

Fang Wang

University of Rhode Island
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EDUCATION

University of Southern California, Los Angeles, CA Ph.D., Chemistry, 2012
Advisors: G. K. Surya Prakash and George A. Olah
Zhejiang University, Hangzhou, Zhejiang, China B.Sc., Chemistry, 2006

APPOINTMENTS

University of Rhode Island, Kingston, RI 2020–
Assistant Professor of Chemistry
Massachusetts Institute of Technology, Cambridge, MA 2017–2020
Research Scientist
Advisors: Stephen J. Lippard and Ömer H. Yilmaz
Massachusetts Institute of Technology, Cambridge, MA 2013–2017
Postdoctoral Associate
Advisor: Stephen J. Lippard
University of Southern California, Los Angeles, CA 2012–2013
Postdoctoral Associate
Advisors: G. K. Surya Prakash and George A. Olah

COURSES TAUGHT AT URI

CHM 505 Chemical Synthesis and Mechanism, Fall 2020, Fall 2021, Fall 2022
CHM 292 Organic Chemistry II for Chemistry Majors, Spring 2021, Spring 2022, Spring 2023
CHM 292L Organic Chemistry Laboratory for Chemistry Majors, Spring 2021, Spring 2022, Spring 2023

AWARDS AND FELLOWSHIPS

Best Poster Award, 22nd International Symposium on Fluorine Chemistry, Royal Society of Chemistry (2018)
Chinese Government Award for Outstanding Self-financed Students Abroad, Chinese Scholarship Council (2012)
Kenneth Nobutoshi Wachi Award, Department of Chemistry, University of Southern California (2010)
19th WFC Student Travel Award, Division of Fluorine Chemistry, American Chemical Society (2009)
Graduate Research Award for Excellence in Research, Department of Chemistry, University of Southern California (2008)
Outstanding Performance in Teaching Organic Chemistry, Department of Chemistry, University of Southern California (2008)
Harold and Lillian Moulton Fellowship in Chemistry, 2007-2011
Merit Undergraduate Student, Zhejiang University (2006)
Merit Undergraduate Student, Zhejiang Provincial Department of Education (2006)
Ferrotec China Scholarship, Zhejiang University (2005)
First-Class Scholarship on Academic Performance, Zhejiang University (2005)
First-Class Student Fellowship with Honor, Zhejiang University (2005)
Merit Undergraduate Student, Zhejiang University (2005)
First-Class Scholarship on Academic Performance, Zhejiang University (2004)
Second-Class Student Fellowship with Honor, Zhejiang University (2004)
Merit Undergraduate Student, Zhejiang University (2004)
Second-Class Student Fellowship with Honor, Zhejiang University (2003)

PROFESSIONAL SERVICE AND ACTIVITIES

Manuscript Review

Journal of the American Chemical Society, Chemistry - A European Journal, Journal of Fluorine Chemistry, European Journal of Organic Chemistry, Synthesis, Topics in Catalysis, Current Medicinal Chemistry, ChemistrySelect, The Chemical Record.

Outreach Activities

Rhode Island Mathematics Engineering Science Achievement (RIMESA), 2022
The Annual Rhode Island High School Chemistry Contest, 2022
URI Welcome Day, 2022
URI Fall Open House, 2021
Rhodyville, October 2, 2021
ACS member: 2008-present

PEER-REVIEWED PUBLICATIONS AND PATENT APPLICATIONS SINCE APPOINTMENT AT URI

39. **Fang Wang**, Jonathan Braverman, George Eng, Özen Leylek, Nicholas L. Petrone, Daiyao Zhang, Camellia S. Huang, Michael T. Hemann, Stephen J. Lippard*, Ömer H. Yilmaz* Leveraging platinum-protein interactions to overcome chemoresistance, *manuscript under review*.
38. Bradley M. Lipka, Daniel S. Honeycutt, Gregory M. Bassett, Taylor N. Kowal, Max Adamczyk, Zachary C. Cartnick, Vincent M. Betti, Jacob M. Goldberg*, and **Fang Wang**,* Ultra-Rapid Electrophilic Cysteine Arylation, *manuscript under review*.
37. Bradley M. Lipka, Vincent M. Betti, Daniel S. Honeycutt, Daniel L. Zelmanovich, Max Adamczyk, Ruojun Wu, Harrison S. Blume, Caitlin A. Mendina, Jacob M. Goldberg*, and **Fang Wang**,* Rapid Electrophilic Cysteine Arylation with Pyridinium Salts, *Bioconjugate Chem.* **2022**, *33*, 2189–2196.
36. Francesco Sessa, Martina Olsson, Fredrik Söderberg, **Fang Wang**, Martin Rahm,* Experimental Quantum Chemistry: A Hammett-inspired Fingerprinting of Substituent Effects, *ChemPhysChem* **2021**, *22*, 569–576.

PEER-REVIEWED PUBLICATIONS PRIOR TO APPOINTMENT AT URI

35. Jacob M. Goldberg,† **Fang Wang**,† Chanan D. Sessler, Nathan W. Vogler, Daniel Y. Zhang, William H. Loucks, Thanos Tzounopoulos, Stephen J. Lippard,* Photoactivatable Sensors for Detecting Mobile Zinc, *J. Am. Chem. Soc.* **2018**, *140*, 2020–2023. († = co-first author)
34. Paul Hebeisen, Urs Weiss, André Alker, Bernd Kuhn, Klaus Müller,* **Fang Wang**, G. K. Surya Prakash,* Molecular Structure and Crystal Packing of Monofluoromethoxyarenes, *Eur. J. Org. Chem.* **2018**, 3724–3734.
33. **Fang Wang**, Sabine Becker, Mik A. Minier, Andrei Loas, Megan N. Jackson, Stephen J. Lippard,* Tuning the Diiron Core Geometry in Carboxylate-Bridged Macrocyclic Model Complexes Affects their Redox Properties and Supports Oxidation Chemistry, *Inorg. Chem.* **2017**, *56*, 11050–11058.
32. Chanan D. Sessler,† Sabine Becker, Martin Rahm, Jacob M. Goldberg, **Fang Wang**, Stephen J. Lippard,* CF₂H, a Hydrogen Bond Donor, *J. Am. Chem. Soc.* **2017**, *139*, 9325–9332. († = undergraduate researcher)
31. Socrates B. Munoz, Chuanfa Ni, Zhe Zhang, **Fang Wang**, Nan Shao, Thomas Mathew, George A. Olah, G. K. Surya Prakash,* Selective Late-Stage, Hydrodefluorination of Trifluoromethylarenes: A Facile Access to Difluoromethylarenes *Eur. J. Org. Chem.* **2017**, *2017*, 2322–2326.
30. Sunghee Kim, Mikael A. Minier, Andrei Loas, Sabine Becker, **Fang Wang**, Stephen J. Lippard,* Achieving Reversible Sensing of Nitroxyl by Tuning the Ligand Environment of Azamacrocyclic Copper(II) Complexes, *J. Am. Chem. Soc.* **2016**, *138*, 1804–1807.
29. Zhe Zhang, Ángel Puente, **Fang Wang**, Martin Rahm, Yuncai Mei, Herbert Mayr,* G. K. Surya Prakash,* The Nucleophilicity of Persistent α -Monofluoromethide Anions, *Angew. Chem. Int. Ed.* **2016**, *55*, 12845–12849.
28. Kogularamanan Suntharalingam, Samuel G. Awuah, Peter M. Bruno, Timothy C. Johnstone, **Fang Wang**, Wei Lin, Yao-Rong Zheng, Julia E. Page, Michael T. Hemann, Stephen J. Lippard,* Necroptosis-Inducing Rhenium(V) Oxo Complexes, *J. Am. Chem. Soc.* **2015**, *137*, 2967–2974.
27. G. K. Surya Prakash,* Farzaneh Paknia, Aditya Kulkarni, Arjun Narayanan, **Fang Wang**, Golam Rasul, Thomas Mathew, George A. Olah, Taming of Superacids: PVP-Triflic Acid as An Effective Solid Triflic Acid Equivalent for Friedel-Crafts Hydroxyalkylation and Acylation, *J. Fluorine Chem.* **2015**, *171*, 102–112.
26. G. K. Surya Prakash,* **Fang Wang**, Zhe Zhang, Ralf Haiges, Martin Rahm, Karl O. Christe, Thomas Mathew, George A. Olah, The Long-Lived Trifluoromethide Anion: A Key Intermediate in Nucleophilic Trifluoromethylations, *Angew. Chem. Int. Ed.* **2014**, *53*, 11575–11578 (VIP). Cover picture. Highlighted in *Angew. Chem. Int. Ed.* **2014**, *53*, 11414–11415; *C&EN* **2014**, *92*, 4; *Science* **2014**, *346*, 206.
25. G. K. Surya Prakash,* **Fang Wang**, Martin Rahm, Zhe Zhang, Chuanfa Ni, Jingguo Shen, George A. Olah, The Trifluoromethyl Group as a Conformational Stabilizer and Probe: Conformational Analysis of Cinchona Alkaloid Scaffolds, *J. Am. Chem. Soc.* **2014**, *136*, 10418–10431.
24. Bo Yang, Lena Hooper-Burkhardt, **Fang Wang**, G. K. Surya Prakash,* S. R. Narayanan,* An Inexpensive Aqueous Flow Battery for Large-Scale Electrical Energy Storage Based on Water-Soluble Organic Redox Couples, *J. Electrochem. Soc.* **2014**, *161*, 1371–1380.
23. G. K. Surya Prakash,* Laxman Gurung, Philipp Christoph Schmid, **Fang Wang**, Tisa Elizabeth Thomas, Chiradeep Panja, Thomas Mathew, George A. Olah, *ipso*-Nitrosation of Arylboronic Acids with Chlorotrimethylsilane and Sodium Nitrite, *Tetrahedron Lett.* **2014**, *55*, 1975–1978.
22. G. K. Surya Prakash,* Zhe Zhang,† **Fang Wang**,† Marc Iuliucci, Chuanfa Ni, Martin Rahm, Ralf Haiges, George A. Olah, Stereoselective Synthesis of Fluoroalkenoates and Fluorinated Isoxazolidinones: *N*-Substituents Governing the Dual Reactivity of Nitrones, *Chem. Eur. J.* **2014**, *20*, 831–838. († = co-first student author)

21. G. K. Surya Prakash,* Chuanfa Ni, **Fang Wang**, Zhe Zhang, Ralf Haiges, George A. Olah,* Difluoro(sulfinato)methylation of *N*-Sulfinyl Imines Facilitated by 2-Pyridyl Sulfone: Stereoselective Synthesis of Difluorinated β -Amino Sulfonic Acids and Peptidosulfonamides, *Angew. Chem. Int. Ed.* **2013**, *52*, 10835–10839.
20. G. K. Surya Prakash,* Zhe Zhang, **Fang Wang**, Socrates Munoz, George A. Olah, Nucleophilic Trifluoromethylation of Carbonyl Compounds: Trifluoroacetaldehyde Hydrate as a Trifluoromethyl Source, *J. Org. Chem.* **2013**, *78*, 3300–3305.
19. G. K. Surya Prakash,* Nan Shao, **Fang Wang**, Chuanfa Ni, Preparation of α -Fluorobis(phenylsulfonyl)methane, *Org. Synth.* **2013**, *90*, 130–144.
18. G. K. Surya Prakash,* **Fang Wang**, Fluorine: the New Kingpin of Drug Discovery, *Chimica Oggi* **2012**, *30*, 5.
17. G. K. Surya Prakash,* **Fang Wang**, Zhe Zhang, Chuanfa Ni, Ralf Haiges, George A. Olah, Enantioselective Synthesis of α -Stereogenic γ -Keto Esters via Formal Umpolung, *Org. Lett.* **2012**, *13*, 3260–3263.
16. G. K. Surya Prakash,* Nan Shao, Zhe Zhang, Chuanfa Ni, **Fang Wang**, Ralf Haiges, George A. Olah, Facile Synthesis of α -Monofluoromethyl Alcohols: Nucleophilic Monofluoromethylation of Aldehydes Using $(\text{PhSO}_2)_2\text{CFTMS}$, *J. Fluorine Chem.* **2012**, *133*, 27–32.
15. G. K. Surya Prakash,* **Fang Wang**, Chuanfa Ni, Jingguo Shen, Ralf Haiges, Andrei Yudin, Thomas Mathew, George A. Olah,* Conformational Study of 9-Dehydro-9-Trifluoromethyl Cinchona Alkaloids via ^{19}F NMR Spectroscopy: Emergence of Trifluoromethyl Moiety as a Conformational Stabilizer and a Probe, *J. Am. Chem. Soc.* **2011**, *133*, 9992–9995.
14. G. K. Surya Prakash,* **Fang Wang**, Martin Rahm, Jingguo Shen, Chuanfa Ni, Ralf Haiges, George A. Olah,* On the Nature of C–H \cdots F–C Interactions in Hindered CF_3 –C(sp^3) Bond Rotations, *Angew. Chem. Int. Ed.* **2011**, *50*, 11761–11764.
13. G. K. Surya Prakash,* Zhe Zhang, **Fang Wang**, Chuanfa Ni, George A. Olah,* *N,N*-Dimethyl-*S*-difluoromethyl-*S*-phenylsulfoximinium Tetrafluoroborate: a Versatile Electrophilic Difluoromethylating Reagent, *J. Fluorine Chem.* **2011**, *132*, 792–798.
12. G. K. Surya Prakash,* Chuanfa Ni, **Fang Wang**, Jinbo Hu, George A. Olah,* From Difluoromethyl 2-Pyridyl Sulfone to Difluorinated Sulfonates: A Protocol for Nucleophilic Difluoro(sulfonyl)methylation, *Angew. Chem. Int. Ed.* **2011**, *50*, 2559–2563. Highlighted in *Synfact*, **2011**, 0498–0498.
11. G. K. Surya Prakash,* **Fang Wang**, Chuanfa Ni, Tito J. Thomas, George A. Olah,* Efficient Synthesis of α -(Fluoro/chloro/methoxy)disulfonylmethane Derivatives as Tunable Substituted Methyl Synthons via A New C–S Bond Forming Strategy, *J. Fluorine Chem.* **2010**, *131*, 1007–1012.
10. G. K. Surya Prakash,* Clement Do, **Fang Wang**, Thomas Mathew, George A. Olah,* Cyclodehydration of Fluorinated Diols Using the Mitsunobu Reaction: Highly Efficient Synthesis of Trifluoromethylated Cyclic Ethers, *Synthesis*, **2010**, 1891–1898.
9. G. K. Surya Prakash,* **Fang Wang**, Nan Shao, Thomas Mathew, Golam Rasul, Ralf Haiges, Timothy Stewart, George A. Olah,* A Persistent α -Fluorocarbanion and Its Analogues: Preparation, Characterization, and Computational Study, *Angew. Chem. Int. Ed.* **2009**, *48*, 5358–5362.
8. G. K. Surya Prakash,* **Fang Wang**, Timothy Stewart, Thomas Mathew, George A. Olah,* α -Fluoro- α -nitro(phenylsulfonyl)methane as A Fluoromethyl Pronucleophile: Efficient Stereoselective Michael Addition to Chalcones, *Proc. Natl. Acad. Sci. U. S. A.* **2009**, *106*, 4090–4094.
7. G. K. Surya Prakash,* Xiaoming Zhao, Sujith Chacko, **Fang Wang**, Habiba Vaghoo, George A. Olah,* Efficient 1, 4-Addition of α -Substituted Fluoro(phenylsulfonyl)methane Derivatives to α , β -Unsaturated Compounds, *Beils. J. Org. Chem.* **2008**, *4*, 17.
6. Chuanfa Ni, **Fang Wang**, Jinbo Hu,* Enantioselective Nucleophilic Difluoromethylation of Aromatic Aldehydes with $\text{Me}_3\text{SiCF}_2\text{SO}_2\text{Ph}$ and $\text{PhSO}_2\text{CF}_2\text{H}$ Reagents Catalyzed by Chiral Quaternary Ammonium Salts, *Beils. J. Org. Chem.* **2008**, *4*, 21.
5. Jun Liu, Chuanfa Ni, **Fang Wang**, Jinbo Hu,* Stereoselective Synthesis of α -Difluoromethyl- β -Amino Alcohols via Nucleophilic Difluoromethylation with $\text{Me}_3\text{SiCF}_2\text{SO}_2\text{Ph}$, *Tetrahedron Lett.* **2008**, *49*, 1605–1608.
4. Zujin Zhao, Peng Zhang, **Fang Wang**, Zixing Wang, Ping Lu,* Wenjin Tian,* Blue Light-Emitting, Electron-Transporting Materials Based on Ethynyl-Linked D-A Systems, *Chem. Phys. Lett.* **2006**, *4-6*, 239–296.
3. Zujin Zhao, Xinjun Xu, **Fang Wang**, Gui Yu, Ping Lu,* Daoben Zhu,* Synthesis and Characterization of Light-Emitting Materials Composed of Carbazole Pyrene and Fluorene, *Synth. Met.* **2006**, *156*, 209–212.
2. Yajun Xing, Haiyao Lin, **Fang Wang**, Ping Lu,* An Efficient D-A Dyad for Solvent Polarity Sensor, *Sens. Actuators B* **2006**, *114*, 28–31.
1. Yajun Xing, Xuanyan Xu, **Fang Wang**, Ping Lu,* Optical Properties of a Series of Tetraarylthiophenes, *Opt. Mater.* **2006**, *29*, 407–409.

BOOK CHAPTERS PRIOR TO APPOINTMENT AT URI

5. G. K. Surya Prakash,* Zhe Zhang, **Fang Wang**, 2,2,2-Trifluoro-1-methoxyethanol in *Encyclopedia of Reagents for Organic Synthesis*, John Wiley & Sons, Ltd, **2013**. DOI: 10.1002/047084289X.rm01620.
4. G. K. Surya Prakash,* **Fang Wang**, Flourishing Frontiers in Organofluorine Chemistry in *Organic Chemistry – Breakthroughs and Perspectives*, K. Ding, L.-X. Dai, Eds. Wiley-VCH Verlag GmbH & Co. KGaA: **2012**; 413–476.
3. G. K. Surya Prakash,* **Fang Wang**, Preparation of Silicon- and Sulfur-Based Fluorinated Methane Derivatives as Versatile Fluoromethylation Reagents in *Efficient Preparations of Fluorine Compounds*, H. W. Roesky, Ed. John Wiley & Sons, Inc.: **2012**; pp 173–204.
2. G. K. Surya Prakash,* **Fang Wang**, 1,1,1-Trifluoroacetone in *Encyclopedia of Reagents for Organic Synthesis*, John Wiley & Sons, Ltd, **2011**. DOI: 10.1002/047084289X.rm01348.
1. G. K. Surya Prakash,* **Fang Wang**, Trifluoromethyltriethylsilane in *Encyclopedia of Reagents for Organic Synthesis*, John Wiley & Sons, Ltd, **2010**. DOI: 10.1002/047084289X.rm01198.

PATENTS

3. **Fang Wang**, Jacob. M. Goldberg, Bradley M. Lipka, Daniel S. Honeycutt, Pnictogen-Containing Heterocyclic Compounds and Their Use, Patent filled.
2. Stephen J. Lippard, Ömer H. Yilmaz, **Fang Wang**, Jonathan Braverman, Platinum-Anthracycline Derivative Conjugates and Their Therapeutic Applications, Pub. No.: US 2020/0331942 A1
1. Ömer H. Yilmaz, Chia-Wei Cheng, George Eng, **Fang Wang**, Compositions and Methods For Inducing Intestinal Stem Cell Regeneration, U.S. Patent application filed, Application No.: 16/655,125

INVITED LECTURES

2. Organofluorine Compounds for Rapid Cysteine Functionalization, 26th Winter Fluorine Conference, Clearwater, Florida, Jan. 12, **2023**.
1. Photoactivatable Sensors for Detecting Mobile Zinc, The Interdisciplinary Neuroscience Program and Ryan Institute for Neuroscience, University of Rhode Island, Sep. 15, **2021**.

FUNDED RESEARCH

1. Anthracycline-Platinum Drug Conjugates for Overcoming Chemoresistance. PI. Rhode Island Foundation Medical Research Grant, 05/01/2021 – 11/01/2022, **\$25,000**.
2. Developing Sulfur-Reactive Metallo drugs to Overcome Chemoresistance. PI. NIH (Rhode Island IDeA Network of Biomedical Research Excellence), 05/01/2023 – 04/30/2025, **\$200,000**.