Kaibo Feng

1645 W University Ave, Gainesville, FL 32601
kfeng2@ufl.edu

Education

Ph.D. in Chemistry, *University of Illinois at Urbana-Champaign*, *Urbana*, *IL*, 2013–2020
Research Advisor: Prof. M. Christina White
Dissertation: Late-stage C(sp^3)–H hydroxylation, amination, and methylation in nitrogen-containing molecules

B.S. in Chemistry, *Nanjing University*, *Nanjing*, *China*, 2009–2013
Research Advisor: Prof. Yi Pan
Thesis: Asymmetric nucleophilic addition of 1-indanone to chiral *N*-sulfinimines

Student Exchange, *National Cheng Kung University*, *Tainan*, *Taiwan*, 2010–2011

Professional Experience

Assistant Professor, *University of Florida*, *Gainesville*, *FL*, 2024 (Incoming)

Postdoctoral Associate, *Massachusetts Institute of Technology*, *Cambridge*, *MA*, 2020–2024
Research Advisor: Prof. Stephen L. Buchwald

Publications and Patents

7. Reichert, E. C.[†]; **Feng, K.**[†]; Sather, A. C.; Buchwald, S. L. *J. Am. Chem. Soc.* **2023**, *145*, 3323. "Pd-catalyzed amination of base-sensitive five-membered heteroaryl halides with aliphatic amines"
    - For a highlight see: Paul Richardson, "Rational design of a palladium catalyst system for C–N bond formation of five-membered heteroaryl halides" *Synfacts* **2023**, *19*, 335.
    - Top 20 most read *JACS* articles for two months, February–March 2023.
6. **Feng, K.** *Pure Appl. Chem.* **2022**, *94*, 547. "The quest for magic: recent advances in C(sp^3)–H methylation"
5. Ide, T.; **Feng, K.**[†]; Dixon, C. F.[†]; Teng, D.[†]; Clark, J. R.; Han, W.; Wendell, C. I.; Koch, V.; White, M. C. *J. Am. Chem. Soc.* **2021**, *143*, 14969. "Late-stage intermolecular allylic C–H amination"
4. **Feng, K.**[†]; Quevedo, R. E.[†]; Kohrt, J. T.; Oderinde, M.; Reilly, U.; White, M. C. *Nature* **2020**, *580*, 621. "Late-stage oxidative C(*sp*^{3})–H methylation"
    - For a news article see: Emily B. Corcoran & Danielle M. Schultz, "Manganese catalyst enables exploration of the magic methyl effect" *Nature* **2020**, *580*, 592; "Medikamententwicklung mit Mangan zum »magischen Methyleffekt«" *Spektrum der Wissenschaft* **2020**, (9), 32.
    - For a news article see: Robert F. Service, "Newly discovered 'magic methyl' reaction could turbocharge the potency of some drugs" *Science* **2020**, doi: 10.1126/science.abb7567.
    - For a highlight see: Franziska Thomas, "Je später, desto lieber: C(sp^3)–H-Hydroxylierung" *Nachrichten aus der Chemie* **2020**, *68*, 72.
    - Also highlighted by *Synfacts* (**2020**, *16*, 663), *Nature Briefing* (March 18), *Today's Science* (Infobase), *UIUC Chemistry News*, Tecmundo, among others.
3. White, M. C.; Clark, J. R.; **Feng, K.**, Sookezian, A., Wendell, C. U.S. Patent, **2020**, US 10,611,786 B2. "Manganese (III) catalyzed C–H aminations"
    - This patented catalyst is commercialized through MilliporeSigma, product #901425.
2. Clark, J. R.; **Feng, K.**[†]; Sookezian, A.[†]; White, M. C. *Nat. Chem.* **2018**, *10*, 583. "Manganese-catalysed benzylic C(*sp*^{3})–H amination for late-stage functionalization"
    - For a highlight see: Stu Borman, "Reaction aminates C–H bonds selectively" *Chem. Eng. News* **2018**, *96* (19), 11.
    - #1 most read *Nature Chemistry* article for 8 consecutive weeks, May–June 2018.
    - Cover article for *Nature Chemistry*, June 2018 issue.

1. Howell, J. M.[†]; **Feng, K.**[†]; Clark, J. R.; Trzepkowski, L. J.; White, M. C. *J. Am. Chem. Soc.* **2015**, *137*, 14590. "Remote oxidation of aliphatic C–H bonds in nitrogen-containing molecules"

Research Experience

Postdoctoral Research, *Massachusetts Institute of Technology*, 2020–2024

- Designed a novel palladium catalyst with enhanced reactivity and steric accessibility for the amination of six-membered (hetero)aryl halides with secondary amines.
- Developed a palladium-catalyzed strategy that readily aminates base-sensitive five-membered heteroaryl halides aided by the combination of a highly reactive catalyst and a moderate-strength base. Achieved tolerance for electrophilic functional groups and high reactivity for complex medicinal chemistry building blocks.

Graduate Research, *University of Illinois at Urbana-Champaign*, 2013–2020

- Developed an oxidative methylation strategy to install methyl groups at late stages in complex drug molecules. Significantly reduced catalyst loadings for C–H oxidation and achieved unprecedented tolerance towards electron-rich and neutral arenes.
- Developed a nitrogen complexation protection strategy. Applied this strategy to achieve unprecedented remote aliphatic C–H oxidation on pyridines, piperidines and acyclic amines. Expanded a previously developed computational, predictive model of site-selectivity to include nitrogen-containing complex molecules.
- Adapted and expanded the nitrogen protection strategy for intermolecular C–H amination using a novel manganese phthalocyanine catalyst. Applied this strategy to achieve unprecedented benzylic and allylic amination of various pharmaceutically active amines, pyridines, and benzimidazole, including commercial drugs, to achieve excellent site-selectivity and good yields.
- Designed a non-heme iron catalyst for C–H oxidation with improved reactivity. Applied this catalyst to achieve higher oxidation yield and selectivity in several aliphatic substrates.

Undergraduate Research, *Nanjing University*, 2011–2013

- Developed an asymmetric strategy that simultaneously introduces two chiral centers through nucleophilic addition using recoverable chiral auxiliaries in high yields and selectivities in electron-rich substrates.

Honors and Awards

- ACS Presidential P3 Medal for Graduate Research Excellence, 2022
- IUPAC-Solvay International Award for Young Chemists, 2021
- Reaxys PhD Prize Finalist, 2020
- R. C. Fuson Travel Award, 2017
- Terry Balthazor Poster Award, 2016
- Graduate Teacher Certificate, 2015
- List of Teachers Ranked as Excellent by Their Students, Outstanding, 2015
- Dr. Harold R. Snyder Fellowship, 2014
- List of Teachers Ranked as Excellent by Their Students, Outstanding, 2014
- List of Teachers Ranked as Excellent by Their Students, 2013
- Virginia Bartow Scholarship, 2013
- People Scholarship, 2012
- People Scholarship, 2010
- Silver Medalist, *Chinese Chemistry Olympiad*, 2009

Presentations

- **Poster Presentation**, *49th IUPAC World Chemistry Congress & CHAINS 2023*, *The Hague, The Netherlands*, August 2023. "Pd-catalyzed amination of base-sensitive five-membered heteroaryl halides"
- **Poster Presentation**, *2023 MIT Organic Chemistry Retreat*, *Cambridge, MA*, June 2023. "Pd-catalyzed amination of base-sensitive five-membered heteroaryl halides with aliphatic amines"

- **Poster Presentation**, *48th IUPAC World Chemistry Congress*, August 2021. "Late-stage C(sp^3)–H hydroxylation, amination, and methylation in nitrogen-containing molecules"
- **Poster Presentation**, *Reaxys PhD Prize Symposium*, September 2020. "Late-stage C(sp^3)–H functionalization in nitrogen-containing molecules"
- **Oral Presentation**, *260th ACS National Meeting*, August 2020. "Late-stage oxidative C(sp^3)–H methylation"
- **Oral Presentation**, *33rd Annual Beak-Pines Organic Area Allerton Conference*, *Monticello*, *IL*, November 2019. "C(sp^3)–H methylation for late-stage functionalization"
- **Poster Presentation**, *Merck Symposium*, *Urbana*, *IL*, December 2018. "Manganese-catalyzed benzylic C(sp^3)–H amination for late-stage functionalization"
- **Poster Presentation**, *Merck Symposium*, *Urbana, IL*, November 2017. "Remote oxidation of aliphatic C–H bonds in nitrogen-containing molecules"
- **Oral Presentation**, *Fuson Awards Symposium*, *Urbana, IL*, August 2017. "Remote oxidation of aliphatic C–H bonds in nitrogen-containing molecules"
- **Poster Presentation**, *Gordon Research Conference on Organic Reactions & Processes*, *Easton*, *MA*, July 2017. "Remote oxidation of aliphatic C–H bonds in nitrogen-containing molecules"
- **Poster Presentation**, *30th Annual Beak-Pines Organic Area Allerton Conference*, *Monticello*, *IL*, November 2016. "Remote aliphatic C–H oxidation of nitrogen-containing molecules"
- **Oral Presentation**, *252nd ACS National Meeting*, *Philadelphia*, *PA*, August 2016. "Remote aliphatic C–H oxidation of nitrogen-containing molecules"

Teaching Experience

Attendee, *University of Illinois at Urbana-Champaign*, 2020
- EOL 585 College Teaching, Prof. Sharon Lee
  Systematic study on pedagogy.

Guest Lecturer, *University of Illinois at Urbana-Champaign*, 2017 & 2020
- CHEM 538 Organometallic Chemistry, Prof. M. Christina White
  Guest lectured on the topics of C–H borylation and silylation.

Facilitator, *University of Illinois at Urbana-Champaign*, 2016
- Graduate Symposium, Center for Innovation in Teaching & Learning
  Taught and led discussions on methods to maximize office hours and principles of grading for new teaching assistants.

Teaching Assistant, *University of Illinois at Urbana-Champaign*, 2015
- CHEM 233 Elementary Organic Chemistry Laboratory, Dr. Shawn Miller
  Held office hours and assisted students in data analysis. Gave pre-lab lectures. Monitored and assisted in online discussions. Proctored exams. Taught laboratory concepts and reaction mechanisms and instructed 30+ non-chemistry majors in proper technique and experimental setup.

Head Teaching Assistant, *University of Illinois at Urbana-Champaign*, 2013–2014
- CHEM 237 Organic Chemistry Laboratory, Prof. M. Christina White/Ryan J. Rafferty
  Organized and led TA meetings. Guest lectured. Organized and hosted review sessions. Held office hours and assisted students in data analysis. Gave pre-lab lectures. Produced and proctored exams. Taught laboratory concepts and reaction mechanisms and instructed 180+ chemistry and chemical engineering majors in proper technique and experimental setup.

Professional Affiliations

- Reaxys Prize Club, 2020–Present
- American Chemical Society, 2011–Present