Chong Liu

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EDUCATION

University of California, Berkeley, Berkeley, CA 2013
Ph. D. in Chemistry. Advisor: Prof. Peidong Yang
Dissertation title: "Nanowire-based integration for artificial photosynthesis"
Fudan University, Shanghai, China 2008
B. S. in Chemistry, Honors. Advisor: Prof. Dongyuan Zhao

PROFESSIONAL EXPERIENCE

University of California, Los Angeles, Los Angeles, CA 2017 – present
Assistant professor. Department of Chemistry and Biochemistry, UCLA
Jeffery and Helo Zink Endowed Professional Development Term Chair
Harvard University, Cambridge, MA 2015 – 2017
Postdoctoral research fellow with Prof. Daniel G. Nocera
University of California, Berkeley, Berkeley, CA 2008 – 2014
Graduate research assistant with Prof. Peidong Yang

HONORS AND AWARDS

Science News' SN 10: Scientists to Watch 2017
Jeffery and Helo Zink Endowed Professional Development Term Chair 2017
Lee Kuan Yew Postdoctoral Fellowship (through Nanyang Technological University) 2014
Graduate Student Silver Award, 2014 Materials Research Society Spring Meeting 2014
Chinese Government Award for Outstanding Self-Financed Students Abroad 2013
Honors for B. S. degree 2008

TEACHING EXPERIENCE

Instructor, University of California, Los Angeles
Advanced topic in inorganic chemistry, electrochemical systems (Chemistry 271) 2017
Guest lecturer, Nanyang Technological University, Singapore
Quantum chemistry & statistical thermodynamics (CM4041) 2016
Graduate student instructor, University of California, Berkeley
Materials & Solid State Chemistry (Chemistry 253) 2013
Physical chemistry, quantum mechanics (Chemistry 120A) 2010 & 2011
General chemistry (Chemistry 1A) 2009

SELECTED PUBLICATIONS (20 listed; #: indicate equal contribution)

Google Scholar citations: 4227 H-index: 26 ORCID ID: 0000-0001-5546-3852

A. Inorganic/microbial hybrid solar-to-chemical conversion

1. C. Liu[#], K. Sakimoto[#], B. Colón, P. Silver, D. Nocera, "An ambient nitrogen reduction cycle using a hybrid inorganic | biological system", *Proc. Natl. Acad. Sci. U. S. A*, accepted.
2. C. Liu[#], B. Colón[#], M. Ziesack, P. Silver, D. Nocera, "Water Splitting-Biosynthetic System with CO_2 Reduction Efficiencies Exceeding Photosynthesis", *Science*, **2016**, *352*, 1210-1213.
   Science News: "Artificial photosynthesis steps up", *Science*, **2016**, *352*, 1185.
   Scientific American: "Bionic Leaf Makes Fuel from Sunlight, Water and Air" (Jun. 2016).
   MIT Technology Review: "A Big Leap for an Artificial Leaf" (Jun. 2016).
3. C. Liu[#], J. Gallagher[#], K. Sakimoto, E. Nichols, C. Chang, M. Chang, P. Yang, "Nanowire-Bacteria Hybrids for Unassisted Solar Carbon Dioxide Fixation to Value-Added Chemicals", *Nano Lett.*, **2015**, *15*, 3634-3639.
   Science perspective: T. Zhang, "More efficient together", *Science*, **2015**, *350*, 738.
   C&EN News: "Artificial Photosynthesis Device Paves Way Towards Sustainable Liquid Fuel" (Apr. 2015).
   MIT Technology Review: "How Nanomaterials Can Help Make Fuel from Sunlight" (May. 2015).
4. E. Nichols[#], J. J. Gallagher[#], C. Liu, Y. Su, J. Resasco, Y. Yu, Y. Sun, P. Yang, M. C. Chang, C. J. Chang, "Hybrid bioinorganic approach to solar-to-chemical conversion", *Proc. Natl. Acad. Sci. U. S. A*, **2015**, *112*, 11461-11466.
   Science perspective: T. Zhang, "More efficient together", *Science*, **2015**, *350*, 738.
5. K. Sakimoto, C. Liu, J. Lim, P. Yang, "Salt-induced Self-Assembly of Bacteria on Nanowire Arrays", *Nano Lett.*, **2014**, *14*, 5471-5476.

B. Single nanowire characterization

6. Y. Su[#], C. Liu[#], S. Brittman, J. Tang, A. Fu, N. Kornienko, Q. Kong, P. Yang, "Single-nanowire photoelectrochemistry", *Nature Nano.*, **2016**, *11*, 609-612.
7. C. Liu[#], Y. J. Hwang[#], H. E. Jeong, P. Yang, "Light Induced Charge Transport within a Single Asymmetric Nanowire", *Nano Lett*., **2011**, *11*, 3755-3758.

C. Semiconductor nanomaterials for solar-to-chemical conversion

8. C. Liu[#], J. Tang[#], H. M. Chen, B. Liu, P. Yang, "A Fully Integrated Nanosystem of Semiconductor Nanowires for Direct Solar Water Splitting", *Nano Lett*., **2013**, *13*, 2989-2992.
   Science Illustrated magazine: "Oil of future", Issue 16, Page 25, Sep. 2013.
   Most read during Q2 2013 in *Nano Letters.*
9. C. Liu, J. Sun, J. Tang, P. Yang, "Zn-doped p-type Gallium Phosphide Nanowire Photocathodes from a Surfactant-free Solution Synthesis", *Nano Lett*., **2012**, *12*, 5407-5411.
10. H. Gao[#], C. Liu[#], H. E. Jeong, P. Yang, "Plasmon Enhanced-Photocatalytic Activity of Iron Oxide on Gold Nanopillars", *ACS Nano*, **2012**, *6*, 234-240.
11. L. Zhang[#], C. Liu[#], A. B. Wong, J. Resasco, P. Yang, "MoS_2-Wrapped Silicon Nanowires for Photoelectrochemical Water Reduction", *Nano Res.*, **2015**, *8*, 281-287.
12. J. Sun, C. Liu, P. Yang, "Surfactant-Free, Large-Scale, Solution-Liquid-Solid Growth of Gallium Phosphide Nanowires and Their Use for Visible-Light-Driven Hydrogen Production from Water Reduction", *J. Am. Chem. Soc.*, **2011**, *132*, 8466-8473.

D. Electrochemical water-splitting and CO_2-reduction catalysts

13. N. Dasgupta[#], C. Liu[#], S. Andrews, F. Prinz, P. Yang, "Atomic Layer Deposition of Platinum Catalysts on Nanowire Surfaces for Photoelectrochemical Water Reduction", *J. Am. Chem. Soc*., **2013**, *135*, 12932-12935.
14. Y. Sun[#], C. Liu[#], D. Grauer, J. Yano, J. Long, P. Yang, C. Chang, "Electrodeposited Cobalt-Sulfide Catalyst for Electrochemical and Photoelectrochemical Hydrogen Generation from Water", *J. Am. Chem. Soc*., **2013**, *135*, 17699-17702.
15. Q. Kong[#], D. Kim[#], C. Liu, Y. Yu, Y. Su, Y. Li, P. Yang, "Directly Assembly of Nanoparticle Catalysts on Nanowire Photoelectrodes for Photoelectrochemical CO_2 Reduction", *Nano Lett.*, **2016**, DOI: 10.1021/acs.nanolett.6b02321.

E. Undergraduate research

16. C. Liu, Y. Deng, J. Liu, H. Wu, D. Zhao, "Homopolymer induced phase evolution in mesoporous silica from evaporation induced self-assembly process", *Microporous Mesoporous Mater.*, **2008**, *116*, 633-640.

F. Invited reviews and book chapter

17. C. Liu, N. Dasgupta, P. Yang, "Semiconductor Nanowires for Artificial Photosynthesis", *Chem. Mater.*, **2014**, *26*, 415-422.
18. C. Liu, P. Yang, "Introductory lecture: Systems materials engineering approach for solar-to-chemical conversion", *Faraday Discuss.*, **2014**, *176*, 9-16.
19. N. Dasgupta, J. Sun, C. Liu, S. Brittman, S. C. Andrews, J. Lim, H. Gao, R. Yan, P. Yang, "25th Anniversary Article: Semiconductor Nanowires-Synthesis, Characterization, and Applications", *Adv. Mater*., **2014**, *26*, 2137-2184.
20. P. Yang, S. Brittman, C. Liu, "Chapter 6: Nanowires for Photovoltaics and Artificial Photosynthesis", in "Semiconductor Nanowires: From Next-Generation Electronics to Sustainable Energy", Royal Society of Chemistry, 2015 (ISBN: 978-1-84973-815-6).

INDEPENDENT JOURNAL REVIEWERS FOR

Journal of the American Chemical Society
Nano Letters
Science Advances
Inorganic Chemistry
Chemical Communications
Scientific Reports
Angewandte Chemie International Edition
Joule
Energy & Environmental Science
ACS Applied Materials & Interfaces
ChemCatChem
Nano Research

PATENTS

- CARBON FIXATION SYSTEMS AND METHODS, filed Sep. 15, 2016, Provisional Patent Application No. 62/218,131.
- AMMONIA SYNTHESIS METHODS AND SYSTEMS, filed July 6, 2016, Provisional Patent Application No. 62/358,710.
- ARTIFICIAL PHOTOSYNTHESIS SYSTEMS AND METHODS FOR PRODUCING CARBON-BASED CHEMICAL COMPOUNDS, filed Mar. 04, 2016, Provisional Patent Application No. 15/061,378.

INVITED PRESENTATIONS

- "Artificial photosynthesis: from nano to microbes", Molecular Foundry User Meeting, *Lawrence Berkeley National Lab*, Berkeley, CA 2017
- "Artificial photosynthesis: from nano to microbes", Connaught Global Challenge Symposium, CO2 solution to Climate Change, *University of Toronto*, Canada, 2017
- "Artificial photosynthesis: from nano to microbes", Nanomaterials for Applications in Energy Technology, *Gordon Research Conference*, Ventura, CA, 2017
- "Artificial photosynthesis: from nano to microbes*", University of California, Los Angeles; University of Chicago; Princeton University; Rice University; University of California, Berkeley; Nanyang Technological University, Singapore; 2016* – 2017.
- "Water splitting-biosynthetic systems for CO_2 reduction", *41st Boston Regional Inorganic Colloquium*, Cambridge, MA, 2016
- "Water splitting-biosynthetic systems for CO_2 reduction", *Rowland Institute*, *Harvard University*, Cambridge, MA, 2016
- "Hybrid bioinorganic CO_2 reduction into commodity chemicals with renewable energy", *MRS Fall Meeting*, Boston, MA, 2015
- "Hybrid bioinorganic CO_2 reduction into commodity chemicals with renewable energy", Inorganic Research Seminar, *Nanyang Technological University*, Singapore, 2015
- "Hybrid bioinorganic CO_2 reduction into commodity chemicals with renewable energy", *8th Nanowire Growth Workshop/Nanowire 2014*, Eindhoven, Netherland, 2014
- "Integration of bacteria and semiconductor nanowires for artificial photosynthesis", *248th ACS National Meeting*, San Francisco, CA, 2014
- "Nanowire-based structural integration for artificial photosynthesis", *247th ACS National Meeting*, Dallas, TX, 2014
- "Nanowire-based structural integration for artificial photosynthesis", *Materials Challenges in Alternative & Renewable Energy*, Clearwater, FL, 2014
- "A Fully Integrated Nanosystem of Semiconductor Nanowires for Direct Solar Water Splitting", *IBM Almaden Student Seminars*, San Jose, CA, 2014
- "Nanowire-based structures for solar-to-fuel conversion", *246th ACS National Meeting*, Indianapolis, IN, 2013