para-Quinone Methides with Vinyl Epoxides/ Cyclopropanes," Ma, C.;† Huang, Y.;† Zhao, Y. *ACS Catal.* **2016**, *6*, 6408–6412.

17. "Asymmetric Transfer Hydrogenation of Imines using Alcohol: Efficiency and Selectivity Are Affected by the Hydrogen Donor," Pan, H.-J.; Zhang, Y.; Shan, C.; Yu, Z.; Lan, Y.;* Zhao, Y.* *Angew. Chem. Int. Ed*. **2016**, *55*, 9615–9619.

18. "Cobalt-Catalyzed Enantioselective Vinylation of Activated Ketones and Imines," Huang, Y.;† Huang, R.-Z.;† Zhao, Y. *J. Am. Chem. Soc.* **2016**, *138*, 6571–6576.

19. “Catalyst-Enabled Diastereodivergent aza-Diels-Alder Reaction: Complementarity of N-Heterocyclic Carbene and Chiral Amine,” Rong, Z. Q.;† Wang, M.;† Chow, C. H. E.; Zhao, Y. *Chem*. *Eur*. *J*. **2016**, *22*, 9483–9487.

20. “Iron-catalyzed transfer hydrogenation of imines assisted by an iron-based Lewis acid,” Pan, H.-J.; Ng, T. W.; Zhao, Y. *Org. Biomol. Chem*. **2016**, *14*, 5490–5493 (Invited article for “New Talent Issue”).

21. “Cobalt-Catalyzed Allylation of Heterobicyclic Alkenes: Ligand-Induced Divergent Reactivities,” Huang, Y.; Ma, C.; Lee, Y. X.; Huang, R.-Z.; Zhao, Y. *Angew. Chem. Int. Ed*. **2015**, *54*, 13696–13700.

22. “Iron-catalyzed amination of alcohols assisted by Lewis acid,” Pan, H.-J.; Ng, T. W.; Zhao, Y. *Chem*. *Comm*. **2015**, *51*, 11907–11910.

23. "Phase-Transfer-Catalyzed Enantioselective α-Hydroxylation of Acyclic and Cyclic Ketones with Oxygen," Sim, S. B. D.; Wang, M.; Zhao, Y. *ACS Catal*. **2015**, *5*, 3609–3612.

24. "Dynamic Kinetic Asymmetric Amination of Alcohols: From A Mixture of Four Isomers to Diastereo- and Enantiopure α-Branched Amines," Rong, Z. Q.;† Zhang, Y.;† Chua, R. H. B.; Pan, H.-J.; Zhao, Y. *J*. *Am*. *Chem*. *Soc*. **2015**, *137*, 4944–4947.

25. "Catalytic Divergent Synthesis of 3*H* or 1*H* Pyrroles by [3+2] Cyclization of Allenoates with Activated Isocyanides," Liao, J.-Y.;† Shao, P.-L.;† Zhao, Y. *J*. *Am*. *Chem*. *Soc*. **2015**, *137*, 628–631.

26. "Stereoselective Synthesis of ε-Lactones or Spiro-Heterocycles through NHC-Catalyzed Annulation: Divergent Reactivity by Catalyst Control," Wang, M.;† Rong, Z.-Q.;† Zhao, Y. *Chem*. *Comm*. **2014**, *50*, 15309–15312.

27. "Kinetic Resolution of 1,1’-Biaryl-2,2’-Diols and Amino Alcohols through NHC-Catalyzed Atroposelective Acylation," Lu, S.; Poh, S. B.; Zhao, Y. *Angew. Chem. Int. Ed*. **2014**, *53*, 11041–11045.

28. "Highly Diastereo- and Enantioselective Ag-Catalyzed Double [3+2] Cyclization of a-Imino Esters with Isocyanoacetate," Shao, P.-L.; Liao, J.-Y.; Ho, Y. A.; Zhao, Y. *Angew. Chem. Int. Ed*. **2014**, *53*, 5435–5439.

29. "Enantioselective Oxidation of 1,2-Diols with Quinine-derived Urea Organocatalyst," Rong, Z.-Q.; Pan, H.-J.; Yan, H.-L.; Zhao, Y. *Org*. *Lett*. **2014**, *16*, 208–211.

30. "Catalytic Enantioselective Amination of Alcohols by the Use of Borrowing Hydrogen Methodology: Cooperative Catalysis by Iridium and a Chiral Phosphoric Acid," Zhang, Y.; Lim, C.-S.; Sim, D. S. B.; Pan, H.-J.; Zhao, Y. *Angew. Chem. Int. Ed*. **2014**, *53*, 1399–1403.

31. "Practical, Highly Stereoselective Allyl- and Crotylsilylation of Aldehydes Catalyzed by Readily Available Cinchona Alkaloid Amide," Huang, Y.; Yang, L.; Shao, P.; Zhao, Y. *Chem*. *Sci*. **2013**, *4*, 3275–3281.

32. “Kinetic Resolution of 3-Hydroxy-3-Substituted Oxindoles through NHC-Catalyzed Oxidative Esterification,” Lu, S.; Poh, S. B.; Siau, W.-Y.; Zhao, Y. *Synlett*, **2013**, *24*, 1165–1169.

33. “Kinetic Resolution of Tertiary Alcohols: Highly Enantioselective Access to 3-Hydroxy-3-Substituted Oxindoles,” Lu, S.; Poh, S. B.; Siau, W.-Y.; Zhao, Y. *Angew*. *Chem*. *Int*. *Ed*. **2013**, *52*, 1731–1734.

34. “Stereoselective Synthesis of *Z*-Alkenes,” Siau, W.-Y.; Zhang, Y.; Zhao, Y. *Top*. *Curr*. *Chem*. **2012**, *327*, 33–58.

PhD and Postdoc Periods:

35. “Preparation of Highly Pure Disubstituted *E* Olefins through Mo-Catalyzed *Z*-Selective Ethenolysis of Stereoisomeric Mixtures,” Marinescu, S. C.; Levine, D. S.; Zhao, Y.; Schrock, R. R.; Hoveyda, A. H. *J*. *Am*. *Chem*. *Soc*. **2011**, *133*, 11512–11514.

36. “Regiodivergent Reactions through Catalytic Enantioselective Silylation of Chiral Diols. Synthesis of Sapinofuranone A,” Rodrigo, J.; Zhao, Y.; Hoveyda, A. H.; Snapper, M. L. *Org*. *Lett*. **2011**, *13*, 3778–3781.

37. “*Endo*-Selective Enyne Ring-Closing Metathesis Promoted by Stereogenic-at-W Mono-Pyrrolide Complexes,” Zhao, Y.; Hoveyda, A. H.; Schrock, R. R. *Org*. *Lett*. **2011**, *13*, 784–787.

38. “Highly *Z*-Selective Metathesis Homocoupling of Terminal Olefins,” Jiang, A. J.; Zhao, Y.; Hoveyda, A. H.; Schrock, R. R. *J*. *Am*. *Chem*. *Soc*. **2009**, *131*, 16630–16631.

39. “Kinetic Resolution of 1,2-Diols through Highly Site- and Enantioselective Catalytic Silylation,” Zhao, Y.; Mitra, A. W.; Hoveyda, A. H.; Snapper, M. L. *Angew*. *Chem*. *Int*. *Ed*. **2007**, *44*, 8471–8474.

40. “Enantioselective Silyl Protection of Alcohols Catalysed by an Amino-Acid-Based Small Molecule,” Zhao, Y.; Rodrigo, J.; Hoveyda, A. H.; Snapper, M. L. *Nature* **2006**, *443*, 67–70.

41. “Proline-Based *N*-Oxides as Readily Available and Modular Chiral Catalysts. Enantioselective Reactions of Allyltrichlorosilane with Aldehydes,” Traverse, J. F.; Zhao, Y.; Hoveyda, A. H.; Snapper, M. L. *Org. Lett.* **2005**, *7*, 3151–3154.

[†]Equal contribution.

Patents

1. “Highly *Z*-Selective Olefin Metathesis,” Schrock, R. R.; Hoveyda, A. H.; Jiang, A. J.; Zhao, Y.; Flook, M. M. US patent No. 9713808 (issued on 25-07-2017).

2. “Catalytic Enantioselective Silylations of Substrates,” Snapper M. L.; Hoveyda A. H.; Rodrigo, J.; Zhao, Y. PCT Int. Appl. **2007**, # WO2007082026.

3. "Novel Cinchona Alkaloid Derived Catalyst Available in One-Pot Synthesis for Highly Diastereo- and Enantioselective Addition of Allyltrichlorosilane and Crotyltrichlorosilane to Aldehydes," Zhao, Y.; Huang, Y.; Shao, P.; Yang, L. US 61/765,315.