

**CURRICULUM VITAE**  
**CURRENT AS OF FEBRUARY 10, 2020**

**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. PUBLICATIONS**

##### **Publications from independent career at CU:**

46. H. Hamby, B. Li, K. E. Shinopoulos, H. R. Keller, S. J. Elliott, G. Dukovic\*. "Light-driven carbon-carbon bond formation via CO<sub>2</sub> 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.jpcllett.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.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 H<sub>2</sub> 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<sub>1-x</sub>Zn<sub>x</sub>)(N<sub>1-</sub>

- xO<sub>x</sub>) 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.jpcllett.5b02772>
30. K. Lee, Y.-G. Lu, C. H. Chuang, J. Ciston, G. Dukovic.\* "Synthesis and Characterization of (Ga<sub>1-x</sub>Zn<sub>x</sub>)(N<sub>1-x</sub>O<sub>x</sub>) 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<sub>1-x</sub>Zn<sub>x</sub>)(N<sub>1-x</sub>O<sub>x</sub>) 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<sub>1-x</sub>Ga<sub>x</sub>)<sub>2</sub>O<sub>4</sub>." *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<sub>2</sub> 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,<sup>†</sup> M. B. Wilker,<sup>†</sup> 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> (<sup>†</sup> 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<sub>1-x</sub>Zn<sub>x</sub>)(N<sub>1-x</sub>O<sub>x</sub>) 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<sub>2</sub> 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,<sup>†</sup> G. Dukovic,<sup>†</sup> 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.