

Curriculum Vitae

Thomas S. Teets

Department of Chemistry
University of Houston
Lamar Fleming Jr. Building
3585 Cullen Blvd. Room 112
Houston, TX 77204-5003
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Experience

University of Houston

Assistant Professor of Chemistry

2014–present

California Institute of Technology

Postdoctoral Scholar

Department of Chemistry

Advised by Prof. John Bercaw and Dr. Jay Labinger

2012–2014

Education

Massachusetts Institute of Technology

Ph.D. Inorganic Chemistry

Research with Professor Daniel G. Nocera

Hertz Foundation Graduate Fellow

2012

Thesis Title: Halogen-Elimination Photochemistry and Oxygen-Activation Chemistry of Late Transition-Metal Complexes

Case Western Reserve University

B. S. Chemistry, *summa cum laude*

Research with Professor Thomas G. Gray

Thesis Title: Synthesis, Characterization and Photophysical Properties of Transition Metal Complexes of Tetraarylazadipyromethenes

2007

Awards and Fellowships

ACS Greater Houston Section Younger Chemist Award

2017

ACS Emerging Investigators in Inorganic Photochemistry and Photophysics

2016

ACS Division of Inorganic Chemistry Young Investigator Award

2012

Hertz Foundation Graduate Fellowship

2007–2012

IPMI Sabin Metals Corp. Graduate Student Award

2010

Alpha Chi Sigma Scholar Award

2007

Charles Mabery Undergraduate Thesis Prize, *CWRU*

2007

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| Hypercube Scholar Award 2007, <i>CWRU</i> | 2007 |
| Polymer Valley Undergraduate Research Award, <i>CWRU</i> | 2006 |
| W. R. Veazey Prize, <i>CWRU</i> | 2005 |
| Eli Lilly Award, <i>CWRU</i> | 2005 |
| SOURCE Summer Research Fellow, <i>CWRU</i> | 2005–2006 |
| Freshman Chemistry Achievement Award, <i>CWRU</i> | 2004 |
| National Merit Scholar | 2003–2007 |
| Trustee's Scholarship, <i>CWRU</i> | 2003–2007 |

Publications

University of Houston

41. Maity, A.; Kölsch, J. C.; Na, H.; **Teets, T. S.** Room temperature transmetallation from tris(pentafluorophenyl)borane to cyclometallated iridium(III). *Dalton Trans.* **2017**, *46*, 11757–11767.
40. Na, H.; Maity, A.; **Teets, T. S.** Bis-Cyclometalated Iridium Complexes with Chelating Dicarbene Ancillary Ligands. *Organometallics* **2017**, *36*, 2965–2972.
39. Na, H.; Maity, A.; **Teets, T. S.** Bis-cyclometalated iridium complexes with electronically modified aryl isocyanide ancillary ligands. *Dalton Trans.* **2017**, *46*, 5008–5016.
38. Maya, R.; Maity, A.; **Teets, T. S.** Fluorination of Cyclometalated Iridium β -Ketoiminate and β -Diketimate Complexes: Extreme Redox Tuning and Ligand-Centered Excited States. *Organometallics* **2016**, *35*, 2890–2899.
37. Na, H.; Maity, A.; **Teets, T. S.** Postsynthetic Systematic Electronic Tuning of Organoplatinum Photosensitizers via Secondary Coordination Sphere Interactions. *Organometallics* **2016**, *35*, 2267–2274.
36. Maity, A.; **Teets, T. S.** Main Group Lewis Acid-Mediated Transformations of Transition-Metal Hydride Complexes. *Chem. Rev.* **2016**, *116*, 8873–8911.
35. Maity, A.; Le, L. Q.; Zhu, Z.; Bao, J. **Teets, T.S.** Steric and Electronic Influence of Aryl Isocyanides on the Properties of Iridium(III) Cyclometalates. *Inorg. Chem.* **2016**, *55*, 2299–2308.
34. Kabir, E.; Wu, C.-H.; Wu, J. I.-C.; **Teets, T. S.** Heteroleptic Complexes of Cyclometalated Platinum with Triarylformazanate Ligands. *Inorg. Chem.* **2016**, *55*, 956–963.
33. Radwan, Y. K.; Maity, A.; **Teets, T. S.** Manipulating the Excited States of Cyclometalated Iridium Complexes with β -Ketoiminate and β -Diketimate Ligands. *Inorg. Chem.* **2015**, *54*, 7122–7131.

Previous Institutions

32. Halbach, R. L.; **Teets, T. S.**; Nocera, D. G. Oxygen Reduction Mechanism of Monometallic Rhodium Hydride Complexes. *Inorg. Chem.* **2015**, *54*, 7335–7344.
31. **Teets, T. S.**; Labinger, J. A.; Bercaw, J. E. Guanidine-Functionalized Rhenium Cyclopentadienyl Carbonyl Complexes: Synthesis and Cooperative Activation of H–H and O–H Bonds. *Organometallics* **2014**, *33*, 4107–4117.

30. **Teets, T. S.;** Labinger, J. A.; Bercaw, J. E. A Thermodynamic Analysis of Rhenium(I)-Formyl C–H Bond Formation via Base-Assisted Heterolytic H₂ Cleavage in the Secondary Coordination Sphere. *Organometallics* **2013**, *32*, 5530–5545.
29. Maity, A.; Choi, J.-S.; **Teets, T. S.;** Deligonul, N.; Berdis, A. J.; Gray, T. G. Cyclometalated Iridium(III) Complexes with Deoxyribose Substituents. *Chem. Eur. J.* **2013**, *Chem. Eur. J.* **2013**, *19*, 15924–15932.
28. Powers, D. C.; Chambers, M. B.; **Teets, T. S.;** Elgrishi, N.; Anderson, B. L.; Nocera, D. G. Halogen photoelimination from dirhodium phosphazene complexes *via* chloride-bridged intermediates. *Chem. Sci.* **2013**, *4*, 2880–2885.
27. **Teets, T. S.;** Nocera, D. G. Acidolysis and oxygen atom transfer reactivity of a diiridium hydroperoxo complex. *Dalton. Trans.* **2013**, *42*, 3521–3527.
26. Symes, M. D.; Lutterman, D. A.; **Teets, T. S.;** Anderson, B. L.; Breen, J. J.; Nocera, D. G. Photo-active Cobalt Cubane Model of an Oxygen-Evolving Catalyst. *ChemSusChem* **2013**, *6*, 65–69.
25. Schwalbe, M.; Metzinger, R.; **Teets, T. S.;** Nocera, D. G. Terpyridine-Porphyrin Hetero-Pacman Compounds. *Chem. Eur. J.* **2012**, *18*, 15449–15458.
24. Elgrishi, N.; **Teets, T. S.;** Chambers, M. B.; Nocera, D. G. Stability-enhanced hydrogen-evolving dirhodium photocatalysts through ligand modification. *Chem. Commun.* **2012**, *48*, 9474–9476.
23. Keith, J. M.; **Teets, T. S.;** Nocera, D. G. O₂ Insertion into Group 9 Metal-Hydride Bonds: Evidence for Oxygen Activation through the Hydrogen-Atom-Abstraction Mechanism. *Inorg. Chem.* **2012**, *51*, 9499–9507.
22. **Teets, T. S.;** Nocera, D. G. Oxygen Reduction Reactions of Monometallic Rhodium Hydride Complexes. *Inorg. Chem.* **2012**, *51*, 7192–7201.
21. Partyka, D. V.; **Teets, T. S.;** Zeller, M.; Updegraff, J. B. III, Hunter, A. D.; Gray, T. G. Constrained Digold(I) Diaryls: Syntheses, Crystal Structures, and Photophysics. *Chem. Eur. J.* **2012**, *18*, 2100–2112.
20. Pizano, A. A.; Lutterman, D. A.; Holder, P. G.; **Teets, T. S.;** Stubbe, J.; Nocera, D. G. Photo-ribonucleotide reductase β₂ by selective cysteine labeling with a radical phototrigger. *Proc. Natl. Acad. Sci. USA* **2012**, *109*, 39–43.
19. **Teets, T. S.;** Nocera, D. G. Mechanistic Studies of O₂ Reduction Effected by Group 9 Bimetallic Hydride Complexes. *J. Am. Chem. Soc.* **2011**, *133*, 17796–17806.
18. **Teets, T. S.;** Nocera, D. G. Photocatalytic hydrogen production. *Chem. Commun.* **2011**, *47*, 9268–9274.
17. **Teets, T. S.;** Cook, T. R.; McCarthy, B. D.; Nocera, D. G. Redox Chemistry, Acid Reactivity, and Hydrogenation Reactions of Two-Electron Mixed Valence Diiridium and Dirhodium Complexes. *Inorg. Chem.* **2011**, *50*, 5223–5233.
16. **Teets, T. S.;** Cook, T. R.; McCarthy, B. D.; Nocera, D. G. Oxygen Reduction to Water Mediated by a Dirhodium Hydrido-Chloride Complex. *J. Am. Chem. Soc.* **2011**, *133*, 8114–8117.
15. Schwalbe, M.; Dogutan, D. K.; Stoian, S. A.; **Teets, T. S.;** Nocera, D. G. Xanthene-Modified and Hangman Iron Corroles. *Inorg. Chem.* **2011**, *50*, 1368–1377.
14. **Teets, T. S.;** Neumann, M. P.; Nocera, D. G. Heterobimetallic rhodium-gold halide and hydride complexes. *Chem. Commun.* **2011**, *47*, 1485–1487.

13. Dogutan, D. K.; Stoian, S. A.; McGuire, R. Jr.; Schwalbe, M.; **Teets, T. S.**; Nocera, D. G. Hangman Corroles: Efficient Synthesis and Oxygen Reaction Chemistry. *J. Am. Chem. Soc.* **2011**, *133*, 131–140.
12. Cook, T. R.; Dogutan, D. K.; Reece, S. Y.; Surendranath, Y.; **Teets, T. S.**; Nocera, D. G. Solar Energy Supply and Storage for the Legacy and Nonlegacy Worlds. *Chem. Rev.* **2010**, *110*, 6474–6502.
11. **Teets, T. S.**; Cook, T. R.; Nocera, D. G. The Diphosphine tfepma and its Diiridium Complex Ir₂^{0,II}(tfepma)₃Cl₂. *Inorg. Synth.* **2010**, *35*, 164–168.
10. McGuire, R. Jr.; Dogutan, D. K.; **Teets, T. S.**; Suntivich, J.; Shao-Horn, Y.; Nocera, D. G. Oxygen reduction reactivity of cobalt(II) hangman porphyrins. *Chem. Sci.* **2010**, *1*, 411–414.
9. **Teets, T. S.**; Lutterman, D. A.; Nocera, D. G. Halogen Photoreductive Elimination from Metal–Metal Bonded Iridium(II)–Gold(II) Heterobimetallic Complexes. *Inorg. Chem.* **2010**, *49*, 3035–3043.
8. Dogutan, D. K.; Bediako, D. K.; **Teets, T. S.**; Schwalbe, M.; Nocera, D. G. Efficient Synthesis of Hangman Porphyrins. *Org. Lett.* **2010**, *12*, 1036–1039.
7. Partyka, D. V.; Gao, L.; **Teets, T. S.**; Updegraff, J. B. III; Deligonul, N.; Gray, T. G. Copper-Catalyzed Huisgen [3 + 2] Cycloaddition of Gold(I) Alkynyls with Benzyl Azide. Syntheses, Structures, and Optical Properties. *Organometallics* **2009**, *28*, 6171–6182.
6. Gao, L.; Peay, M. A.; Partyka, D. V.; Updegraff, J. B. III; **Teets, T. S.**; Esswein, A. J.; Zeller, M.; Hunter, A. D.; Gray, T. G. Mono- and Di-Gold(I) Naphthalenes and Pyrenes: Syntheses, Crystal Structures, and Photophysics. *Organometallics* **2009**, *28*, 5669–5681.
5. **Teets, T. S.**; Updegraff, J. B. III; Esswein, A. J.; Gray, T. G. Three-Coordinate, Phosphine-Ligated Azadipyromethene Complexes of Univalent Group 11 Metals. *Inorg. Chem.* **2009**, *48*, 8134–8144.
4. **Teets, T. S.**; Nocera, D. G. Halogen Photoreductive Elimination from Gold(III) Centers. *J. Am. Chem. Soc.* **2009**, *131*, 7411–7420.
3. Bachmann, J.; **Teets, T. S.**; Nocera, D. G. Proton storage in the periphery of zirconium(IV) porphyrinogen. *Dalton Trans.* **2008**, 4549–4551.
2. **Teets, T. S.**; Partyka, D. V.; Updegraff, J. B. III; Gray, T. G. Homoleptic, Four-Coordinate Azadipyromethene Complexes of d¹⁰ Zinc and Mercury. *Inorg. Chem.* **2008**, *47*, 2338–2346.
1. **Teets, T. S.**; Partyka, D. V.; Esswein, A. J.; Updegraff, J. B. III; Zeller, M.; Hunter, A. D.; Gray, T. G. Luminescent Three-Coordinate Azadipyromethene Complexes of d¹⁰ Copper, Silver, and Gold. *Inorg. Chem.* **2007**, *46*, 6218–6220.

Invited Conferences and Seminars

7. Teets, T. S.; Na, H.; Lai, P.-N.; Maity, A.; Kölsch, J. “Controlling triplet energies and dynamics in bis-cyclometalated iridium complexes via ancillary ligand modification” 254th American Chemical Society National Meeting: INOR-397 August 21 2017, Washington, D. C.
6. Teets, T. S. “Ancillary Ligand Strategies to Control Triplet Energies and Dynamics in Organometallic Phosphors” Shandong University, May 18 2017, Jinan, Shandong, China.
5. Teets, T. S. “Ancillary Ligand Strategies to Control Triplet Energies and Dynamics in Organometallic Phosphors” Hubei University, May 13 2017, Wuhan, Hubei, China.

4. Teets, T. S. “Ancillary Ligand Strategies to Control Triplet Energies and Dynamics in Organometallic Phosphors” Huazhong University of Science and Technology, May 9 2017, Wuhan, Hubei, China.
3. Teets, T. S. “Synthetic Modification of Organometallic Phosphors in the Primary and Secondary Coordination Spheres” Case Western Reserve University, April 21 2016, Cleveland, OH.
2. Teets, T. S.; Nocera, D. G. “Rhodium and iridium hydrides: GO_2 guys for oxygen activation and reduction”; 244th American Chemical Society National Meeting: INOR-63 August 19–23 2012, Philadelphia, PA (*Invited*).
1. Teets, T. S. “Halogen Photoreductive Elimination from Late Transition Metal Complexes”; 22nd Boston Regional Inorganic Colloquium, June 12 2010, Brandeis University, Waltham, MA (*Invited*).

Contributed Conference Presentations

13. Teets, T. S.; Na, H.; Maity, A.; Kölsch, J. C. “New Synthetic Strategies for Bis-Cyclometalated Iridium Complexes” Organometallic Chemistry Gordon Research Conference, July 9–14 2017, Newport, RI.
12. Teets, T. S.; Maity, A.; Na, H.; Maya, R. A.; Radwan, Y.; Lai, P.-N. “Primary and Secondary Coordination Sphere Strategies for Modifying Organometallic Phosphors” Inorganic Chemistry Gordon Research Conference, June 19–24 2016, Biddeford, ME.
11. Teets, T. S.; Maity, A.; Radwan, Y. “Bis-cyclometalated iridium complexes supported by β -ketiminate (acNac) and β -diketimininate (NacNac) ligands” American Chemical Society National Meeting: INOR-409 August 18 2015, Boston, MA.
10. Teets, T. S.; Kabir, E. “Heteroleptic formazan complexes of cyclometallated platinum” American Chemical Society National Meeting: INOR-134 August 16 2015, Boston, MA.
9. Teets, T. S.; Radwan, Y. K.; Maya, R. A.; Maity, A. “Cyclometallated Iridium Complexes with β -Ketoiminate and β -Diketimininate Ligands” Organometallic Chemistry Gordon Research Conference, July 12–17 2015, Newport, RI.
8. Teets, T. S.; Labinger, J. A.; Bercaw, J. E. “Thermodynamic Aspects of Formyl C–H Bond Formation via Base-Assisted Heterolytic H_2 Cleavage”; Organometallic Chemistry Gordon Research Seminar and Conference, July 6–13 2013, Newport, RI.
7. Teets, T. S.; Nocera, D. G. “Redox chemistry, acid reactivity and hydrogenation reactions of a new class of two-electron mixed valence dirhodium and diiridium complexes”; 242nd American Chemical Society National Meeting: INOR-565 August 28–September 1 2011, Denver, CO.
6. Teets, T. S.; Nocera, D. G. “Mechanism of O_2 Reduction Reactions Mediated by Dirhodium and Diiridium Complexes”; Inorganic Reaction Mechanisms Gordon Research Conference, March 6–11 2011, Galveston, TX (*Selected for poster talk*).
5. Teets, T. S. “Synthesis, Thermal Reactivity and Photochemistry of Late Transition Metal Halide and Hydride Complexes”; Department of Chemistry, Massachusetts Institute of Technology; September 8, 2010.
4. Teets, T. S.; Neumann, M. P.; Nocera, D. G. “Synthesis, Reactivity and Photochemistry of Heterobimetallic Rhodium-Gold Halide and Hydride Complexes”; 240th American Chemical Society National Meeting: INOR-682 August 22–26 2010, Boston, MA.

3. Teets, T. S. "A New Mechanism for Photocatalytic HCl Splitting Mediated by Dirhodium Complexes"; Inorganic Chemistry Gordon Research Seminar (oral, *invited*) and Conference (poster), June 19–25 2010, University of New England, Biddeford, ME.
2. Teets, T. S.; Nocera, D. G. "Halogen Elimination from Monomeric and Dimeric Au^{III} Complexes"; 237th American Chemical Society National Meeting: INOR-680 March 22–26 2009, Salt Lake City, UT.
1. Teets, T. S.; Nocera, D. G. "Halogen Elimination from Monomeric and Dimeric Au^{III} Complexes"; Osaka University Forum on Bio-Environmental Chemistry, December 8–10 2008, San Francisco, CA.

Teaching Experience

University of Houston

Courses Taught: Fundamentals of Chemistry I (CHEM 1331) 2014–present
Physical Inorganic Chemistry I (CHEM 6374)

Massachusetts Institute of Technology

Graduate Teaching Assistant 2007–2008
Courses Taught: General Chemistry, Introductory Chemistry Lab

Case Western Reserve University

Supplemental Instructor (SI)
Courses Taught: General Chemistry, General Chemistry for Engineers, 2004–2007
Introductory Organic Chemistry

Service and Outreach

Houston ABC13 Evening News: Consulted and interviewed for story on hazards of mixing household chemicals (<http://abc13.com/health/household-chemicals-you-should-never-mix/1748504/>)

University of Houston Student Fees Advisory Committee (SFAC): Faculty Representative
University of Houston "Run UH" and Pre-Veterinary Student Association student organizations: Faculty Advisor

UH Honors College STEM Graduate Fellowship Workshop: Panelist

Science Engineering Fair of Houston: Judge

Intel International Science and Engineering Fair: Grand Award Judge (2014)

Los Angeles County Science Fair: Judging chair, general chemistry division.

Caltech Summer Undergraduate Research Fellows Seminar Day: Session chair and judge.

Pasadena Unified School District: Science Fair judge and outreach modules.

Science Buddies: "Water to Fuel to Water: The Fuel Cycle of the Future": Online electrocatalysis lab module for high school students (sciencebuddies.com)

MIT Center for Materials Science and Engineering Middle School Program: "Energy Conversion": Outreach course teaching fundamentals of electrochemistry, energy conversion, photophysics, and photochemistry

MIT Museum Innovation Sunday: Interactive demonstration on photochemistry and electrochemistry