

CURRICULUM VITAE
CURRENT AS OF MARCH 17, 2019

GORDANA DUKOVIC, PhD

Associate Professor
Department of Chemistry
University of Colorado, Boulder, 215 UCB, Boulder, CO 80304
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1. EDUCATION:

Ph. D. **Columbia University**
Physical Chemistry, *with Distinction*, **2006**
Dissertation: "Electronic spectra of carbon nanotubes: excitonic states, chemical doping, and chiral interactions."

B. A. **Douglass College, Rutgers University**
Chemistry, minor: Italian; *Valedictorian, Summa cum Laude*, **2001**

2. POSITIONS HELD:

2016- **Associate Professor of Chemistry**
Department of Chemistry and Biochemistry, University of Colorado Boulder

2009-2016 **Assistant Professor of Chemistry**
Department of Chemistry and Biochemistry, University of Colorado Boulder

2006-2009 **Postdoctoral Scholar**
University of California, Berkeley and Lawrence Berkeley National Lab

3. HONORS AND AWARDS

- 2017 Faculty Fellow, Research and Innovation Office, University of Colorado Boulder
- 2016 Fellow, Renewable and Sustainable Energy Institute
- 2016 Visiting Professor, Claude Bernard University, Lyon, France
- 2015 Provost's Faculty Achievement Award, University of Colorado Boulder
- 2014 Sloan Research Fellow
- 2013 Beckman Young Investigator
- 2013 Cottrell Scholar
- 2012 NSF CAREER Award
- 2012 Scialog Collaborative Innovation Award (with Sean Elliott, Boston University)
- 2012 Fellow, Materials Science and Engineering Program, University of Colorado Boulder
- 2011 ACS PRF Doctoral New Investigator Award
- 2010 Renewable and Sustainable Energy Institute (RASEI) Affiliate
- 2006 Hammet Award, for excellence in studies and research toward the PhD, Columbia University
- 2003 Jack Miller Award, for excellence in teaching, Columbia University

- 2002 Edith and Eugene Blout Scholarship, Columbia University

4. FUNDING

Project Title	Organization	Award Period	Total Amount
CURRENT			
Control of charge transfer and light-driven reactions in nanocrystal-enzyme complexes (PI)	Department of Energy – Basic Energy Sciences	04/01/2017-3/31/2020	\$648,000
Mechanism of Photochemical N ₂ Reduction (co-PI ; PI: Paul King, NREL)	Department of Energy – Basic Energy Sciences	10/01/2017-9/30/2020	\$450,000 to GD
Trapped-hole diffusion in semiconductor nanocrystals and its impact on oxidation photochemistry (PI ; co-PI: Joel Eaves)	Air Force Office of Scientific Research	02/15/2019-02/14/2022	\$579,424 (\$386,283 to GD)
Science and Technology Center on Real-Time Functional Imaging (STROBE) (Faculty , Thrust I Electron Imaging)	National Science Foundation	12/01/18-09/30/21	TBD
CHECRA Matching Funds for use in Support of STROBE (Faculty collaborator)	Colorado Higher Education Competitive Research Authority (CHECRA)	12/01/18-09/30/21	TBD

PAST			
Beckman Young Investigator Award: Novel Compositionally Complex Nanoscale Materials With Targeted Optical And Chemical Properties (PI)	Arnold and Mabel Beckman Foundation	09/01/2013-08/31/2018	\$750,000
Excited States, Electronic Coupling, and Charge Transfer Properties of Chalcogenide-capped Semiconductor Nanocrystals (PI)	Air Force Office of Scientific Research	07/01/2015-12/31/2018	\$420,000
Alfred P. Sloan Research Fellowship (PI)	Alfred P. Sloan Foundation	9/15/2014-9/15/2018	\$50,000

Chemistry Early Career Investigator Workshop (co-PI ; PI: Matthew Whited, Carleton College)	NSF	11/1/2017-10/31/2018	\$70,498
CAREER : Research and Education for a Solar Future: Fundamentals of Nanocrystal Photochemistry and Integration of Solar Energy Research into Physical Chemistry Curriculum (PI)	National Science Foundation	2/1/2012-1/30/2018	\$600,000
Supplement to CAREER award: funds to support a sabbatical visitor in Summer 2016 (PI)	National Science Foundation		\$30,125
Doctoral New Investigator Award : Hybrid Inorganic-Organic Nanoscale Arrays: Structural Control and Mechanisms (PI)	Petroleum Research Fund of the American Chemical Society	01/01/2012-08/31/2015	\$100,000
Semiconductor Nanocrystals As Light Harvesters For Biomimetic Solar Fuel Generation (PI)	Department of Energy – Basic Energy Sciences	8/15/2013-3/31/2017	\$727,000
DURIP: Ultrafast laser equipment for investigation of excited state dynamics in semiconductor nanocrystals (PI)	Department of Defense	4/18/2016-5/15/2017	\$149,890
Cottrell Scholar Award : Compositionally Complex Nanoscale Materials for Solar Fuel Generation and Integration of Solar Energy Research into Physical Chemistry Curriculum (PI)	Research Corporation for Science Advancement	7/1/2013-6/30/2017	\$75,000
Photophysics and photochemistry of nanocrystals functionalized with ultrashort ligands (PI)	Air Force Office of Scientific Research	01/04/2012-31/03/2015	\$261,000
Sciolog Collaborative Innovation Award : Photo-induced CO ₂ Reduction Using Reverse TCA Cycle Enzymes (co-PI ; with co-PI Sean Elliott, Boston University)	Research Corporation for Science Advancement	03/06/2013 – 12/31/2014	\$100,000 (\$50,000 to GD)
Photomaterials for PEC Water Splitting (Subaward)	National Renewable Energy Lab	11/03/2011-09/30/2013	\$124,583
Band-Structure Guided Photochemical Reactivity of Semiconductor Nanocrystals (PI)	CU Innovative Seed Grant Program	07/01/2011-06/30/2013	\$44,000

Hybrid molecule-semiconductor nanostructures for solar water splitting (co-PI ; with co-PI Niels Damrauer)	Renewable and Sustainable Energy Institute	06/01/2010-05/31/2012	\$40,000 (\$20,000 to GD)
Synthesis of Nanoscale Oxy(nitrides) for Solar Water Splitting (PI)	Center for Revolutionary Solar Photoconversion	01/01/2010-05/31/2011	\$100,000

5. COLLABORATORS DURING INDEPENDENT CAREER AT CU

- Jim Ciston, National Center for Electron Microscopy, Lawrence Berkeley National Laboratory.
- Niels Damrauer, Department of Chemistry and Biochemistry, University of Colorado Boulder.
- Joel Eaves, Department of Chemistry and Biochemistry, University of Colorado Boulder
- Sean Elliott, Department of Chemistry, Boston University
- Henry Kapteyn and Margaret Murnane, Department of Physics and JILA, University of Colorado Boulder
- Paul King, Biosciences Division, National Renewable Energy Laboratory
- Nathan Neale, Chemical and Materials Sciences, National Renewable Energy Laboratory
- John Peters, Department of Chemistry and Biochemistry, Washington State University
- Lance Seefeldt, Department of Chemistry, Utah State University
- Mathias Weber, Department of Chemistry and Biochemistry, University of Colorado Boulder

6. PUBLICATIONS

Publications from independent career at CU:

44. J. K. Utterback, M. B. Wilker, D. W. Mulder, P. W. King, J. D. Eaves, G. Dukovic*. "Quantum Efficiency of Charge Transfer Competing against Nonexponential Processes: The Case of Electron Transfer from CdS Nanorods to Hydrogenase." *Journal of Physical Chemistry C*, **2019**, 123, 886-896. <https://pubs.acs.org/doi/10.1021/acs.jpcc.8b09916>
43. O. M. Pearce, J. S. Duncan, N. H. Damrauer*, G. Dukovic*. "Ultrafast Hole Transfer from CdS Quantum Dots to a Water Oxidation Catalyst." *Journal of Physical Chemistry C*, **2018**, 122, 30, 17559-17565. <https://pubs.acs.org/doi/10.1021/acs.jpcc.8b06237>
42. J. K. Utterback, H. Hamby, O. M. Pearce, J. D. Eaves, G. Dukovic*. "Trapped-Hole Diffusion in Photoexcited CdSe Nanorods." *Journal of Physical Chemistry C*, **2018**, 122, 16974-16982. <https://pubs.acs.org/doi/10.1021/acs.jpcc.8b05031>
41. R. P. Cline, J. K. Utterback, S. E. Strong, G. Dukovic, J. D. Eaves*. "On the Nature of Trapped-Hole States in CdS Nanocrystals and the Mechanism of Their Diffusion." *Journal of Physical Chemistry Letters*, **2018**, 9, 3532-3537. <https://pubs.acs.org/doi/10.1021/acs.jpcllett.8b01148>

40. K. J. Schnitzenbaumer, G. Dukovic*. "Comparison of phonon damping behavior in quantum dots capped with organic and inorganic ligands." *Nano Letters*, **2018**, *18*, 3667-3674. <https://pubs.acs.org/doi/10.1021/acs.nanolett.8b00800>
39. J. C. Beimborn II, L. M. G. Hall, P. Tongying, G. Dukovic, J. M. Weber*. "Pressure Response of Photoluminescence in Cesium Lead Iodide Perovskite Nanocrystals." *Journal of Physical Chemistry C*, **2018**, *122*, 11024-11030. <https://pubs.acs.org/doi/10.1021/acs.jpcc.8b03280>
38. M. B. Wilker, J. K. Utterback, S. Greene, K. A. Brown, D. W. Mulder, P. W. King, G. Dukovic*. "Role of Surface-Capping Ligands in Photoexcited Electron Transfer between CdS Nanorods and [FeFe] Hydrogenase and the Subsequent H₂ Generation." *Journal of Physical Chemistry C*, **2018**, *122*, 741-750. <https://pubs.acs.org/doi/10.1021/acs.jpcc.7b07229>
37. M. W. Ratzloff, M. B. Wilker, D. W. Mulder, C. E. Lubner, H. Hamby, K. A. Brown, G. Dukovic, P. W. King*. "Activation Thermodynamics and H/D Kinetic Isotope Effect of the Hox to HredH+ Transition in [FeFe] Hydrogenase." *Journal of the American Chemical Society*, **2017**, *139*, 12879-12882. <http://pubs.acs.org/doi/10.1021/jacs.7b04216>
36. P. Tongying, Y.-G. Lu, L. M. G. Hall, K. Lee, M. Sulima, J. Ciston, G. Dukovic*. "Control of Elemental Distribution in the Nanoscale Solid-State Reaction That Produces (Ga_{1-x}Zn_x)(N_{1-x}O_x) Nanocrystals." *ACS Nano*, **2017**, *11*, 8401-8412. <http://pubs.acs.org/doi/full/10.1021/acs.nano.7b03891>
35. A. N. Grennell, J. K. Utterback, O. M. Pearce, M. B. Wilker, G. Dukovic*. "Relationships between exciton dissociation and slow recombination within ZnSe/CdS and CdSe/CdS dot-in-rod heterostructures." *Nano Letters*, **2017**, *17*, 3764-3774. <http://pubs.acs.org/doi/abs/10.1021/acs.nanolett.7b01101>
34. J. K. Utterback, A. N. Grennell, M. W. Wilker, O. M. Pearce, J. D. Eaves,* G. Dukovic*. "Observation of trapped-hole diffusion on the surface of CdS nanorods." *Nature Chemistry*, **2016**, *8*, 1061-1066. <http://www.nature.com/nchem/journal/vaop/ncurrent/full/nchem.2566.html>
33. K. A. Brown, D. F. Harris, M. B. Wilker, A. Rasmussen, N. Khadka, H. Hamby, S. Keable, G. Dukovic, J. W. Peters, L. C. Seefeldt, P. W. King*. "Light-driven dinitrogen reduction catalyzed by a CdS:Nitrogenase MoFe protein biohybrid." *Science*, **2016**, *352*, 448-450. <http://science.sciencemag.org/content/352/6284/448.full>
32. K. A. Brown,* M. B. Wilker, M. Boehm, H. Hamby, A. Dubini, G. Dukovic, P. W. King. "Photocatalytic Regeneration of Nicotinamide Cofactors by Biohybrid Quantum Dot-Enzyme Complexes." *ACS Catalysis*, **2016**, *6*, 2201-2204. <http://pubsdc3.acs.org/doi/full/10.1021/acscatal.5b02850>
31. J. L. Ellis,* D. D. Hickstein,* W. Xiong, F. Dollar, B. B. Palm, K. E. Keister, K. M. Dorney, C. Ding, T. Fan, M. B. Wilker, K. J. Schnitzenbaumer, G. Dukovic, J. L. Jimenez, H. C. Kapteyn, M. M. Murnane. "Materials Properties and Solvated Electron Dynamics of Isolated Nanoparticles and Nanodroplets Probed with Ultrafast Extreme Ultraviolet Beams." *Journal of Physical Chemistry Letters*, **2016**, *7*, 609-615. <http://pubs.acs.org/doi/abs/10.1021/acs.jpcllett.5b02772>
30. K. Lee, Y.-G. Lu, C. H. Chuang, J. Ciston, G. Dukovic*. "Synthesis and Characterization of (Ga_{1-x}Zn_x)(N_{1-x}O_x) Nanocrystals with a Wide Range of Compositions." *Journal of Materials Chemistry A*, **2016**, *4*, 2927-2935. <http://pubs.rsc.org/en/content/articlelanding/2015/ta/c5ta04314j>

29. K. J. Schnitzenbaumer, T. Labrador, G. Dukovic*. "Impact of Chalcogenide Ligands on Excited State Dynamics in CdSe Quantum Dots." *Journal of Physical Chemistry C*, **2015**, 119, 13314-13324. <http://pubs.acs.org/doi/abs/10.1021/acs.jpcc.5b02880>
28. C.-H. Chuang, Y.-G. Lu, K. Lee, J. Ciston, G. Dukovic*. "Strong Visible Absorption and Broad Time Scale Excited-State Dynamics in $(\text{Ga}_{1-x}\text{Zn}_x)(\text{N}_{1-x}\text{O}_x)$ Nanocrystals." *Journal of the American Chemical Society*, **2015**, 137, 6452-6455. <http://pubs.acs.org/doi/abs/10.1021/jacs.5b02077>
27. J. L. Ellis, D. D. Hickstein, K. J. Schnitzenbaumer, M. B. Wilker, B. B. Palm, J. L. Jimenez, G. Dukovic, H. C. Kapteyn, M. Murnane and W. Xiong*. "Solvents Effects on Charge Transfer from Quantum Dots." *Journal of the American Chemical Society*, **2015**, 137, 3759-3762. <http://pubs.acs.org/doi/abs/10.1021/jacs.5b00463>
26. K. Lee, D. A. Ruddy*, G. Dukovic*, N. R. Neale*. "Synthesis, Optical, and Photocatalytic Properties of Cobalt Mixed-Metal Spinel Oxides $\text{Co}(\text{Al}_{1-x}\text{Ga}_x)_2\text{O}_4$." *Journal of Materials Chemistry A*, **2015**, 3, 8115-8122. <http://pubs.rsc.org/en/content/articlelanding/2015/ta/c4ta06690a>
25. J. K. Utterback, M. B. Wilker, K. A. Brown, P. W. King, J. D. Eaves, G. Dukovic*. "Competition Between Electron Transfer, Trapping, and Recombination in CdS Nanorod-Hydrogenase Complexes." *Physical Chemistry Chemical Physics*, **2015**, 17, 5538-5542. <http://pubs.rsc.org/en/content/articlelanding/2015/cp/c4cp05993>
24. K. J. Schnitzenbaumer, G. Dukovic*. "Chalcogenide-Ligand Passivated CdTe Quantum Dots Can Be Treated as Core/Shell Semiconductor Nanostructures." *Journal of Physical Chemistry C*, **2014**, 118, 28170-28178. <http://pubs.acs.org/doi/abs/10.1021/jp509224n>
23. D. D. Hickstein, F. Dollar, J. L. Ellis, K. J. Schnitzenbaumer, K. E. Keister, G. M. Petrov, C. Ding., B. B. Palm, J. A. Gaffney, M. E. Foord, S. B. Libby, G. Dukovic, J. L. Jimenez, H. C. Kapteyn, M. M. Murnane, W. Xiong*. "Mapping Nanoscale Absorption of Femtosecond Laser Pulses Using Plasma Explosion Imaging." *ACS Nano*, **2014**, 8, 8810-8818. <http://pubs.acs.org/doi/abs/10.1021/nn503199v>
22. M. B. Wilker, K. E. Shinopoulos, K. A. Brown, D. W. Mulder, P. W. King, G. Dukovic*. "Electron transfer kinetics in CdS nanorod-[FeFe] hydrogenase complexes an implications for photochemical H_2 generation." *Journal of the American Chemical Society*, **2014**, 136, 4316-4364. <http://pubs.acs.org/doi/abs/10.1021/ja413001p>
- This manuscript was featured in **JACS Spotlights**. *Journal of the American Chemical Society*, **2014**, 136, 4795–4796: <http://pubs.acs.org/doi/full/10.1021/ja5028452>
21. B. Tienes, R. Perkins, R. Shoemaker, G. Dukovic*. "Layered Phosphonates in Colloidal Synthesis of Anisotropic ZnO Nanocrystals." *Chemistry of Materials*, **2013**, 25, 4321-4329. <http://pubs.acs.org/doi/abs/10.1021/cm402465w>
20. W. Xiong*, D. D. Hickstein, K. J. Schnitzenbaumer, J. L. Ellis, B. B. Palm, K. E. Keister, C. Ding, L. Miaja-Avila, G. Dukovic, J. L. Jimenez, M. M. Murnane, H. C. Kapteyn. "Photoelectron Spectroscopy of CdSe Nanocrystals in the Gas Phase: A Direct Measure of the Evanescent Electron Wave Function of Quantum Dots." *Nano Letters*, **2013**, 13, 2924-2930. <http://pubs.acs.org/doi/abs/10.1021/nl401309z>
19. H-W. Tseng,[†] M. B. Wilker,[†] N. H. Damrauer*, G. Dukovic*. "Charge Transfer Dynamics between Photoexcited CdS Nanorods and Mononuclear Ru Water-Oxidation Catalysts" *Journal of the American Chemical Society*, **2013**, 135, 3383-3386. <http://pubs.acs.org/doi/abs/10.1021/ja400178q> ([†] denotes equal contribution)

18. (Invited review) M. B. Wilker, K. J. Schnitzenbaumer, G. Dukovic*. "Recent Progress in Photocatalysis Mediated by Colloidal II-VI Nanocrystals." *Israel Journal of Chemistry*, **2012**, 52, 1002–1015 (special issue "Nanochemistry: Wolf Prize for A. Paul Alivisatos and Charles M. Lieber"). <http://onlinelibrary.wiley.com/doi/10.1002/ijch.201200073/abstract>
17. K. Lee, B. M. Tienes, K. J. Schnitzenbaumer, M. B. Wilker, G. Dukovic*. "(Ga_{1-x}Zn_x)(N_{1-x}O_x) Nanocrystals: Visible Absorbers with Tunable Composition and Band Gap." *Nano Letters*, **2012**, 12, 3268-3272. <http://pubs.acs.org/doi/abs/10.1021/nl301338z>
16. K. A. Brown, M. B. Wilker, M. Boehm, G. Dukovic,* P. W. King.* "Characterization of Photochemical Processes for H₂ Production by CdS Nanorod-[FeFe] Hydrogenase Complexes." *Journal of the American Chemical Society*, **2012**, 134, 5627–5636. <http://pubs.acs.org/doi/abs/10.1021/ja2116348>

This manuscript was featured in **JACS Spotlights**. *Journal of the American Chemical Society*, **2012**, 134, 5005: <http://pubs.acs.org/doi/full/10.1021/ja302470c>

Publications prior to independent career at CU

15. D. Song, F. Wang, G. Dukovic, M. Zheng, E. D. Semke, L. E. Brus, T. F. Heinz. "Measurement of the optical Stark effect in semiconducting carbon nanotubes." *Applied Physics A* **2009**, 96, 283-287.
14. G. Dukovic, M. G. Merkle, J. H. Nelson, S. M. Hughes, A. P. Alivisatos. "Photodeposition of Pt on colloidal CdS and CdSe@CdS semiconductor nanostructures." *Advanced Materials*, **2008**, 20, 4306-4311.
13. D. Song, F. Wang, G. Dukovic, M. Zheng, E. D. Semke, L. E. Brus, T. F. Heinz. "Direct measurement of the lifetime of optical phonons in single-walled carbon nanotubes." *Physical Review Letters* **2008**, 100, 225503.
12. F. Wang, G. Dukovic, Y. Wu, M. S. Hybertsen, L. E. Brus, T. F. Heinz. "Auger recombination of excitons in semiconducting carbon nanotubes." *Springer Series in Chemical Physics* **2007**, 88, 683-685.
11. D. Song, F. Wang, G. Dukovic, M. Zheng, E. D. Semke, L. E. Brus, T. F. Heinz. "Observation of the optical Stark effect in semiconducting carbon nanotubes." *Springer Series in Chemical Physics* **2007**, 88, 674-676.
10. G. Dukovic, M. Balaz, P. Doak, N. D. Berova, M. Zheng, R. S. McLean, L. E. Brus. "Racemic single-walled carbon nanotubes exhibit circular dichroism when wrapped with DNA." *Journal of the American Chemical Society* **2006**, 128, 9004-9005.
9. G. Dukovic, F. Wang, D. Song, M. Y. Sfeir, T. F. Heinz, L. E. Brus. "Structural dependence of excitonic optical transitions and band gap energy in carbon nanotubes." *Nano Letters* **2005**, 5, 2314-2318.
8. F. Wang,[†] G. Dukovic,[†] L. E. Brus, T. F. Heinz. "The optical resonances in carbon nanotubes arise from excitons." *Science* **2005**, 308, 838-841. ([†] denotes equal contribution)
7. G. Dukovic, B. E. White, Z. Zhou, F. Wang, S. Jockusch, M. L. Steigerwald, T. F. Heinz, R. A. Friesner, N. J. Turro, L. E. Brus. "Reversible surface oxidation and efficient luminescence quenching in semiconductor single-walled carbon nanotubes." *Journal of the American Chemical Society* **2004**, 126, 15269-15276.

6. F. Wang, G. Dukovic, E. Knoesel, L. E. Brus, T. F. Heinz. "Observation of rapid Auger recombination in optically excited semiconducting carbon nanotubes." *Physical Review B* **2004**, 70, 241403.
5. F. Wang, G. Dukovic, L. E. Brus, T. F. Heinz. "Time-resolved fluorescence of carbon nanotubes and its implication for radiative lifetimes." *Physical Review Letters* **2004**, 92, 177401.
4. L. Huang, X. Cui, G. Dukovic, S. O'Brien. "Self-organizing high-density single-walled carbon nanotube arrays from surfactant suspensions." *Nanotechnology* **2004**, 15, 1450-1454.
3. K. Schmalenberg, G. Dukovic, L. Garfias, K. E. Uhrich. "Spectroscopic and microscopic analysis of micropatterned polymer substrates for directing cell growth." *Polymeric Materials Science and Engineering* **2001**, 84, 285.
2. T. J. Emge, A. Agrawal, J. Dalessio, G. Dukovic, J. A. Inghrim, K. Janjua, M. Macaluso, L. Robertson, T. J. Stiglic, Y. Volovik, M. M. Georgiadis. "Alaninyltryptophan hydrate, glycytryptophan dehydrate and tryptophylglycine hydrate." *Acta Crystallographica* **2000**, C56, E469-E471.
1. K. Patterson, M. Yamachika, R. Hung, C. N. Brodsky, S. Yamada, M. Somervell, B. Osborn, D. Hall, G. Dukovic, J. Byers, W. Conley, C. G. Willson. "Polymers for 157-nm photoresist applications: a progress report." *Proceedings of the SPIE* **2000**, 3999, 365-374.

7. PATENTS

Nanoparticle Biohybrid Complexes, *U.S. Provisional Patent Application* November **2016**

8. PRESENTATIONS DURING INDEPENDENT CAREER AT CU

Invited Seminars

41. *STROBE Seminar*, University of Colorado Boulder, Boulder, CO, February **2019**
40. *Department of Chemistry*, University of Illinois at Urbana-Champaign, Urbana, IL, November **2018**
39. *Department of Chemistry*, University of Washington, Seattle, WA, May **2018**
38. *Department of Chemistry*, Texas A&M University, College Station, TX, November **2017**
37. *Institute of Chemistry*, Academia Sinica, Taipei, Taiwan, September **2017**
36. *Department of Chemistry*, Cornell University, Ithaca, NY, March **2017**
35. *Department of Chemistry and Biochemistry*, University of Oregon, Eugene, OR, March **2017**
34. *Department of Chemistry*, Emory University, Atlanta, GA, February **2017**
33. *Department of Chemistry*, University of Minnesota, Minneapolis, MN, February **2017**
32. *Laboratory for Materials and Interfaces*, Claude Bernard University, Lyon, France, July **2016**
31. *Department of Chemistry*, Boston University, Boston, MA, April **2016**
30. *Department of Chemistry*, Pennsylvania State University, State College, PA, March **2016**
29. *Department of Chemistry*, University of Rochester, Rochester, NY, March **2016**
28. *Department of Chemistry*, University of Pittsburgh, Pittsburgh, PA, March **2016**
27. *Department of Chemistry*, Massachusetts Institute of Technology, Cambridge, MA, February **2016**
26. *Department of Chemistry*, Yale University, New Haven, CT, February **2016**
25. *Department of Chemistry*, California Institute of Technology, Pasadena, CA, January **2016**
24. *Department of Chemistry*, University of California Irvine, Irvine, CA, January **2016**
23. *Department of Chemistry and Biochemistry*, Montana State University, Bozeman, MT, December **2015**

22. *Department of Chemistry and Biochemistry, University of Colorado Boulder, Boulder, CO, October 2015*
21. *Department of Chemistry, Colorado State University, Fort Collins, CO, September 2015*
20. *Materials Research Science and Engineering Center, Columbia University, New York, NY, September 2015*
19. *Department of Chemistry, Princeton University, Princeton, NJ, September 2015*
18. *Department of Chemistry, University of Illinois at Urbana-Champaign, Urbana, IL, April 2015*
17. *James Franck Institute, University of Chicago, Chicago, IL, April 2015*
16. *ANSER Center, Northwestern University, Evanston, IL, April 2015*
15. *Department of Chemistry, University of California Berkeley, Berkeley, CA, April 2015*
14. *Department of Chemistry and Biochemistry, Arizona State University, Tempe, AZ, April 2015*
13. *Department of Chemistry, University of Southern California, Los Angeles, CA, March 2015*
12. *Department of Chemistry, Washington University in St. Louis, St. Louis, MO, March 2015*
11. *Department of Chemistry and Biochemistry, University of California San Diego, La Jolla, CA, February 2015*
10. *Department of Chemistry, University of Miami, Miami, FL, January 2015*
9. *Department of Chemistry, University of Texas at Austin, Austin, TX, November 2014*
8. *Department of Chemistry, Rice University, Houston, TX, November 2014*
7. *Department of Physics, University of Denver, Denver, CO, November 2014*
6. *Department of Chemistry, University of Michigan, Ann Arbor, MI, October 2014*
5. *Department of Chemistry, Michigan State University, East Lansing, MI, October 2014*
4. *Condensed Matter Physics Seminar, University of Colorado Boulder, Boulder, CO, April 2014*
3. *Molecular Foundry, Lawrence Berkeley National Laboratory, Berkeley, CA, November 2013*
2. *Department of Chemistry, University of Illinois Chicago, Chicago, IL, September 2010.*
1. *National Renewable Energy Laboratory, Golden, CO, April 2010.*

Invited Conference Talks

39. "Excited State Processes in Semiconductor Nanocrystals and their relationships with Light-Driven Multi-Electron Catalysis," *Pacific Conference on Spectroscopy and Dynamics*, San Diego, CA, January **2019**
38. "Excited State Processes in Semiconductor Nanocrystals and their relationships with Light-Driven Multi-Electron Catalysis," *NanoGe Fall Meeting*, Torremolinos, Spain, October **2018**
37. "Elucidating how photoexcited semiconductor nanocrystals drive redox enzyme catalysis," *Gerischer Electrochemistry Today 2018 - A Symposium*, Boulder, CO, August **2018**
36. Keynote Speaker: "Elucidating how semiconductor nanocrystals drive redox enzyme catalysis," *Gordon Research Seminar on Colloidal Semiconductor Nanocrystals*, Smithfield, RI, July **2018**
35. "Elucidating how semiconductor nanocrystals drive redox enzyme catalysis," *Spring Meeting of the American Chemical Society*, New Orleans, LA, March **2018**
34. "Elemental distribution and excited state dynamics in oxynitride nanocrystals," *Spring Meeting of the American Chemical Society*, New Orleans, LA, March **2018**
33. "Elucidating how semiconductor nanocrystals drive redox enzyme catalysis," *Gordon Research Conference on Renewable Energy: Solar Fuels*, Ventura, CA, January **2018**
32. "Dynamics of charge transfer between semiconductor nanocrystals and redox catalysts," *Fall Meeting of the Materials Research Society*, Boston, MA, December **2017**
31. "Semiconductor-microorganism hybrids for solar photochemistry," *7th Chemical Sciences and Society Summit*, Dalian, China, September **2017**
30. "Elucidating How Photoexcited Semiconductor Nanocrystals Drive Redox Enzyme Catalysis," *Molecular Foundry User Meeting*, Berkeley, CA, August **2017**
29. "Dynamics of charge transfer between semiconductor nanocrystals and redox catalysts," *Solar Solutions to Energy and Environmental Problems*, Telluride, CO, June **2017**

28. "Oxynitride nanocrystals: synthesis, excited state dynamics, and elemental distribution," *21st International Conference on Solid State Ionics*, Padova, Italy, June **2017**
27. "Solar photochemistry of semiconductor nanocrystals coupled with redox catalysts," *Spring Meeting of the American Chemical Society*, San Francisco, CA, April **2017**
26. "Semiconductor nanocrystals in multi-electron redox photochemistry," *26th Inter-American Photochemical Society Meeting*, Sarasota, FL, January **2017**
25. "Charge transfer kinetics between CdS nanorods and redox catalysts," *Spring Meeting of the American Chemical Society*, San Diego, CA, March **2016**
24. "Synthesis and excited state dynamics of oxynitride nanocrystals," *March Meeting of the American Physical Society*, Baltimore, MD, March **2016**
23. (Keynote Speaker), "Synthesis and excited state dynamics of oxynitride nanocrystals," *20th International Conference on Solid State Ionics*, Keystone, CO, June **2015**
22. "Charge transfer kinetics between CdS nanorods and redox catalysts," *Spring Meeting of the Materials Research Society*, San Francisco, CA, April **2015**
21. "Charge transfer kinetics between CdS nanorods and redox catalysts," *Spring Meeting of the American Chemical Society*, Denver, CO, March **2015**
20. "Nanocrystalline oxynitrides with tunable composition and absorption spectra," *Spring Meeting of the American Chemical Society*, Denver, CO, March **2015**
19. "Solar photochemistry of semiconductor nanocrystals," *Fall Meeting of the Materials Research Society*, Boston, MA, December **2014**
18. "Charge transfer and solar photochemistry of nanocrystal-catalyst complexes," *Fall Meeting of the American Chemical Society, Younger Awardee National Awardee Forum*, San Francisco, CA, August **2014**
17. "Charge transfer and solar photochemistry of nanocrystal-catalyst complexes," *Gordon Research Conference on Colloidal Semiconductor Nanocrystals*, Smithfield, RI, July **2014**
16. "Nanocrystalline oxynitrides with tunable composition and band gap," *Spring Meeting of the American Chemical Society*, Dallas, TX, March **2014**
15. (Selected Poster Talk) "Electron transfer kinetics in CdS nanorods-[FeFe] hydrogenase complexes and implications for solar H₂ generation," *Gordon Research Conference on Renewable Energy: Solar Fuels*, Ventura, CA, January **2014**
14. "Nanocrystalline oxynitrides with tunable composition and band gap," *Fall Meeting of the Materials Research Society*, Boston, MA, December **2013**
13. "Photophysics and Photochemistry of Nanoscale Semiconductors." *AVS International Symposium and Exhibition*, Long Beach, CA, October **2013**
12. "Charge transfer dynamics and solar photochemistry of semiconductor nanocrystals." *Fall Meeting of the American Chemical Society*, Indianapolis, IN, September **2013**
11. "Mixed metal oxynitrides as light harvesters for solar fuel generation." *Telluride Science Research Center Meeting: Solar Solutions to Energy and Environmental Problems*, Telluride, CO, August **2013**
10. (2 brief presentations) "Integration of nanocrystal light absorbers with solar fuels catalysts" and "Nanoscale oxynitrides as light harvesting semiconductors for solar fuels." *Telluride Science Research Center: Solar Fuels Institute (SOFI) Meeting*, Telluride, CO, July **2013**
9. "Scientific frontiers in renewable generation of fuels." *National Academy of Science Israeli-American Kavli Frontiers of Science Symposium*, Irvine, CA, June **2013**
8. "Charge transfer dynamics and photochemical activity of semiconductor nanocrystals." *Spring Meeting of the Materials Research Society*, San Francisco, CA, April **2013**
7. (A series of 2 tutorial lectures) "Nanocrystals for photocatalysis and photochemical conversion of solar energy." *I-CAMP 12 Summer School on Renewable & Sustainable Energy*, Boulder, CO, August **2012**
6. "Integrating light absorption and catalysis for solar fuel generation: nanocrystal-enzyme complexes." *The Rank Prize Funds Symposium on Nanomaterials for Solar Energy Generation and Storage*, Grasmere, United Kingdom, June **2012**

5. "Measuring charge transfer dynamics in complex structures for solar energy harvesting." *RASEI Workshop on Electronic and Optical Characterization of Nanoscale Systems for Renewable Energy*, Boulder, CO, November **2011**
4. "Nanocrystal-enzyme complexes for solar photochemistry." *Telluride Science Research Center Meeting: Solar Solutions to Energy and Environmental Problems*, Telluride, CO, August **2011**
3. "Nanocrystal-enzyme complexes for solar photochemistry." *Fall Meeting of the American Chemical Society*, Denver, CO, August **2011**
2. "Integrating light absorbers and catalysts: nanocrystal-enzyme complexes." *Fall Meeting of the American Chemical Society*, Denver, CO, August **2011**
1. (Keynote speaker) "Nanocrystal-enzyme complexes for solar photochemistry." *Nanoscale Science and Engineering Center Symposium, Columbia University*, New York, NY, June **2011**

Contributed Conference Presentations

12. (talk) "Elucidating how photoexcited semiconductor nanocrystals drive redox enzyme catalysis," *2nd International Solar Fuels Conference*, La Jolla, CA, July **2017**
11. (poster) *Gordon Research Conference on Colloidal Semiconductor Nanocrystals*, West Dover, VT, August **2016**
10. (poster) "Excited State Dynamics in Oxynitride Nanocrystals and Implications for Solar Fuel Generation," *1st International Solar Fuels Conference*, Uppsala, Sweden, April **2015**
9. (poster) "Light-driven electron transfer and H₂ production in nanocrystal-hydrogenase complexes," *30 Years of Quantum Dots*, Paris, France, May **2014**
8. (poster) "Light-driven electron transfer and H₂ production in nanocrystal-hydrogenase complexes," *Gordon Research Conference on Renewable Energy: Solar Fuels*, Ventura, CA, January **2014**
7. (talk) "Photochemical H₂ generation by nanocrystal-enzyme complexes." *19th International Conference on Photochemical Conversion and Storage of Solar Energy*, Pasadena, CA, August **2012**
6. (poster) "Light-driven electron transfer and H₂ production in nanocrystal-hydrogenase complexes." *Gordon Research Conference on Renewable Energy: Solar Fuels*, Barga, Italy, May **2012**
5. (poster) "Nanocrystal-enzyme complexes for photochemical H₂ generation." *Gordon Research Conference on Clusters, Nanocrystals, and Nanostructures*, Holyoke, MA, July **2011**
4. (poster) "Nanocrystal-enzyme complexes for photochemical H₂ generation." *Gordon Research Conference on Renewable Energy: Solar Fuels*, Ventura, CA, January **2011**
3. (talk) "Efficient charge transfer in metal-semiconductor nano-heterostructures." *Spring Meeting of the American Chemical Society*, San Francisco, CA, March **2010**
2. (poster) "Nanoscale materials for solar energy harvesting." *RASEI Research Symposium*, Boulder, CO, October **2009**
1. (poster) "CdS-Pt nanoheterostructures: photochemical synthesis and efficient charge transfer." *Gordon Research Conference on Clusters, Nanocrystals, and Nanostructures*, Holyoke, MA, July **2009**

9. EDUCATIONAL ACTIVITIES

Courses Taught

- Spring 2010: CHEM 6321/5011: Chemistry of Solar Energy (new course developed)
- Fall 2010: CHEM 4531: Physical Chemistry 2
- Spring 2011: CHEM 4271/5271: Chemistry of Solar Energy
- Fall 2011: CHEM 6401: Seminar: Physical Chemistry
- Spring 2012: CHEM 6401: Seminar: Physical Chemistry

- Fall 2012: CHEM 4581 + 4591: Physical Chemistry Lab 1 and 2
- Spring 2013: CHEM 4271/5271: Chemistry of Solar Energy
- Fall 2013: CHEM 4531: Physical Chemistry 2
- Spring 2014: CHEM 4271/5271: Chemistry of Solar Energy
- Fall 2014: CHEM 4271/5271: Chemistry of Solar Energy
- Fall 2015: CHEM 1113: General Chemistry 1
- Spring 2016: CHEM 4531: Physical Chemistry 2
- Spring 2017: CHEM 4581 + 4591: Physical Chemistry Lab 1 and 2
- Fall 2017: CHEM 4581 + 4591: Physical Chemistry Lab 1 and 2
- Spring 2018: CHEM 4271/5271: Chemistry of Solar Energy
- Fall 2018: CHEM 4531: Physical Chemistry 2 and CHEM 6401: Seminar: Physical Chemistry

Postdoctoral Research Associates Supervised:

- Katherine Shinopoulos (March 2013-July 2015)
- Chi-Hung Chuang (September 2013-February 2017)
- Ying-Gang Lu (June 2014- August 2015)
- Pornthip Tongying (August 2015 – August 2017)
- James Utterback (September 2018 -)

PhD Students Supervised:

- Kimberly See (Fall 2009 – Spring 2010), moved to the Chemistry PhD program at University of California, Santa Barbara
- Molly Wilker (formerly Beernink), PhD (Fall 2009-Spring 2015), Now Assistant Professor of Chemistry, Luther College, Decorah, IA
- Kyle Schnitzenbaumer, PhD (Fall 2009-Spring 2015), Now Assistant Professor of Chemistry, Transylvania University, Lexington, KY
- Bryan Tienes, PhD (Summer 2010- Summer 2013), co-supervised with Daniel Feldheim, now at Joint Research and Development, Stafford, VA
- Kyureon Lee, PhD (Fall 2010-Summer 2015), Now at LG Chemistry, South Korea
- Amanda Grennell (formerly Norell Bader) (Fall 2011-), Received Graduate Research Fellowship from the National Science Foundation, **2013**
- Hiroko Nakao, MS (Fall 2011-Summer 2014), Now at Toyota Motors, Japan
- Tais Labrador (Spring 2013-)
- James Utterback (Fall 2013-), Received Graduate Research Fellowship from the National Science Foundation, **2015**
- Orion Pearce (Fall 2013-), co-supervised with Niels Damrauer
- Hayden Hamby (Fall 2013-)
- Leah Hall (Fall 2014-)
- Marta Sulima (Fall 2014-)
- Kristina Vrouwenvelder (Fall 2015-)
- Jesse Ruzicka (Fall 2015-)
- Shelby Beer (Fall 2015-)
- Ashutosh Gupta (Fall 2016-Spring 2017)
- Nicholas Pogranichniy (Fall 2016-), Received Graduate Research Fellowship from the National Science Foundation, **2016**
- Helena Keller (Fall 2017 -)
- Lauren Pellows (Summer 2018 -)
- Madison Jilek (Fall 2018 -)
- Benjamin Hohman (Fall 2018 -)

Undergraduate Student Researchers (CU students unless otherwise noted):

- Farrah Qureshi (2010-2011)
- David Garfield (2011-2012)
- Russell Perkins (2011-2012)
- Michael Martin (2012)
- Emily Sophie Greene (2013), visiting summer undergraduate from Carleton College
- Alec Wild (2015), visiting summer undergraduate from University of Chicago

10. SERVICE

Departmental

- Departmental Executive Committee (**2018-2020**)
- Faculty search committee member, Open Discipline Search (**2018-2019**)
- Faculty Search Committee Member, Functional Materials and Complex Matter Search (**2018-2019**)
- “Thriving in grad school,” presentation to CHEMUnity, graduate student group (**2017**)
- Departmental Space Committee (**2017-2018**)
- Faculty Search Committee (Theoretical Chemistry) (**2015-2016**)
- Graduate Admissions and Recruitment Committee (**2009-2014, 2015-2016**)
- Materials/Nanoscience Program Graduate Student Advising Committee (**2011-2014**)
- Departmental Laser Safety Officer (**2010-2013**)
- Undergraduate Honors Committee (**2011-2012**)
- Graduate Scholastic Committee (**2011-2013**)
- Faculty Search Committee (Organic Chemistry) (**2012-2013**)
- CU Chemistry-NREL-RASEI Partnership Committee (**2012-2013**)

University

- Chair, Faculty Oversight Committee for the Facility for Electron Microscopy of Materials (**2017-**)
- Chair, Research Professor Search for Campus Imaging Facility (**2017**)
- Member of the Advisory Board of Nanomaterials Characterization Facility (**2014-**)
- Faculty Adviser, CU chapter of the Materials Research Society (**2013-**)
- Organizer, *Materials Research Day*, official kickoff of the Materials Science and Engineering program, **2013**
- Panelist, *Pi Day: Celebrating Women in Math & Science*, CU Women’s Resource Center, March **2013**
- Member of Executive Committee, Materials Science and Engineering, (**2012-**)
- Proposal reviewer for the Innovative Seed Grant program, **2012**
- Poster judge, *CU Energy Club's Energy Frontiers*, April **2012**
- Served as the PI for NSF MRI proposals to bring a high resolution transmission electron microscope to CU, **2011, 2012, 2016**
- Presentation and Panel: Applying and Interviewing for Faculty Positions, *Postdoctoral Association of Colorado*, November **2010**

Scientific Community

- Co- Chair, Gordon Conference on Colloidal Semiconductor Nanocrystals, **2022**
- Co-Vice Chair, Gordon Conference on Colloidal Semiconductor Nanocrystals, **2020**

- Member of Editorial Advisory Board, *Journal of Physical Chemistry*, **2019-2021**
- Member of Editorial Advisory Board, *Journal of Chemical Physics*, **2019-2021**
- Co-organizer, *Telluride Workshop on Solar Solutions to Energy and Environmental Problems*, Telluride, CO, July **2019**
- Co-organizer, *ACS meeting session "Light-Driven Chemistry: Photoelectrochemistry and Photocatalysis,"* Orlando, FL, April **2019**
- Co-organizer, *2018 NSF Chemistry Early Career Investigator Workshop*, Arlington, VA, **March 2018**
- Oversight of development of Beckman Legacy Program materials, Arnold and Mabel Beckman Foundation, **2018**
- Member at Large, *ACS Physical Chemistry Division*, **2018-2020**
- Member, Organizing Committee, *Gerischer Electrochemistry Today*, Boulder, CO, August **2018**
- Member of Local Organizing Committee, *21st International Conference on Ternary and Multinary Compounds*, Boulder, CO, September **2018**
- Member of Editorial Advisory Board, *Sustainable Energy and Fuels*, **2017-**
- Co-organizer, *ACS meeting session "Light-Driven Chemistry: Photoelectrochemistry and Photocatalysis,"* San Francisco, CA, April **2017**
- Speaker, *2017 NSF Chemistry Early Career Investigator Workshop*, Arlington, VA, **March 2017**
- Member of Editorial Advisory Board, *ACS Energy Letters*, **2016-**
- Co-organizer, *E-MRS symposium "Established and Emerging Nanocolloids: From Synthesis and Characterization to Applications II,"* Lille, France, May **2016**
- Mentor, Chemistry Women Mentorship Network (**2014-**)
- Co-organizer, *E-MRS symposium "Established and Emerging Nanocolloids: From Synthesis and Characterization to Applications,"* Lille, France, May **2014**
- Participant, *Brasil-United States Workshop: Nanotechnology for Renewable and Sustainable Energy Materials*, Golden, CO, May **2013**
- Co-organizer, *Institute for Complex Adaptive Matter (ICAM) workshop "Emergent Nano-Photovoltaics,"* Boulder, CO, August **2012**
- Participant, National Academy of Sciences Workshop on Chemistry Graduate Education, Washington, DC, January **2012**
- Reviewer for a new textbook edition of "Quanta, Matter, and Change," **2011**

Journals (manuscript reviewer)

Journal of the American Chemical Society, Nano Letters, ACS Nano, Journal of Physical Chemistry, Chemistry of Materials, ACS Catalysis, Chemical Communications, Small, Accounts of Chemical Research, Chemical Physics, Proceedings of the National Academy of Sciences, Nature Nanotechnology, Nature Chemistry, Nature Materials, Nature

Proposal Reviewer

National Science Foundation, Center for Functional Nanomaterials, Brookhaven National Lab, Molecular Foundry, Lawrence Berkeley National Lab, Petroleum Research Fund of the American Chemical Society, Department of Energy – Basic Energy Sciences, NREL Laboratory Directed Research and Development Program, Research Corporation for Science Advancement,

Outreach

- Ted-style talk: “Harvesting Solar Energy Through Chemistry and Biology,” Boulder, CO, October **2018**; Covered in Daily Camera: http://www.dailycamera.com/cu-news/ci_32214491/cu-boulder-research-and-innovation-get-airing-at
- Interviewee, Perspectives Radio-Camp, Boulder, CO, June **2015**