

## Jenny Y. Yang

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### EDUCATION AND TRAINING

- 2007-2009 **Postdoctoral Fellow**, Institute for Interfacial Catalysis, Pacific Northwest National Laboratory, Richland, WA. Advisor: Dr. Daniel L. DuBois
- 2007 **Ph.D.** Inorganic Chemistry, Massachusetts Institute of Technology, Cambridge, MA. Advisor: Professor Daniel G. Nocera
- 2001 **B.S.** Chemistry, University of California, Berkeley. Advisor: Professor Jeffrey Long

### RESEARCH AND PROFESSIONAL

- 2013-current **Assistant Professor, University of California, Irvine**
- 2012-2013 **Senior Research Scientist, California Institute of Technology**  
-Scientist Lead for Molecular Electrocatalysts for CO<sub>2</sub> Reduction at the Joint Center for Artificial Photosynthesis
- 2009-2012 **Research Scientist, Pacific Northwest National Laboratory**  
-Group Lead for Nickel Electrocatalysts for Hydrogen Production and Oxidation in the Center for Molecular Electrocatalysis, an Energy Frontier Research Center  
-Primary Investigator, Laboratory Directed Research and Development Project, Development of Inorganic Water Oxidation Electrocatalysts

### PUBLICATIONS (\*indicates corresponding authorship)

1. Reath, A.; Ziller, J.; Tsay, C.; Ryan, A. J.; Yang, J. Y.\* *Inorg. Chem.*, **2017**, *56* (6), 3713–3718.  
“Redox Potential and Electronic Structure Effects of Proximal Non-Redox Active Cations in Cobalt Schiff Base Complexes”
2. Shaffer, D. W.; Bhowmick, I.; Rheingold, A. L.; Tsay, C.; Livesay, B.; Shores, M. P.\*; Yang, J. Y.\* *Dalton Trans.*, **2016**, *45*, 17910-17917.  
“Spin State Diversity in a Series of Co(II) PNP Pincer Bromide Complexes”
3. Tsay, C.; Yang, J. Y.\* *J. Am. Chem. Soc.*, **2016**, *138*(43), 14174-14177.  
“Electrocatalytic Hydrogen Evolution Under Acidic Aqueous Conditions and Mechanistic Studies of a Highly Stable Molecular Catalyst”
  - Cover article
  - Highlighted in [Spotlights on Recent JACS Publications](#)
4. Thammavongsy, Z.; Kha, I. M.; Ziller, J. W.; Yang, J. Y.\* *Dalton Trans.*, **2016**, *45*, 9853-9859.  
(invited to “New Talent: Americas” special issue)  
“Electronic and Steric Tolman Parameters for Proazaphosphatranes, the Superbase Core of the Tri(pyridylmethyl)azaphosphatrane (TPAP) Ligand”
5. Lydon, Brian R.; Germann, A.; Yang, J. Y.\* *Inorg. Chem. Front.*, **2016**, *3*, 836-841.  
(invited to “Emerging Investigator” special issue)  
“Chemical Modification of Gold Electrodes via Non-Covalent Interactions”
6. Kotyk, J. F. K.; Ziller, J. W.; Yang, J. Y.\* *J. Coord. Chem.*, **2016**, *69*(11-13), 1990-2002.  
(invited to "Emerging Leaders in Coordination Chemistry Issue")  
"Copper Tetradentate N<sub>2</sub>Py<sub>2</sub> Complexes with Pendant Bases in the Secondary Coordination Sphere: Improved Ligand Synthesis and Protonation Studies"
7. Thammavongsy, Z.; Kotyk, J. F. K.; Tsay, C.; Yang, J. Y.\* *Inorg. Chem.*, **2015**, *54*(23), 11505-11510.

- "Flexibility is Key: Synthesis of a Tripyridylamine (TPA) Congener with a Phosphorus Apical Donor and Coordination to Cobalt(II)"
8. Tsay, C.; Livesay, B.; Ruelas, S.; Yang, J. Y.\*, *J. Am. Chem. Soc.* **2015**, *137*(44), 14114-14121.  
"Solvation Effects on Transition Metal Hydricity"
    - Selected for JACS virtual issue on Electrocatalysis
  9. Shaffer, D. W.; Johnson, S. I.; Rheingold, A.; Ziller, J.; Goddard III, W.; Nielsen, R. J.; Yang, J. Y.\*, *Inorg. Chem.* **2014**, *53*(24), 13031-13041.  
"Reactivity of a Series of Isostructural Cobalt Pincer Complexes with CO<sub>2</sub>, CO, and H<sup>+</sup>"
  10. Hoffert, W. A.; Mock, M. T.; Appel, A. M.; Yang, J. Y.\* *Eur. J. Inorg. Chem.* **2013**, 22-23, 3846-3857.  
(invited to special issue "Small-Molecule Activation by Reactive Metal Complexes")  
"Incorporation of Hydrogen-Bonding Functionalities into the Second Coordination Sphere of Iron-Based Water-Oxidation Catalysts"
  11. Yang, J. Y.\*; Smith, S. E.; Liu, T.; Dougherty, W. G.; Hoffert, W. A.; Kassel, W. S.; DuBois, M. R.; DuBois, D. L.; Bullock, R. M. *J. Am. Chem. Soc.* **2013**, *135*, 9700-9712.  
"Two Pathways for Electrocatalytic Oxidation of Hydrogen by a Nickel Bis(diphosphine) Complex with Pendant Amines in the Second Coordination Sphere"
  12. O'Hagan, M.; Ho, M.-H.; Yang, J. Y.; Appel, A. M.; DuBois, M. R.; Raugei, S.; Shaw, W. J.; DuBois, D. L.; Bullock, R. M. *J. Am. Chem. Soc.* **2012**, *134*, 19409-19424.  
"Proton Delivery and Removal in [Ni(PR<sub>2</sub>NR'<sub>2</sub>)<sub>2</sub>]<sup>2+</sup> Hydrogen Production and Oxidation Catalysts"
  13. Matson, B. D.; Carver, C. T.; Von Ruden, A.; Yang, J. Y.; Raugei, S.; Mayer, J. M. *Chem. Commun.* **2012**, 48, 11100-11102.  
"Distant Protonated Pyridine Groups in Water-Soluble Iron Porphyrin Electrocatalyst Promote Selective Oxygen Reduction to Water"
  14. Smith, S. E.; Yang, J. Y.\*; Bullock, R. M.; DuBois, D. L. *Angew. Chemie Int. Ed.* **2012**, *51*, 3152-3155.  
"Reversible Electrocatalytic Production and Oxidation of Hydrogen at Low Overpotentials by a Functional Hydrogenase Mimic"
  15. Wiedner, E. S.; Yang, J. Y.; Chen, S.; Raugei, S.; Dougherty, W. G.; Kassel, W. S.; Helm, M. L.; Bullock, R. M.; DuBois, M. R.; DuBois, D. L. *Organometallics* **2012**, *31*, 144-156.  
"Stabilization of Nickel Complexes with NiO...H-N Bonding Interactions Using Sterically Demanding Cyclic Diphosphine Ligands"
  16. Galan, B. R.; Schöffel, J.; Linehan, J. C.; Seu, C.; Appel, A. M.; Roberts, J. A. S.; Helm, M. L.; Kilgore, U. J.; Yang, J. Y.; DuBois, D. L.; Kubiak, C. P. *J. Am. Chem. Soc.* **2011**, *133*, 12767-12779.  
"Electrocatalytic Oxidation of Formate by [Ni(PR<sub>2</sub>NR'<sub>2</sub>)<sub>2</sub>(CH<sub>3</sub>CN)]<sup>2+</sup> Complexes"
  17. O'Hagan, M.; Shaw, W. J.; Raugei, S.; Chen, S.; Yang, J. Y.; Kilgore, U. J.; DuBois, D. L.; Bullock, R. M. *J. Am. Chem. Soc.* **2011**, *133*, 14301-14312.  
"Moving Protons with Pendant Amines: Proton Mobility in a Nickel Catalyst for Oxidation of Hydrogen"
  18. Appel, A. M.; Pool, D. H.; O'Hagan, M.; Shaw, W. J.; Yang, J. Y.; DuBois, M. R.; DuBois, D. L.; Bullock, R. M. *A CS Catalysis* **2011**, *1*, 777-785.  
"[Ni(PPh<sub>2</sub>NBn<sub>2</sub>)<sub>2</sub>(CH<sub>3</sub>CN)]<sup>2+</sup> as an Electrocatalyst for H<sub>2</sub> Production: Dependence on Acid Strength and Isomer Distribution"
  19. Yang, J. Y.; Bullock, R. M.; DuBois, M. R.; DuBois, D. L. *MRS Bulletin* **2011**, *36*, 39-47.  
"Fast and Efficient Molecular Electrocatalysts for H<sub>2</sub> Production: Using Hydrogenase Enzymes as Guides" (invited)
  20. Yang, J. Y.\*; Chen, S.; Dougherty, W. G.; Kassel, W. S.; Bullock, R. M.; DuBois, D. L.; Raugei, S.; Rousseau, R.; Dupuis, M.; DuBois, M. R. *Chem. Commun.* **2010**, 46, 8618-8620.  
"Hydrogen Oxidation Catalysis by a Nickel Diphosphine Complex with Pendant *tert*-Butyl Amines" (invited)

21. Wiedner, E. S.; Yang, J. Y.; Dougherty, W. G.; Kassel, W. S.; Bullock, R. M.; DuBois, M. R.; DuBois, D. L. *Organometallics* **2010**, *29*, 5390-5401.  
"Comparison of Cobalt and Nickel Complexes with Sterically Demanding Cyclic Diphosphine Ligands: Electrocatalytic H<sub>2</sub> Production by [Co(PtBu<sub>2</sub>NPh<sub>2</sub>)(CH<sub>3</sub>CN)<sub>3</sub>](BF<sub>4</sub>)<sub>2</sub>" (invited)
22. Yang, J. Y.; Bullock, R. M.; Dougherty, W. G.; Kassel, W. S.; Twamley, B.; DuBois, D. L.; DuBois, M. R. *Dalton Trans.* **2010**, *39*, 3001-3010.  
"Reduction of Oxygen Catalyzed by Nickel Diphosphine Complexes with Positioned Pendant Amines" (invited)
23. Yang, J. Y.; Bullock, R. M.; Shaw, W. J.; Twamley, B.; Frazee, K.; DuBois, M. R.; DuBois, D. L. *J. Am. Chem. Soc.* **2009**, *131*, 5935-5945.  
"Mechanistic Insights into Catalytic H<sub>2</sub> Oxidation by Ni Complexes Containing a Diphosphine Ligand with a Positioned Amine Base"
24. Yang, J. Y.; Liu, S.-Y.; Korendovych, I. V.; Rybak-Akimova, E. V.; Nocera, D. G. *ChemSusChem* **2008**, *1*, 941-949.  
"Hangman Salen Platforms Containing Dibenzofuran Scaffolds" (invited)
25. Jacobsen, G. M.; Yang, J. Y.; Twamley, B.; Wilson, A. D.; Bullock, R. M.; DuBois, M. R.; DuBois, D. L. *Energy Environ. Sci.* **2008**, *1*, 167-174.  
"Hydrogen Production Using Cobalt-Based Molecular Catalysts Containing a Proton Relay in the Second Coordination Sphere" (invited)
26. Yang, J. Y. and Nocera, D. G. *Tetrahedron Lett.* **2008**, *49*, 4796-4798.  
"Manganese Amido-Imine Bisphenol Hangman Complexes"
27. Yang, J. Y. and Nocera, D. G. *J. Am. Chem. Soc.* **2007**, *129*, 8192-8198.  
"Catalase and Epoxidation Activity of Manganese Salen Complexes Bearing Two Xanthenes Scaffolds"
28. Yang, J. Y.; Bachmann, J.; Nocera, D. G. *J. Org. Chem.* **2006**, *71*, 8706-8714.  
"Hangman Salen Platforms Containing Two Xanthenes Scaffolds"
29. Liu, S.-Y.; Soper, J. D.; Yang, J. Y.; Rybak-Akimova, E. V.; Nocera, D. G. *Inorg. Chem.* **2006**, *45*, 7572-7574.  
"Mechanistic Studies of Hangman Salophen-Mediated Activation of O-O Bonds"
30. Yang, J. Y.; Shores, M. P.; Sokol, J. J.; Long, J. R. *Inorg. Chem.* **2003**, *42*, 1403-1419.  
"High-Nuclearity Metal-Cyanide Clusters: Synthesis, Magnetic Properties, and Inclusion Behavior of Open-Cage Species Incorporating [(tach)M(CN)<sub>3</sub>] (M = Cr, Fe, Co) Complexes" (cover article)

## **INVITED PRESENTATIONS**

(scheduled)

- 2018 **Renewable Energy: Solar Fuels Gordon Research Seminar**, Ventura, CA
- 2017 **University of South Dakota**, Vermillion, SD
- 2017 **Control of Proton and Electron Transfers in Redox Catalysis**, Telluride, CO
- 2017 **Personal and Global Energy Conversion in Chemistry and Biology Symposium, 253<sup>rd</sup> ACS National Meeting**, Washington, DC
- 2017 **International Solar Fuels Conference 2 – Young**, San Diego, CA
- 2017 **Department of Energy Solar Photochemistry P.I. Meeting**, Washington, D. C.

(given)

- 2017 **New Paradigm for Catalyst Design: From Enzymatic Function to Functional Mimics, 253<sup>rd</sup> ACS National Meeting**, San Francisco, CA
- 2017 **Celebrating 60 Years of the Division of Inorganic Chemistry, 253<sup>rd</sup> ACS National Meeting**, San Francisco, CA
- 2017 **Sustainability in Electrocatalytic Fuel and Chemical Production Symposium, 253<sup>rd</sup> ACS National Meeting**, San Francisco, CA

- 2017 **Korea Advanced Institute of Science and Technology (KAIST)**, Daejeong, S. Korea
- 2017 **Northwestern University** (Student Invited Seminar, 1 seminar on research, 1 seminar on diversity in science), Evanston, IL
- 2016 **Texas Christian University**, Fort Worth, TX
- 2016 **California State University Long Beach**, CA
- 2016 **Secondary Coordination Sphere Influences Symposium, 252<sup>nd</sup> ACS National Meeting**, Philadelphia, PA
- 2016 **ANSER Solar Energy Symposium**, Northwestern University, Evanston, IL
- 2016 **California State University, Chico**, CA
- 2016 **University of Memphis**, TN
- 2016 **Renewable Energy: Solar Fuels Gordon Research Conference (Poster Talk)**, Barga, Italy
- 2015 **Inorganic Complexes for Solar Energy Harvesting Symposium, Pacificchem 2015**, Honolulu, HI
- 2015 **Orange County ACS Meeting**, Costa Mesa, CA
- 2015 **ACS Catalysis Lectureship, 250<sup>th</sup> ACS National Meeting**, Boston, MA
- 2015 **Solar Solutions to Energy and Environmental Problems**, Telluride, CO
- 2015 **Global Young Academy**, Montreal, Canada
- 2015 **First International Solar Fuels Symposium**, Uppsala, Sweden
- 2015 **Inorganic Reaction Mechanisms Gordon Research Conference**, Galveston, TX
- 2015 **Theoretical and Experimental Synergies at the Frontiers of Renewable Energy Catalysis Symposium, 249<sup>th</sup> ACS National Meeting**, Denver, CO
- 2015 **Molecular Catalysts for Solar Fuels Symposium, 249<sup>th</sup> ACS National Meeting**, Denver, CO
- 2015 **ACS Award in Organometallic Chemistry: Symposium in Honor of William J. Evans, 249<sup>th</sup> ACS National Meeting**, Denver, CO
- 2014 **Second International Conference of Young Researchers on Advanced Materials**, Haikou, China
- 2014 **1<sup>st</sup> International Electrochemistry Workshop and Forum**, Rio de Janeiro, Brazil
- 2014 **Organometallic Gordon Research Conference (Poster Talk)** Newport, RI
- 2014 **New Horizons in Science Symposium**, Mexico City, Mexico
- 2014 **Catalysis Science: The Next Generation Symposium, 247<sup>th</sup> ACS National Meeting**, Dallas, TX
- 2014 **Western Photosynthesis Conference**, Monterey Bay, CA
- 2013 **Enabling Sustainability and Innovation through Catalysis CENTC Summer School**, University of Washington

#### **WORKSHOPS**

- 2017 DOE Basic Research Needs Workshop on Catalysis, Washington, D. C.
- 2016 Addressing the Mars ISRU Challenge: Production of Oxygen and Fuel from CO<sub>2</sub> Using Sunlight – Part II, Caltech/JPL
- 2015 ARPA-E: Bridging Renewable Electricity with Transportation Fuels Workshop – Denver, CO
- 2013 Low Temperature Electrochemical Oxidation of Hydrocarbon Fuels DARPA Meeting – Pasadena, CA

#### **AWARDS**

- 2017 **Presidential Early Career Award for Scientists and Engineers (PECASE)**
- 2015 **National Science Foundation CAREER Award**
- 2015 **Henry and Camille Dreyfus Environmental Postdoctoral Mentor**
- 2015 **ACS Catalysis Lectureship** (member of team award)
- 2015 **Hellman Faculty Fellow**
- 2014 **Department of Energy Early Career Award**, Department of Energy
- 2001 **Presidential Fellowship**, Massachusetts Institute of Technology
- 2001 **Hypercube Scholar**, University of California, Berkeley

- 2000 **Undergraduate Summer Institutes in Applied Science Scholarship**, Lawrence Livermore National Laboratory
- 1999 **Department of Energy Research Undergraduate Laboratory Fellowship**, National Renewable Energy Laboratory
- 1998 **Department of Energy Research Undergraduate Laboratory Fellowship**, Lawrence Berkeley National Laboratory
- 1997 **Advanced Placement Scholar with Distinction**, College Board
- 1997 **MCI International Scholar**, MCI, Inc.

### **PROFESSIONAL ACTIVITIES**

#### **Chair**

2016 Southern California Organometallics Meeting

#### **Symposium Chair**

2015 Molecular Catalysts for Solar Fuels, 249<sup>th</sup> ACS National Meeting, Denver, CO

2013 Inorganic Award: Symposium in Honor of Daniel L. DuBois, 245<sup>th</sup> ACS National Meeting, New Orleans, LA

#### **Discussion Leader**

2016 Renewable Energy: Solar Fuels Gordon Research Seminar

#### **Session Presider**

2016 251<sup>st</sup> ACS National Meeting: Energy and Environmental Chemistry

### **PROFESSIONAL AFFILIATIONS**

2015 – present **Global Young Academy**, member

2001 – present **American Chemical Society**, division of Inorganic Chemistry

2012 – 2013 **Joint Center for Artificial Photosynthesis**, Integration Team

2001 – 2007 **Women In Chemistry**, Massachusetts Institute of Technology (Chair, 2002-2003)

2002 – 2004 **Chemistry Graduate Student Council**, Massachusetts Institute of Technology

### **TEACHING EXPERIENCE**

#### **Lecture Courses**

##### **Chemistry 127**

Winter 2014, new course preparation, 29 students. Teaching 3.86/4.0, Course 3.79/4.0

Winter 2015, 32 students. Evaluation: Teaching 3.96/4.0, Course 3.88/4.0

Winter 2016, 34 students. Evaluation: Teaching 3.90/4.0, Course 3.90/4.0

##### **Chemistry 215**

Fall 2013, new course preparation, 16 students. Teaching 3.50/4.0, Course 3.50/4.0

Fall 2014, 16 students. Evaluation: Teaching 3.61/4.0, Course 3.63/4.0

Fall 2015, 8 students. Evaluation: Teaching 3.93/4.0, Course 3.93/4.0

### **COMMUNITY SERVICE**

2014 – present **Chemistry Women Mentorship Network**

2013 – current **UCI Laboratory Experiments and Activities Program (LEAPS)**

2016 **SACNAS National Meeting Poster Judge**

2016 **UCI Math CEO Program**

2016 **Sally Ride Science Center Interview**

2013 **Women in STEM UCI interview**