CURRICULUM VITAE
CURRENT AS OF DECEMBER 1, 2020

GORDANA DUKOVIC, PhD
Associate Professor
Department of Chemistry, University of Colorado, Boulder, 215 UCB, Boulder, CO 80304
Tel: (303) 735-5297 Email: Gordana.Dukovic@colorado.edu

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**

POSITIONS HELD:

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

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

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

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

COLLABORATORS DURING INDEPENDENT CAREER AT CU

- Jim Ciston, National Center for Electron Microscopy, Lawrence Berkeley National Laboratory.
- Niels Damrauer, Department of Chemistry, University of Colorado Boulder.
- Joel Eaves, Department of Chemistry, 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, University of Colorado Boulder
- Sadegh Yazdi, RASEI, University of Colorado Boulder

PUBLICATIONS

NOTES:

- Corresponding authors are marked with asterisks (*).
- In each sub-section, publications are listed in reverse chronological order based on the publication date.
- **All publications from my independent career at CU were peer reviewed**.
- An up to date citation report for these publications can be found on my Google Scholar profile (https://goo.gl/riAuMd).
- Citation data from ISI Web Of Science: h-index: 23; avg. citations per item: 47.78.

Publications from independent career at CU:

52. J. K. Utterback, R. P. Cline, K. E. Shulenberger, J. D. Eaves, G. Dukovic*. "The Motion of Trapped Holes on Nanocrystal Surfaces." *Journal of Physical Chemistry Letters*, **2020**, *11*, 9876−9885. https://pubs.acs.org/doi/10.1021/acs.jpclett.0c02618

    Includes supplementary journal cover

51. O. M. Pearce, J. S. Duncan, B. Lama, G. Dukovic*, N. H. Damrauer*. " Binding Orientation of a Ruthenium-Based Water Oxidation Catalyst on a CdS QD Surface Revealed by NMR Spectroscopy." *Journal of Physical Chemistry Letters*, **2020**, *11*, 9552−9556. https://pubs.acs.org/doi/10.1021/acs.jpclett.0c02639

50. K. A. Brown, J. L. Ruzicka, H. Kallas, B. Chica, D. W. Mulder, J. W. Peters, L. C. Seefeldt, G. Dukovic, P. W. King*. "Excitation-Rate Determines Product Stoichiometry in Photochemical Ammonia Production by CdS Quantum Dot-Nitrogenase MoFe Protein Complexes." *ACS Catalysis,* **2020**, *10*, 11147-11152. https://pubs.acs.org/doi/10.1021/acscatal.0c02933

49. B. Chica, J. Ruzicka, H. Kallas, D. W. Mulder, K. A. Brown, J. W. Peters, L. C. Seefeldt, G. Dukovic, P. W. King*. "Defining Intermediates of Nitrogenase MoFe Protein during N_2 Reduction under Photochemical Electron Delivery from CdS Quantum Dots." *Journal of the American Chemical Society*, **2020**, *142*, 14324-14330. https://doi.org/10.1021/jacs.0c06343

48. J. K. Utterback, J. L. Ruzicka, H. R. Keller, L. M. Pellows, G. Dukovic*. "Electron Transfer from Semiconductor Nanocrystals to Redox Enzymes." *Annual Review of Physical Chemistry*, **2020**, *71*, 335-359. https://doi.org/10.1146/annurev-physchem-050317-014232

47. T. Labrador, G. Dukovic*. "Simultaneous Determination of Spectral Signatures and Decay Kinetics of Excited State Species in Semiconductor Nanocrystals Probed by Transient Absorption Spectroscopy." *Journal of Physical Chemistry C*, **2020**, *124*, 8439-8447. https://doi.org/10.1021/acs.jpcc.0c01701

46. H. Hamby, B. Li, K. E. Shinopoulos, H. R. Keller, S. J. Elliott, G. Dukovic*. "Light-driven carbon-carbon bond formation via CO_2 reduction catalyzed by complexes of CdS nanorods and a 2-oxoacid oxidoreductase." *Proceedings of the National Academy of Sciences*, **2020**, *117*, 135-140. https://doi.org/10.1073/pnas.1903948116

45. J. K. Utterback, J. L. Ruzicka, H. Hamby, J. D. Eaves, G. Dukovic*. "Temperature-Dependent Transient Absorption Spectroscopy Elucidates Trapped-Hole Dynamics in CdS and CdSe Nanorods." *Journal of Physical Chemistry Letters*, **2019**, *10*, 2782−2787. https://pubs.acs.org/doi/10.1021/acs.jpclett.9b00764

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.jpclett.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 H_2 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 $H^{red}H^+$ 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/acsnano.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.jpclett.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 $(Ga_{1-x}Zn_x)(N_{1-x}O_x)$ 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 $Co(Al_{1-x}Ga_x)_2O_4$." *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/ja400178g († 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 H_2 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, glycyltryptophan 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.

PATENTS

P. W. King, K. A. Brown, L. C. Seefeldt, J. W. Peters, G. Dukovic, Nanoparticle Biohybrid Complexes, *U.S. Provisional Patent Application* November **2016**

FUNDING

A **PI** designation indicates that I was the principal investigator. When the grant involved a co-principal investigator (**co-PI**), that person's name is included, as well as my share of the funds.

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	04/01/2017-3/31/2021	$648,000
Mechanism of Photochemical N2 Reduction (**co-PI**; PI: Paul King, NREL)	Department of Energy – Basic Energy Sciences	10/01/2017-6/30/2021	$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**)	National Science Foundation	12/01/18-09/30/21	$100,000
CHECRA Matching Funds for use in Support of STROBE (**Faculty**)	Colorado Higher Education Competitive Research Authority (CHECRA)	12/01/18-09/30/21	$20,000
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
Scialog 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

PRESENTATIONS DURING INDEPENDENT CAREER AT CU

NOTE: Presentations given at investigator meetings of funding agencies and foundations are not included here

Invited Seminars

45. *Department of Chemistry*, University of Colorado Boulder, Boulder, CO (virtual), October **2020**
44. *News in Nanocrystals Seminar*, virtual international seminar series, June **2020**
43. *Chemistry Internal Seminar Series*, University of Colorado Boulder, Boulder, CO (virtual), May **2020**
42. *Harvard-MIT Inorganic Seminar*, Massachusetts Institute of Technology, Cambridge, MA, February **2020**
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 Heaven, 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

47. *NanoGe Fall Meeting*, virtual, October **2020**
46. Division of Physical Chemistry, *Fall Meeting of the American Chemical Society*, virtual, August **2020**
45. Division of Colloids and Surface Science, *Fall Meeting of the American Chemical Society*, virtual, August **2020**
44. *Spring Meeting of the American Chemical Society*, virtual, March **2020**
43. *2nd Frontiers in Photochemistry Conference,* Nassau, Bahamas, February **2020**
42. *Electrochemical Society Meeting*, Atlanta, GA, October **2019**
41. *The 29th International Conference on Photochemistry*, Boulder, CO, July **2019**
40. *Solar Solutions to Energy and Environmental Problems*, Telluride, CO, July **2019**
39. *Pacific Conference on Spectroscopy and Dynamics*, San Diego, CA, January **2019**
38. *NanoGe Fall Meeting*, Torremolinos, Spain, October **2018**
37. *Gerischer Electrochemistry Today 2018 - A Symposium*, Boulder, CO, August **2018**
36. Keynote Speaker, *Gordon Research Seminar on Colloidal Semiconductor Nanocrystals*, Smithfield, RI, July **2018**
35. Division of Inorganic Chemistry, *Spring Meeting of the American Chemical Society*, New Orleans, LA, March **2018**
34. Division of Physical Chemistry, *Spring Meeting of the American Chemical Society*, New Orleans, LA, March **2018**
33. *Gordon Research Conference on Renewable Energy: Solar Fuels*, Ventura, CA, January **2018**
32. *Fall Meeting of the Materials Research Society,* Boston, MA, December **2017**
31. *7th Chemical Sciences and Society Summit*, Dalian, China, September **2017**
30. *Molecular Foundry User Meeting, Berkeley*, CA, August **2017**
29. *Solar Solutions to Energy and Environmental Problems*, Telluride, CO, June **2017**
28. *21st International Conference on Solid State Ionics*, Padova, Italy, June **2017**

27. *Spring Meeting of the American Chemical Society*, San Francisco, CA, April **2017**
26. *26th Inter-American Photochemical Society Meeting*, Sarasota, FL, January **2017**
25. *Spring Meeting of the American Chemical Society*, San Diego, CA, March **2016**
24. *March Meeting of the American Physical Society,* Baltimore, MD, March **2016**
23. Keynote Speaker, *20th International Conference on Solid State Ionics,* Keystone, CO, June **2015**
22. *Spring Meeting of the Materials Research Society,* San Francisco, CA, April **2015**
21. Division of Colloid and Surface Chemistry, *Spring Meeting of the American Chemical Society,* Denver, CO, March **2015**
20. Division of Inorganic Chemistry, *Spring Meeting of the American Chemical Society,* Denver, CO, March **2015**
19. *Fall Meeting of the Materials Research Society,* Boston, MA, December **2014**
18. *Fall Meeting of the American Chemical Society, Younger Awardee National Awardee Forum,* San Francisco, CA, August **2014**
17. *Gordon Research Conference on Colloidal Semiconductor Nanocrystals,* Smithfield, RI, July **2014**
16. *Spring Meeting of the American Chemical Society,* Dallas, TX, March **2014**
15. Selected Poster Talk, *Gordon Research Conference on Renewable Energy: Solar Fuels*, Ventura, CA, January **2014**
14. *Fall Meeting of the Materials Research Society,* Boston, MA, December **2013**
13. *AVS International Symposium and Exhibition*, Long Beach, CA, October **2013**
12. *Fall Meeting of the American Chemical Society*, Indianapolis, IN, September **2013**
11. *Telluride Science Research Center Meeting: Solar Solutions to Energy and Environmental Problems*, Telluride, CO, August **2013**
10. Two brief presentations, *Telluride Science Research Center: Solar Fuels Institute (SOFI) Meeting*, Telluride, CO, July **2013**
9. *National Academy of Science Israeli-American Kavli Frontiers of Science Symposium*, Irvine, CA, June **2013**
8. *Spring Meeting of the Materials Research Society*, San Francisco, CA, April **2013**
7. A series of two tutorial lectures, *I-CAMP 12 Summer School on Renewable & Sustainable Energy*, Boulder, CO, August **2012**
6. *The Rank Prize Funds Symposium on Nanomaterials for Solar Energy Generation and Storage*, Grasmere, United Kingdom, June **2012**
5. *RASEI Workshop on Electronic and Optical Characterization of Nanoscale Systems for Renewable Energy*, Boulder, CO, November **2011**
4. *Telluride Science Research Center Meeting: Solar Solutions to Energy and Environmental Problems*, Telluride, CO, August **2011**
3. Division of Physical Chemistry, *Fall Meeting of the American Chemical Society*, Denver, CO, August **2011**
2. Division of Inorganic Chemistry, *Fall Meeting of the American Chemical Society*, Denver, CO, August **2011**
1. Keynote speaker, *Nanoscale Science and Engineering Center Symposium, Columbia University*, New York, NY, June **2011**

Contributed Conference Presentations

12. *2nd International Solar Fuels Conference,* La Jolla, CA, July **2017**
11. *Gordon Research Conference on Colloidal Semiconductor Nanocrystals,* West Dover, VT, August **2016**
10. *1st International Solar Fuels Conference,* Uppsala, Sweden, April **2015**
9. *30 Years of Quantum Dots*, Paris, France, May **2014**
8. *Gordon Research Conference on Renewable Energy: Solar Fuels*, Ventura, CA, January **2014**

7. *19th International Conference on Photochemical Conversion and Storage of Solar Energy*, Pasadena, CA, August **2012**
6. *Gordon Research Conference on Renewable Energy: Solar Fuels*, Barga, Italy, May **2012**
5. *Gordon Research Conference on Clusters, Nanocrystals, and Nanostructures*, Holyoke, MA, July **2011**
4. *Gordon Research Conference on Renewable Energy: Solar Fuels*, Ventura, CA, January **2011**
3. *Spring Meeting of the American Chemical Society*, San Francisco, CA, March **2010**
2. *RASEI Research Symposium*, Boulder, CO, October **2009**
1. *Gordon Research Conference on Clusters, Nanocrystals, and Nanostructures*, Holyoke, MA, July **2009**

EDUCATIONAL ACTIVITIES

Courses Taught

Term	Course number	Course name
Spring 2010	CHEM 6321/5011	Chemistry of Solar Energy (developed new course)
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
Fall 2018	CHEM 6401	Seminar: Physical Chemistry
Spring 2019	CHEM 6401	Seminar: Physical Chemistry
Spring 2020	CHEM 4271/5271	Chemistry of Solar Energy
Fall 2020	CHEM 1400	Foundations of Chemistry

Postdoctoral Research Associates Supervised

Name	Period	Notes
Katherine Shinopoulos	March 2013-July 2015	Now working in industry
Chi-Hung Chuang	September 2013-February 2017	Now working in industry
Ying-Gang Lu	June 2014- August 2015	Now working in industry
Pornthip Tongying	August 2015 – August 2017	Now in an academic position abroad
James Utterback	September 2018– May 2019	Bridging PhD research; Now in a postdoctoral position
Katherine Shulenberger	September 2019 -	

Details of current position withheld for privacy

Graduate Students Supervised (received PhD unless otherwise noted)

Name	Period	Notes
Kimberly See	Fall 2009 – Spring 2010	Moved to another PhD program; Now R1 faculty
Molly Wilker (formerly Beernink)	Fall 2009-Spring 2015	Now PUI faculty
Kyle Schnitzenbaumer	Fall 2009-Spring 2015	Now PUI faculty
Bryan Tienes	Summer 2010-Summer 2013	co-supervised with Daniel Feldheim; Now working in industry
Kyureon Lee	Fall 2010-Summer 2015	Now working in industry
Amanda Grennell (formerly Norell Bader)	Fall 2011-Spring 2017	NSF Graduate Research Fellowship, **2013**; Now freelance writer
Hiroko Nakao, MS	Fall 2011-Summer 2014	Now working in industry
Tais Labrador	Spring 2013-Summer 2018	Went on to a postdoctoral position; Now a chemistry instructor
James Utterback	Fall 2013- Spring 2018	NSF Graduate Research Fellowship, **2015**; Now in a postdoctoral position
Orion Pearce	Fall 2013- Spring 2019	co-supervised with Niels Damrauer; Went on to a postdoctoral position; Now a chemistry instructor
Hayden Hamby	Fall 2013-Fall 2018	Now government lab researcher
Leah Hall	Fall 2014-Summer 2019	Now working in industry
Marta Sulima	Fall 2014-Summer 2019	Now working in industry
Kristina Vrouwenvelder	Fall 2015-Spring 2020	Now journal editor
Jesse Ruzicka	Fall 2015-	
Shelby Beer, MS	Fall 2015- Spring 2019	Now working in industry
Nicholas Pogranichniy, MS	Fall 2016-Summer 2020	NSF Graduate Research Fellowship, **2016**
Helena Keller	Fall 2017 -	NSF Graduate Research Fellowship, **2019**
Lauren Pellows	Summer 2018 -	
Madison Jilek	Fall 2018 -	NSF Graduate Research Fellowship, **2020**
Benjamin Hohman	Fall 2018 -	

Details of current position withheld for privacy

Undergraduate Student Researchers (CU students unless otherwise noted):

Name	Period	Notes
Farrah Qureshi	2010-2011	Obtained UROP funding
David Garfield	2011-2012	Obtained UROP funding; Received PhD
Russell Perkins	2011-2012	Obtained UROP funding; Received PhD
Michael Martin	2012	Now in the military

Emily Sophie Greene	2013	visiting from Carleton College
Alec Wild	2015	visiting from University of Chicago
Niamh Brown	Spring 2020-	Goldwater Scholar; Obtained UROP funding

Details of current position withheld for privacy

SERVICE

Departmental

- Chemistry Building Committee (**2020-**)
- Departmental Executive Committee (**2018-2019**)
- Faculty Search Committee, Open Discipline Search (**2018-2019**)
- Faculty Search Committee, Functional Materials & 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

- Served as the PI for NSF MRI proposals to bring an electron energy loss spectrometer to CU, **2019**, **2020**
- Chair, Oversight Committee for the Facility for Electron Microscopy of Materials (**2017-**)
- Instrument selection and facility set up for a powder X-ray diffractometer as a shared user instrument (**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**-**2018**)
- 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 Elect, Gordon Conference on Colloidal Semiconductor Nanocrystals, **2024**
- Co-Vice Chair Elect, Gordon Conference on Colloidal Semiconductor Nanocrystals, **2022**
- Member of Editorial Advisory Board, *Journal of Physical Chemistry,* **2019-2021**

- Member of Editorial Advisory Board, *Journal of Chemical Physics,* **2019-2021**
- Member, Scientific Committee, *2nd Gerischer Electrochemistry Today Symposium,* Ft. Collins, CO, June **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**
- 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,* **2017-2019**
- 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,* **2016-2018**
- 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, Arnold and Mabel Beckman Foundation.

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**