

CURRICULUM VITAE



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Education

University of California, Berkeley & Lawrence Berkeley National Laboratory *CA, USA*

Post-doctoral researcher *2012 - 2015*

Advisor: Prof. F. Dean Toste and Prof. Paul Alivisatos

University of Wisconsin-Madison *WI, USA*

Post-doctoral researcher *2010 - 2012*

Advisor: Prof. Weiping Tang

Lanzhou University *Lanzhou, Gansu, P.R. China*

Ph. D., Organic Chemistry *2005 -2010*

Advisor: Prof. Yong-Min Liang

Shaoxing University *Shaoxing, Zhejiang P.R. China*

B.S., Chemistry *2001 -2005*

Professional Experience

Professor, State Key Laboratory of Applied Organic Chemistry & College of Chemistry and Chemical Engineering, Lanzhou University *2015 – present*

Honors and Awards

Lanzhou University Youth May Fourth Medal *2020*

Thieme Chemistry Journals Award *2020*

China Youth Science and Technology Innovation Award *2009*

Chinese Academy of Sciences Scholarship	2009
Baosteel Excellent Student Award	2008
Zhejiang Province Government Award for “Outstanding University Graduates”	2005

Publications

1. Duan, J.; Wang, Y.; Qi, L.; Guo, P.; Pang, X.; Shu, X.-Z.*, “Nickel-Catalyzed Cross-Electrophile C(sp₃)-Si Coupling of Unactivated Alkyl Bromides with Vinyl Chlorosilanes” *Org. Lett.* **2021** (DOI: 10.1021/acs.orglett.1c02874).
2. Ma, W.-Y.; Han, G.-Y.; Kang, S.; Pang, X.; Liu, X.-Y.; Shu, X.-Z.*, “Cobalt-Catalyzed Enantiospecific Dynamic Kinetic Cross-Electrophile Vinylation of Allylic Alcohols with Vinyl Triflates” *J. Am. Chem. Soc.* **2021**, *143*, 15930.
3. Qiao, J.-B.; Zhang, Y.-Q.; Yao, Q.-W.; Zhao, Z.-Z.; Peng, X.; Shu, X.-Z.*, “Enantioselective Reductive Divinylation of Unactivated Alkenes by Nickel-Catalyzed Cyclization Coupling Reaction” *J. Am. Chem. Soc.* **2021**, *143*, 12961.
4. Xu, G.-L.; Liu, C.-Y.; Pang, X.; Liu, X.-Y.; Shu, X.-Z.*, “Nickel-Catalyzed Cross-Electrophile Vinyl–Vinyl Coupling: An Approach to Structurally Versatile Dienylboronates” *CCS Chemistry*, **2021**, *3*, 1147.
5. Pan, F.-F.; Guo, P.; Huang, X.; Shu, X.-Z.*, “Dibenzyls synthesis by nickel-catalyzed homocoupling of benzyl alcohols” *Synthesis*, **2021**, *53*, 3094.
6. Pang, X.; Zhao, Z.-Z.; Wei, X.-X.; Qi, L.; Xu, G.-L.; Duan, J.; Liu, X.-Y.; Shu, X.-Z.*, “Regiocontrolled Reductive Vinylation of Aliphatic 1,3-Dienes with Vinyl Triflates by Nickel Catalysis” *J. Am. Chem. Soc.* **2021**, *143*, 4536.
7. Pang, X.; Shu, X.-Z.*, “Titanium: A Unique Metal for Radical Dehydroxylative Functionalization of Alcohols” *Synlett*, **2021**, *32*, 1269. (A contribution to ‘Perspectives on Organoheteroatom and Organometallic Chemistry’ invited by Prof. Xuefeng Jiang.; doi: 10.1055/a-1406-0484)
8. Guo, P.; Wang, K.; Jin, W.-J.; Xie, H.; Qi, L.; Liu, X.-Y.; Shu, X.-Z.*, “Dynamic Kinetic Cross-Electrophile Arylation of Benzyl Alcohols by Nickel Catalysis” *J. Am. Chem. Soc.* **2021**, *143*, 513.
9. Duan, J.; Wang, K.; Xu, G.-L.; Kang, S.; Qi, L.; Liu, X.-Y.; Shu, X.-Z.*, “Cross-Electrophile Csp₂-Si Coupling of Vinyl Chlorosilanes” *Angew. Chem. Int. Ed.* **2020**, *59*, 23083.
10. Xie, H.; Guo, J.; Wang, Y.-Q.; Wang, K.; Guo, P.; Su, P.-F.; Wang, X.*; Shu, X.-Z.*; “Radical Dehydroxylative Alkylation of Tertiary Alcohols by Ti Catalysis” *J. Am. Chem. Soc.*, **2020**, *142*, 16787.
11. Qiao, J.-B.; Zhao, Z.-Z.; Zhang, Y.-Q.; Yin, K.; Tian, Z.-X.; Shu, X.-Z.*, “Allylboronates from Vinyl Triflates and α -Chloroboronates by Reductive Nickel Catalysis” *Org. Lett.* **2020**, *22*, 5085–5089.
12. Pang, X.; Peng, X.; Shu, X.-Z.*, “Reductive Cross-Coupling of Vinyl Electrophiles” *Synthesis* **2020**, *52*, 3751. (Invited review)
13. Pang, X.; He, R.-D.; Shu, X.-Z.*, “Construction of C-C Bond via C-N and C-O Cleavage” *Synlett* **2019**, *30*, A–F. (A review paper invited by Prof. Paul Knochel)
14. Duan, J.; Du, Y.-F.; Pang, X.; Shu, X.-Z.*, “Ni-catalyzed cross-electrophile coupling between

- v vinyl/aryl and alkyl sulfonates: synthesis of cycloalkenes and modification of peptides” *Chem. Sci.*, **2019**, 10, 8706-8712.
- 15. He, R.-D.; Li, C.-L.; Pan, Q.-Q.; Guo, P.; Liu, X.-Y.; **Shu, X.-Z.**^{*}, “Reductive Coupling between C–N and C–O Electrophiles” *J. Am. Chem. Soc.* **2019**, 141, 12481-12486.
 - 16. Pan, F.-F.; Guo, P.; Li, C.-L.; Su, P.; **Shu, X.-Z.**^{*}, “Enones from Acid Fluorides and Vinyl Triflates by Reductive Nickel Catalysis” *Org. Lett.* **2019**, 21, 3701–3705.
 - 17. Tian, Z.-X.; Qiao, J.-B.; Xu, G.-L.; Pang, X.; Qi, L.; Ma, W.-Y.; Zhao, Z.-Z.; Duan, J.; Du, Y.-F.; Su, P.-F.; Liu, X.-Y.; **Shu, X.-Z.**^{*}, “Highly Enantioselective Cross-Electrophile Aryl-Alkenylation of Unactivated Alkenes” *J. Am. Chem. Soc.* **2019**, 141, 7637-7643.
 - 18. Yan, X.-B.; Li, C.-L.; Jin, W.-J.; Guo, P.; **Shu, X.-Z.**^{*}, “Reductive coupling of benzyl oxalates with highly functionalized alkyl bromides by nickel catalysis.” *Chem. Sci.*, **2018**, 9, 4529-4534.
 - 19. Jia, X.-G.; Guo, P.; Duan, J.; **Shu, X.-Z.**^{*}, “Dual nickel and lewis acid catalysis for cross-electrophile coupling: the allylation of aryl halides with allylic alcohols.” *Chem. Sci.*, **2018**, 9, 640-645.
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- 20. **Shu, X.-Z.**; Schienebeck, C. M.; Li, X.; Zhou, X.; Song, W.; Chen, L.; Guzei, I. A.; Tang, W. “Rhodium-Catalyzed Stereoselective Intramolecular [5 + 2] Cycloaddition of 3-Acyloxy 1,4-Enyne and Alkene.” *Org. Lett.* **2015**, 17, 5128-5131.
 - 21. **Shu, X.-Z.**; Nguyen, S. C.; He, Y.; Oba, F.; Zhang, Q.; Canlas, C.; Somorjai, G. A.; Alivisatos, A. P.; Toste, F. D. “Silica-Supported Cationic Gold(I) Complexes as Heterogeneous Catalysts for Regio- and Enantioselective Lactonization Reactions.” *J. Am. Chem. Soc.* **2015**, 137, 7083-7086.
 - 22. **Shu, X.-Z.**; Zhang, M.; He, Y.; Frei, H.; Toste, F. D. “Dual visible light photoredox and gold-catalyzed arylative ring expansion.” *J. Am. Chem. Soc.* **2014**, 136, 5844-5847.
 - 23. Gross, E.; **Shu, X.-Z.**; Alayoglu, S.; Bechtel, H. A.; Martin, M. C.; Toste, F. D.; Somorjai, G. A. “In Situ IR and X-ray High Spatial-Resolution Microspectroscopy Measurements of Multistep Organic Transformation in Flow Microreactor Catalyzed by Au Nanoclusters.” *J. Am. Chem. Soc.* **2014**, 136, 3624-3629.
 - 24. Zhang, Q.; **Shu, X.-Z.**; Lucas, J. M.; Toste, F. D.; Somorjai, G. A.; Alivisatos, A. P. “Inorganic micelles as efficient and recyclable micellar catalysts.” *Nano. Lett.* **2014**, 14, 379-383.
 - 25. **Shu, X.-Z.**; Schienebeck, C. M.; Song, W.; Guzei, I. A.; Tang, W. “Transfer of Chirality in the Rhodium-Catalyzed Intramolecular [5+2] Cycloaddition of 3-Acyloxy-1,4-enynes (ACEs) and Alkynes: Synthesis of Enantioenriched Bicyclo[5.3.0]decatrienes.” *Angew. Chem. Int. Ed.* **2013**, 52, 3601-13605.
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 - 29. Yang, Y.-F.; **Shu, X.-Z.**; Luo, J.-Y.; Ali, S.; Liang, Y.-M. “Platinum-catalyzed cyclization/[1,2]-

- alkyl migration/allyl shift/cyclization cascade of epoxy alkynyl allyl ethers: a step-economical route to spirobenzo[h]chromanones.” *Chemistry* **2012**, *18*, 8600-8604.
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 - 33. Xia, X.-F.; **Shu, X.-Z.**; Ji, K.-G.; Shaukat, A.; Liu, X.-Y.; Liang, Y.-M. “Platinum/scandium-cocatalyzed cascade cyclization and ring-opening reaction of tertiary amines with substituted salicylaldehydes to synthesize 3-(aminoalkyl)coumarins.” *J. Org. Chem.* **2011**, *76*, 342-345.
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 - 41. Ji, K.-G.; **Shu, X.-Z.**; Zhao, S.-C.; Zhu, H.-T.; Niu, Y.-N.; Liu, X.-Y.; Liang, Y.-M. “Novel Carbon–Carbon Bond Formation from Propargylic Alcohols and Olefin toward Five-Membered Heterocyclic Rings Catalyzed by AgSbF₆.” *Org. Lett.* **2009**, *11*, 3206-3209.
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46. **Shu, X.-Z.**; Zhao, S.-C.; Ji, K.-G.; Zheng, Z.-J.; Liu, X.-Y.; Liang, Y.-M. “Platinum-Catalyzed Cyclization of o-Alkynyl(oxo)benzenes with Alkenes by 1,2-Migration of Benzene: Synthesis of 8-Oxabicyclo[3.2.1]octane Derivatives.” *Eur. J. Org. Chem.* **2008**, *2009*, 117-122.
47. **Shu, X.-Z.**; Liu, X.-Y.; Xiao, H.-Q.; Ji, K.-G.; Guo, L.-N.; Liang, Y.-M. “Tandem Gold(III)-Catalyzed Amination-Intramolecular Hydroamination Reactions of 1-En-4-yn-3-ols with Sulfonamides: Efficient Approach to Highly Substituted Pyrroles.” *Adv. Synth. Cat.* **2008**, *350*, 243-248.
48. **Shu, X.-Z.**; Liu, X.-Y.; Ji, K.-G.; Xiao, H.-Q.; Liang, Y.-M. “Au-catalyzed tandem cyclization/[1,2]-alkyl migration reaction of epoxy alkynes: synthesis of spiropyranones.” *Chemistry* **2008**, *14*, 5282-5289.
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51. Ji, K.-G.; Shen, Y.-W.; **Shu, X.-Z.**; Xiao, H.-Q.; Bian, Y.-J.; Liang, Y.-M. “Synthesis of Difurylmethane Derivativesvia the Gold-Catalyzed Tandem Cycloisomerization/Dimerization of Epoxide Alkynes.” *Adv. Synth. Cat.* **2008**, *350*, 1275-1280.
52. Xiao, H.-Q.; **Shu, X.-Z.**; Ji, K.-G.; Qi, C.-Z.; Liang, Y.-M. “Au(III)-catalyzed ring opening reaction of 1-cyclopropyl-2-yn-1-ols with nucleophiles: highly efficient approach to (Z)-conjugated enynes.” *New Journal of Chemistry* **2007**, *31*, 2041-2043.
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