
Curriculum Vitae

James F. Cahoon, Ph.D.

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(a) Address

James F. Cahoon, Ph.D.
Department of Chemistry, CB #3290
University of North Carolina at Chapel Hill
Caudill 019, 131 South Road
Chapel Hill, NC 27599-3290

(b) Education

2003–2008, Ph.D. Department of Chemistry, University of California, Berkeley (12/20/2008)
Research advisor: Prof. Charles B. Harris

1999–2003, B.S. Summa Cum Laude & Highest Honors, The College of William and Mary
Concentrations in Chemistry & Philosophy
Research advisor: Prof. Robert A. Orwoll

(c) Professional Experience

2022–Present Professor, Department of Chemistry, UNC Chapel Hill

2019–Present Executive Director of Research Core Facilities, College of Arts & Sciences

2018–2019 Executive Director, Chapel Hill Analytical and Nanofabrication Laboratory

2017–2022 Associate Professor, Department of Chemistry, UNC Chapel Hill

2015–Present UNC Director for the Research Triangle Nanotechnology Network (RTNN), a site in the National Nanotechnology Coordinated Infrastructure

2011–2017 Assistant Professor, Department of Chemistry, UNC Chapel Hill

2009–2011 Intelligence Community Postdoctoral Research Fellow, Department of Chemistry & Chemical Biology, Harvard University, Research advisor: Prof. Charles M. Lieber

(d) Honors and Awards

2017 Phillip and Ruth Hettleman Prize for Artistic and Scholarly Achievement

2016 National Science Foundation CAREER Award

2015 Sloan Research Fellowship

2015 Cottrell Scholar Award

2014 Packard Fellowship for Science and Engineering

2010 ACS Physical Chemistry Division Post-doctoral Research Award

2009 Intelligence Community Post-doctoral Fellowship

2004 National Science Foundation Graduate Research Fellowship

2003 William George Guy Prize in Chemistry, William and Mary

2003 Thomas Jefferson Prize in Natural Philosophy, William and Mary

2002 Phi Beta Kappa, William and Mary

2002 Barry M. Goldwater Scholarship

2001 Virginia Space Grant Consortium Undergraduate Research Scholarship

(e.1) Refereed Articles from UNC-Chapel Hill (*denotes corresponding author publications)

- 78)* “Optical Nonlinearity in Silicon Nanowires Enabled by Bound States in the Continuum”, J.-S. Park, C. Li, K.-H. Kim, Y. Tang, C. G. E. Murphey, T. S. Teitsworth, S. Kim, H. Harutyunyan*, **J. F. Cahoon**. *ACS Nano*, *17*, 11729–11738 (2023).
- 77)* “Identifying a ‘Raoult’s Law’ Relationship to Modulate the Stoichiometry of Hybrid Perovskite Films by Amino-Deliquescence/Efflorescence in Mixed Amine Vapors”, L. Y. Serafin, J. K. Meyers, A. C. Bryan, K. G. Broun, **J. F. Cahoon**. *J. Phys. Chem. C* (Emerging Investigator issue), *127*, 22, 10845–10852 (2023).
- 76) “Multi-Electron Transfer at H-Terminated p-Si Electrolyte Interfaces: Large Photovoltages under Inversion Conditions”, N. D. Keller, P. Vecchi, D. C. Grills, D. E. Polyansky, G. P. Bein, J. L. Dempsey, **J. F. Cahoon**, G. N. Parsons, R. N. Sampaio, and G. J. Meyer. *J. Am. Chem. Soc.*, *145*, 11282–11292 (2023).
- 75)* “Influence of Geometry on Quasi-Ballistic Behavior in Silicon Nanowire Geometric Diodes”, K. L. White, M. A. Umanstev, J. D. Low, J. P. Custer Jr., **J. F. Cahoon**. *ACS Appl. Nano Mater.*, *6*, 5117–5126 (2023).
- 74)* “In Situ Attenuated Total Reflectance Infrared Spectroelectrochemistry (ATR-IR-SEC) for the Characterization of Molecular Redox Processes on Surface-Proximal Doped Silicon ATR Crystal Working Electrodes” (cover article), S. R. Bottum, T. S. Teitsworth, Q. Han, J. Park, X. Jia, C. Cappuccino, B. H. Layne, N. Hazari, J. J. Concepcion, C. L. Donley, D. E. Polyansky, M. R. Lockett, **J. F. Cahoon**, D. C. Grills. *J. Phys. Chem. C* (cover article), *127*, 6690–6701 (2023).
- 73)* “Research Briefings | Designer Silicon Nanowires Produce Hydrogen from Water and Light”, T. S. Teitsworth, **J. F. Cahoon**. *Nature*, <https://doi.org/10.1038/d41586-023-00154-6> (2023).
- 72)* “Water splitting with silicon p–i–n superlattices suspended in solution”, T. S. Teitsworth, D. J. Hill, S. R. Litvin, E. T. Ritchie, J. Park, J. P. Custer, A. D. Taggart, S. R. Bottum, S. E. Morley, S. Kim, J. R. McBride, J. M. Atkin, **J. F. Cahoon**. *Nature*, *614*, 270–274 (2023).
- **UNC press release: “Designer silicon nanowires can produce hydrogen from water and light” <https://college.unc.edu/2023/02/designer-silicon-nanowires/>
- 71) “Synthesis and Surface Attachment of Molecular Re(I) Complexes Supported by Functionalized Bipyridyl Ligands”, X. Jia, H. S. Nedzbala, S. R. Bottum, **J. F. Cahoon**, J. J. Concepcion, C. L. Donley, A. Gang, Q. Han, N. Hazari, M. C. Kessinger, M. R. Lockett, J. M. Mayer, B. Q. Mercado, G. J. Meyer, A. J. Pearce, C. L. Rooney, R. N. Sampaio, B. Shang, H. Wang. *Inorg. Chem.*, *62*, 5, 2359–2375 (2023).
- 70) “Aqueous Photoelectrochemical CO₂ Reduction to CO and Methanol over a Silicon Photocathode Functionalized with a Cobalt Phthalocyanine Molecular Catalyst”, B. Shang, C. L. Rooney, D. J. Gallagher, B. Wang, A. Krayev, H. Shema, O. Leitner, N. J. Harmon, L. Xiao, C. Sheehan, S. R. Bottum, E. Gross, **J. F. Cahoon**, T. E. Mallouk, H. Wang. *Angew. Chem. Int. Ed.*, *62*, e202215213 (2023).
- 69) “Reconfigurable Complementary and Combinational Logic Based on Monolithic and Single-Crystalline Al-Si Heterostructures”, R. Böckle, M. Sistani, M. Bazikova, L. Wind, Z. Sadre-Momtaz, M. I. den Hertog, C. G. E. Murphey, **J. F. Cahoon**, W. M. Weber. *Adv. Elect. Mater.*, *9*, 2200567 (2023).
- 68) “Monolithic and Single-Crystalline Aluminum–Silicon Heterostructures”, L. Wind, R. Böckle, M. Sistani, P. Schweizer, X. Maeder, J. Michler, C. G. E. Murphey, **J. Cahoon**, and W. M. Weber *ACS Appl. Mater. Interfaces*, *14*, 26238–26244 (2022).
- 67) “Unveiling the complex configurational landscape of the intralayer cavities in a crystalline carbon nitride”, M. Pauly, J. Kröger, V. Duppel, C. Murphey, **J. Cahoon**, B. V. Lotsch, P. A. Muggard. *Chem. Sci.*, *13*, 3187–3193 (2022).

- 66) “Influence of Surface and Structural Variations in Donor–Acceptor–Donor Sensitizers on Photoelectrocatalytic Water Splitting” L. Nhon, B. Shan, A. D. Taggart, R. M. W. Wolfe, T.-T. Li, C. M. Klug, A. Nayak, R. M. Bullock, **J. F. Cahoon**, Thomas J. Meyer, K. S. Schanze, J. R. Reynolds. *ACS Appl. Mater. Interfaces*, *13*, 47499–47510 (2021).
- 65)* “Lithographically Patterning Hybrid Perovskite Single Crystals by Surface-Engineered Amino-Deliquescence/Efflorescence” J. K. Meyers, L. Y. Serafin, A. D. Orr, C. J. McKinney, **J. F. Cahoon**. *ACS Photonics*, *8*, 2329–2336 (2021).
- 64)* “Amino-deliqescence and Amino-efflorescence of Methylammonium Lead Iodide” J. K. Meyers, L. Y. Serafin, A. D. Orr, **J. F. Cahoon**. *Chem. Mater.*, *33*, 3814–3822 (2021).
- 63) “Electrostatic Tip Effects in Scanning Probe Microscopy of Nanostructures” C. B. Casper, E. T. Ritchie, T. S. Teitworth, P. Kabos, **J. F. Cahoon**, S. Berweger J. M. Atkin. *Nanotechnology*, *32*, 195710 (2021).
- 62)* “Enabling Aqueous NiO Photocathodes by Passivating Surface Sites that Facilitate Proton-Coupled Charge Transfer” A. D. Taggart*, J. E. Evans* (*equal contribution), L. Li, K. J. Lee, J. L. Dempsey, Y. Kanai, **J. F. Cahoon**. *ACS Appl. Energy Mater.*, *3*, 10702–10713 (2020).
- 61) “Organic Chromophores Designed for Hole Injection into Wide-Band-Gap Metal Oxides for Solar Fuel Applications,” L. Nhon, A. D. Taggart, T. Moot, M. K. Brennaman, P. Jagadesan, K. S. Schanze, **J. F. Cahoon**, J. R. Reynolds. *Chem. Mater.*, *32*, 8158–8168 (2020).
- 60) “Remote Nongenetic Optical Modulation of Neuronal Activity using Fuzzy Graphene” S. Rastogi, R. Garg, M. G. Scopelliti, D. Pinto, J. Hartung, S. Kim, C. Murphey, N. Johnson, D. S. Roman, F. Bezanilla, **J. F. Cahoon**, M. Gold, M. Chamanzar, T. Cohen-Karni. *Proc. Natl. Acad. Sci. U.S.A.*, *117*, 13339-13349 (2020).
- 59)* “Abrupt Degenerately-doped Silicon Nanowire Tunnel Junctions,” C. Cordoba, T. Teitworth, M. Yang, **J. F. Cahoon**, K. Kavanagh. *Nanotechnology*, *31*, 415708 (2020).
- 58)* “Ratcheting Quasi-ballistic Electrons in Silicon Geometric Diodes at Room Temperature,” J. P. Custer, J. D. Low, D. J. Hill, T. S. Teitworth, J. D. Christesen, C. J. McKinney, J. R. McBride, M. A. Brooke, S. C. Warren, **J. F. Cahoon**. *Science*, *368*, 177-180 (2020).
- **UNC press release: “UNC-Chapel Hill researchers develop one-way street for electrons”
<https://college.unc.edu/2020/04/electrons/>
- 57)* “Semi-transparent, Flexible, and Electrically Conductive Silicon Mesh by Capillarity-driven Welding of Vapor-liquid-solid-grown Nanowires over Large Areas,” T. A. Celano, S. Kim, D. J. Hill, **J. F. Cahoon**. *Nano Res.*, *13*, 1465–1471 (2020).
- 56)* “Cation Effects in p-Type Dye Sensitized Solar Cells,” S. M. McCullough, J. M. Evans, T. Moot, A. D. Taggart, L. Troian-Gautier, J. F. Cahoon. *ACS Appl. Energy Mater.* *3*, 1496–1505 (2020).
- 55)* “Geometric Nanophotonics: Light Management in Single Nanowires through Morphology,” S. Kim, **J. F. Cahoon**. *Acc. Chem. Res.*, *52*, 3511-3520 (2019).
- 54) “Observation of Phonon Propagation in Germanium Nanowires using Femtosecond Pump-Probe Microscopy,” E. M. Van Goethem, C. W. Pinion, E. E. M. Cating, **J. F. Cahoon**, J. M. Papanikolas. *ACS Photonics*, *6*, 2213-2222 (2019).
- 53)* “Optical Bound States in the Continuum with Nanowire Geometric Superlattices,” S. Kim, K.-H. Kim, **J. F. Cahoon**. *Phys. Rev. Lett.*, *122*, 187402 (2019).
- 52) “Solvent-Engineered Stress in Nanoscale Materials,” S. Mills, C. Rotella, E. McCarthy, D.J. Hill, J.J. Wang, J.F. Donegan, J.F. Cahoon, J.E. Sader, J.J. Boland. *ACS Appl. Mater. Interfaces*, *10*, 44183–44189 (2018).
- 51) “Tuning Electroluminescence from a Plasmonic Cavity-Coupled Silicon Light Source,” S. Glassner, H. Keshmiri, D. J. Hill, **J. F. Cahoon**, B. Fernandez, M.I. den Hertog, A. Lugstein. *Nano Letters*, *18*, 7230–7237 (2018).

- 50)* "Interplay of Surface Recombination and Diode Geometry for the Performance of Axial p-i-n Nanowire Solar Cells," D. J. Hill, T. S. Teitsworth, E. T. Ritchie, J. M. Atkin, **J. F. Cahoon**. ACS Nano, *12*, 10554–10563 (2018).
- 49)* "Mie-Coupled Bound Guided States in Nanowire Geometric Superlattices," S. Kim, K.-H. Kim, D. J. Hill, H.-G. Park, **J. F. Cahoon**. Nature Commun. *9*, 2781 (2018).
- 48) "Interfacial Electron Transfer Yields in Dye-Sensitized NiO Photocathodes Correlated to Excited-State Dipole Orientation of Ruthenium Chromophores" Y. Han, R. Dillon, C. J. Flynn, E. S. Rountree, L. Alibabaei, **J. F. Cahoon**, J. M. Papanikolas, J. L. Dempsey. Can. J. Chem., *96*, 865–874 (2018).
- 47) "Enhancement of Light Absorption in Silicon Nanowire Photovoltaic Devices with Dielectric and Metallic Grating Structures," J.-S. Park, K.-H. Kim, M.-S. Hwang, X. Zhang, J. M. Lee, J. Kim, K.-D. Song, Y.-S. No, K.-Y. Jeong, **J. F. Cahoon**, S.-K. Kim, H.-G. Park. Nano Lett. *17*, 7731–7736 (2017).
- 46)* "Self-Catalyzed Vapor-Liquid-Solid Growth of Lead Halide Nanowires and Conversion to Hybrid Perovskites," J. K. Meyers, S. Kim, D. J. Hill, E. E. M. Cating, L. J. Williams, A. S. Kumbhar, J. R. McBride, J. M. Papanikolas, **J. F. Cahoon**. Nano Lett. *17*, 7561–7568 (2017).
- 45)* "Mapping Free-Carriers in Multijunction Silicon Nanowires Using Infrared Near-Field Optical Microscopy," E. T. Ritchie, D. J. Hill, T. M. Mastin, P. C. Deguzman, **J. F. Cahoon**, J. M. Atkin. Nano Lett. *17*, 6591–6597 (2017).
- 44)* "Optoelectronics: Letting Photons out of the Gate," **J. F. Cahoon**. Nature Nanotechnology | News and Views, *12*, 938-939 (2017).
- 43)* "Encoding Highly Non-Equilibrium Boron Concentrations and Abrupt Morphology in P-Type/N-Type Silicon Nanowire Superlattices," D. J. Hill, T. S. Teitsworth, S. Kim, J. D. Christesen, **J. F. Cahoon**. ACS Appl. Mater. Interfaces, *9*, 37105-37111, (2017).
- 42)* "Probing Intrawire, Interwire, and Diameter-Dependent Variations in Silicon Nanowire Surface Trap Density with Pump–Probe Microscopy," E. E. M. Cating, C. W. Pinion, J. D. Christesen, C. A. Christie, E. M. Grumstrup, **J. F. Cahoon**, J. M. Papanikolas. Nano Lett., *17*, 5956-5961 (2017).
- 41)* "Designing Morphology in Epitaxial Silicon Nanowires: The Role of Gold, Surface Chemistry, and Phosphorus Doping," S. Kim, D. J. Hill, C. W. Pinion, J. D. Christesen, J. R. McBride, **J. F. Cahoon**. ACS Nano. *11*, 4453–4462 (2017).
- 40) "All-in-one Derivatized Tandem p⁺n-Silicon-SnO₂/TiO₂ Water Splitting Photoelectrochemical Cell," M. V. Sheridan, D. J. Hill, B. D. Sherman, D. Wang, S. L. Marquard, K.-R. Wee, **J. F. Cahoon**, T. J. Meyer. Nano Lett. *17*, 2440–2446 (2017).
- 39)* "Material Informatics Driven Design and Experimental Validation of Lead Titanate as an Aqueous Solar Photocathode," T. Moot, O. Isayev, R. W. Call, S. M. McCullough, M. Zemaitis, R. Lopez, **J. F. Cahoon**, A. Tropsha. Mater. Discov. *6*, 9–16 (2016).
- 38)* "Barrierless Switching between a Liquid and Superheated Solid Catalyst During Nanowire Growth," C. W. Pinion, D. J. Hill, J. D. Christesen, J. R. McBride, **J. F. Cahoon**. J. Phys. Chem. Lett. *7*, 4236–4242 (2016).
- 37)* "Capillarity-Driven Welding of Semiconductor Nanowires for Crystalline and Electrically Ohmic Junctions," T. A. Celano, D. J. Hill, X. Zhang, C. W. Pinion, J. D. Christesen, C. J. Flynn, J. R. McBride, **J. F. Cahoon**. Nano Lett. *16*, 5241–5246 (2016)
- 36)* "Passivation of Nickel Vacancy Defects in Nickel Oxide Solar Cells by Targeted Atomic Deposition of Boron," C. J. Flynn, S. M. McCullough, L. Li, C. L. Donley, Y. Kanai, **J. F. Cahoon**. J. Phys. Chem. C. *120*, 16568–16576 (2016).
- 35)* "Site-Selective Passivation of Defects in NiO Solar Photocathodes by Targeted Atomic Deposition," C. J. Flynn, S. M. McCullough, E. Oh, L. Li, C. C. Mercado, B. H. Farnum, W. Li, C.

- L. Donley, W. You, A. J. Nozik, J. R. McBride, T. J. Meyer, Y. Kanai, **J. F. Cahoon**. *ACS Appl. Mater. Interfaces*. *8*, 4754–4761 (2016).
- 34)* "Chemically Engraving Semiconductor Nanowires: Using Three-Dimensional Nanoscale Morphology to Encode Functionality from the Bottom Up," J. D. Christesen, C. W. Pinion, D. J. Hill, S. Kim, **J. F. Cahoon**. *J. Phys. Chem. Lett.* (Invited Perspective), *7*, 685–692 (2016).
****Discussed in the editorial “Nanoparticles at SEA: Seeding, Etching, and Applications” by Greg Hartland in the same issue.**
- 33)* "Understanding the Vapor-Liquid-Solid Mechanism of Si Nanowire Growth and Doping to Synthetically Encode Precise Nanoscale Morphology," C. W. Pinion, J. D. Christesen, **J. F. Cahoon**. *J. Mater. Chem. C*, (Highlight Article for the Emerging Investigator Issue), *4*, 3890–3897 (2016).
****Inside cover of the special issue “Emerging Investigators 2016: Novel design strategies for new functional materials”**
- 32) "Designing Plasmon-Enhanced Thermochromic Films Using a Vanadium Dioxide Nanoparticle Elastomeric Composite," T. Moot, C. Palin, S. Mitran, **J. F. Cahoon**, and R. Lopez. *Adv. Opt. Mater.*, *4*, 578–583 (2016).
- 31)* "Imaging Spatial Variations in the Dissipation and Transport of Thermal Energy within Individual Silicon Nanowires Using Ultrafast Microscopy," E. E. M. Cating, C. W. Pinion, E. M. van Goethem, M. M. Gabriel, **J. F. Cahoon**, and J. M. Papanikolas. *Nano Lett.*, *16*, 434–439 (2016).
- 30)* "Compositionally-Tunable Mechanochemical Synthesis of $Zn_xCo_{3-x}O_4$ Nanoparticles for Mesoporous p-Type Photocathodes," S. M. McCullough, C. J. Flynn, C. C. Mercado, A. J. Nozik, **J. F. Cahoon**. *J. Mater. Chem. A*, *3*, 21990–21994 (2015).
- 29)* "Doubling Absorption in Nanowire Solar Cells with Dielectric Shell Optical Antennas," S.-K. Kim, X. Zhang, D. J. Hill, J.-S. Park, K.-D. Song, H.-G. Park, **J. F. Cahoon**. *Nano Lett.* *15*, 753–758 (2015).
- 28)* "Encoding Abrupt and Uniform Dopant Profiles in Vapor-Liquid-Solid Nanowires by Suppressing the Reservoir Effect of the Liquid Catalyst," J. D. Christesen, C. W. Pinion, X. Zhang, J. R. McBride, **J. F. Cahoon**. *ACS Nano*. *8*, 11790–11798 (2014).
- 27) "Sensitized Zinc Cobalt Oxide Spinel p-type Photoelectrodes," C. Mercado, A. Zakutayev, K. Zhu, C. J. Flynn, **J. F. Cahoon**, A. J. Nozik. *J. Phys. Chem. C*. *118*, 25340–25349 (2014).
- 26)* "Reversible Strain-Induced Electron-Hole Recombination in Silicon Nanowires Observed with Femtosecond Pump-Probe Microscopy," E. M. Grumstrup, M. M. Gabriel, C. W. Pinion, J. K. Parker, **J. F. Cahoon**, J. M. Papanikolas. *Nano Lett.* *14*, 6287–6292 (2014).
- 25)* "Waveguide Scattering Microscopy for Dark-Field Imaging and Spectroscopy of Photonic Nanostructures," D. J. Hill, C. W. Pinion, J. D. Christesen, **J. F. Cahoon**. *ACS Photonics* (cover article). *1*, 725–731 (2014).
****Cover of the August 2014 issue and featured as one of the “Most Read” articles**
- 24)* "Identifying Crystallization and Incorporation Limited Regimes During Vapor-Liquid-Solid Growth of Si Nanowires," C. W. Pinion, D. Nenon, J. D. Christesen, **J. F. Cahoon**. *ACS Nano*. *8*, 6081–6088 (2014).
- 23)* "Hierarchically-Structured NiO Nanoplatelets as Mesoscale p-Type Photocathodes for Dye-Sensitized Solar Cells," C. J. Flynn, E. E. Oh, S. M. McCullough, R. W. Call, C. L. Donley, R. Lopez, **J. F. Cahoon**. *J. Phys. Chem. C*. *118*, 14177–14184 (2014).
- 22)* "Imaging Charge Separation and Carrier Recombination in Nanowire p-i-n Junctions Using Ultrafast Microscopy," M. M. Gabriel, E. M. Grumstrup, J. R. Kirschbrown, C. W. Pinion, J. D. Christesen, D.F. Zigler, E. M. Cating, **J. F. Cahoon**, J. M. Papanikolas. *Nano Lett.* *14*, 3079–3087 (2014).

****Featured as one of the “Most Read” articles**

- 21)* "Ultrafast Carrier Dynamics in Individual Silicon Nanowires: Characterization of Diameter-Dependent Carrier Lifetime and Surface Recombination with Pump-Probe Microscopy," E. M. Grumstrup, M. M. Gabriel, E. M. Cating, C. W. Pinion, J. D. Christesen, J. R. Kirschbrown, E. L. Vallorz III, **J. F. Cahoon**, J. M. Papanikolas. J. Phys. Chem. C. *118*, 8634-8640 (2014).
- 20)* "Ultrafast Carrier Dynamics of Silicon Nanowire Ensembles: The Impact of Geometrical Heterogeneity on Charge Carrier Lifetime," E. M. Grumstrup, E. M. Cating, M. M. Gabriel, C. W. Pinion, J. D. Christesen, J. R. Kirschbrown, E. L. Vallorz III, **J. F. Cahoon**, J. M. Papanikolas. J. Phys. Chem. C. *118*, 8626-8633 (2014).
- 19)* "Synthetically Encoding 10 nm Morphology in Silicon Nanowires," J. D. Christesen, C. W. Pinion, E. M. Grumstrup, J. M. Papanikolas, **J. F. Cahoon**. Nano Lett. *13*, 6281-6286 (2013).
****Featured in “Nanofabrication: Engraving Nanowires” by Fabio Pulizzi, Research Highlight in Nature Nanotechnology (January 2014)**
- 18)* "Horizontal Silicon Nanowires with Radial p-n Junctions: A Platform for Unconventional Solar Cells," X. Zhang, C. W. Pinion, J. D. Christesen, C. J. Flynn, T. A. Celano, **J. F. Cahoon**. J. Phys. Chem. Lett. (Invited Perspective), *4*, 2002-2009 (2013).
****Discussed in editorial by Greg Scholes in the same issue.**
- 17)* "Direct Imaging of Free Carrier and Trap Carrier Motion in Silicon Nanowires by Spatially-Separated Femtosecond Pump-Probe Microscopy," M. M. Gabriel, J. R. Kirschbrown, J. D. Christesen, C. W. Pinion, D. F. Zigler, E. M. Grumstrup, B. P. Mehl, E. E. M. Cating, **J. F. Cahoon**, J. M. Papanikolas. Nano Lett. *13*, 1336-1340 (2013).
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- 16)* "Design Principles for Photovoltaic Devices Based on Si Nanowires with Axial or Radial p-n Junctions," J. D. Christesen, X. Zhang, C. W. Pinion, T. A. Celano, C. J. Flynn, **J. F. Cahoon**. Nano Lett. *12*, 6024-6029 (2012).

(e.2) Refereed Articles Prior to UNC-Chapel Hill

- 15) "Direct Observation of Metal-Ketenes Formed by Photoexcitation of a Fischer-Carbene Using Ultrafast Infrared Spectroscopy," S. C. Nguyen, J. P. Lomont, M. C. Zoerb, P. V. Pham, **J. F. Cahoon**, C. B. Harris. Organometallics. *33*, 6149-6153 (2014).
- 14) "Tuning Light Absorption in Core/Shell Silicon Nanowire Photovoltaic Devices through Morphological Design," S.-K. Kim,[‡] R. W. Day,[‡] **J. F. Cahoon**,[‡] T. J. Kempa, K.-D. Song, H.-G. Park, C. M. Lieber ([‡]equal contribution). Nano Lett. *12*, 4971-4976 (2012).
****Highly Cited Paper by Thomson Reuters**
- 13) "Synthetically Encoded Ultrashort-Channel Nanowire Transistors for Fast, Pointlike Cellular Signal Detection," T. Cohen-Karni, D. Casanova, **J. F. Cahoon**, Q. Qing, D. C. Bell, C. M. Lieber. Nano Lett. *12*, 2639-2644 (2012).
- 12) "Coaxial Multishell Nanowires with High-Quality Electronic Interfaces and Tunable Optical Cavities for Ultrathin Photovoltaics," T. J. Kempa,[‡] **J. F. Cahoon**,[‡] S.-K. Kim, R. W. Day, D. C. Bell, H.-G. Park, C. M. Lieber ([‡]equal contribution). Proc. Natl. Acad. Sci. U.S.A. *109*, 1407-1412 (2012).
****Highly Cited Paper by Thomson Reuters**
- 11) "Time-resolved IR Studies on the Mechanism for the Functionalization of Primary C-H Bonds by Photoactivated Cp*W(CO)₃(Bpin)," K. R. Sawyer, **J. F. Cahoon**, J. E. Shanoski, E. A. Glascoe, M. F. Kling, J. P. Schlegel, M. C. Zoerb, M. Hapke, J. F. Hartwig, C. E. Webster, C. B. Harris. J. Am. Chem. Soc. *132*, 1848-1859 (2010).

- 10) "Direct Observation of Photoinduced Bent Nitrosyl Excited-State Complexes," K. R. Sawyer, R. P. Steele, E. A. Glascoe, **J. F. Cahoon**, J. P. Schlegel, M. Head-Gordon, C. B. Harris. J. Phys. Chem. A *112*, 8505-8514 (2008).
 - 9) "DFT and Time-Resolved IR Investigation of Electron Transfer between Photogenerated 17- and 19-Electron Organometallic Radicals," **J. F. Cahoon**, M. F. Kling, K. R. Sawyer, L. K. Andersen, C. B. Harris. J. Mol. Struct. (Memorial Issue for F. A. Cotton) *890*, 328-338 (2008).
 - 8) "Mechanism for Iron-Catalyzed Alkene Isomerization in Solution," K. R. Sawyer, E. A. Glascoe, **J. F. Cahoon**, J. P. Schlegel, C. B. Harris. Organometallics. *27*, 4370-4379 (2008).
 - 7) "Determining Transition-State Geometries in Liquids using 2D-IR," **J. F. Cahoon**, K. R. Sawyer, J. P. Schlegel, C. B. Harris. Science. *319*, 1820-1823 (2008).
- **Highlighted in RSC Chemistry World "Cutting Edge Chemistry in 2008"**
- 6) "19-Electron Intermediates in the Ligand Substitution of CpW(CO)₃ with a Lewis Base," **J. F. Cahoon**, M. F. Kling, K. R. Sawyer, H. Frei, C. B. Harris. J. Am. Chem. Soc. *128*, 3152-3153 (2006).
 - 5) "19-Electron Intermediates and Cage-Effects in the Photochemical Disproportionation of [CpW(CO)₃]₂ with Lewis Bases," **J. F. Cahoon**, M. F. Kling, S. Schmatz, C. B. Harris. J. Am. Chem. Soc. *127*, 12555-12565 (2005).
 - 4) "The Role of Odd-Electron Intermediates and In-Cage Electron Transfer in Ultrafast Photochemical Disproportionation Reactions in Lewis Bases," M. F. Kling, **J. F. Cahoon**, E. A. Glascoe, J. E. Shanoski, C. B. Harris. J. Am. Chem. Soc. *126*, 11414-11415 (2004).
 - 3) "Polyimide Nanocomposites Prepared with a Novel Aromatic Surfactant," D. M. Delozier, R. A. Orwoll, **J. F. Cahoon**, J. S. Ladislaw, J. G. Smith, J. W. Connell. High Perform. Polym. *15*, 329-346 (2003).
 - 2) "Polyimide Nanocomposites Prepared from High-Temperature, Reduced Charge Organoclays," D. M. Delozier, R. A. Orwoll, **J. F. Cahoon**, J. S. Ladislaw, J. G. Smith, J. W. Connell. Polymer *44*, 2231-2241 (2003).
 - 1) "Preparation and Characterization of Polyimide/Organoclay Nanocomposites," D. M. Delozier, R. A. Orwoll, **J. F. Cahoon**, N. J. Johnston, J. G. Smith, J. W. Connell. Polymer *43*, 813-822 (2002).

(e.3) Invited Conference Presentations

- 24) "Designing Rectifying and Energy Harvesting Silicon Nanostructures," Duke Materials Initiative Hard Matter Workshop, December 8, 2020.
- 23) "Lithographic patterning of single-crystal hybrid perovskite microstructures by surface-engineered deliquescence and efflorescence," IEEE 2020 Research and Applications of Photonics in Defense Conference (RAPID), Miramar Beach, FL, August 11, 2020.
- 22) "Designing silicon nanostructures to harvest energy: From asymmetric electron ratchets to decouple-junction photovoltaics" (symposium plenary talk), Materials Science & Technology 2019, Portland, OR, October 3, 2019.
- 21) "Architectural Nanomaterials: Designing Structures to Direct Light and Electrons" 31st Annual Packard Fellows Meeting, Monterey, CA, September 6, 2019
- 20) "Bottom-up synthesis of rectifying silicon nanostructures: From asymmetric electron ratchets to decouple-junction photovoltaics" European Meeting of the Materials Research Society, Nice, France, May 28, 2019.
- 19) "Synthesis of charge rectifying silicon nanostructures" 50th Silicon Symposium, Columbia, SC, May 15, 2019.
- 18) "Bottom-up synthesis of rectifying silicon nanowires: From asymmetric electron ratchets to decouple-junction photovoltaics" Southeast Regional Meeting of the American Chemical Society,

Augusta, GA November 2, 2018.

- 17) "Bound states, optical switches, and plasmonics in Si nanowires: Controlling light from the visible through mid-infrared" Southeast Regional Meeting of the American Chemical Society, Augusta, GA November 1, 2018.
- 16) "Synthesized Silicon Nanostructures for Optical Switches and GHz-THz Electronics," IEEE 2018 Research and Applications of Photonics In Defense Conference (RAPID), Miramar Beach, FL, August 23, 2018.
- 15) "Design, Synthesis, and Passivation of Metal Oxide Photocathodes for Aqueous Solution," National Meeting of the American Chemical Society, New Orleans, LA, March 20, 2018
- 14) "Designing Geometric Superlattices and Asymmetry in Silicon Nanowires: Encoding Emergent Electronic and Photonic Properties through Morphology," Photonics West, San Francisco, CA, January 30, 2018
- 13) "Designing Symmetric and Asymmetric Morphology in Silicon Nanowires to Encode Advanced Electronic and Photonic Functionality," 232nd Electrochemical Society Meeting, National Harbor, MD, October 2, 2017
- 12) "Designing Sub-10 nm Morphology and Functionality in Silicon Nanowires and Nanowire Networks," IEEE International Conference on Nano/Micro Engineered and Molecular Systems, Los Angeles, CA, April 12, 2017
- 11) "Design, Synthesis, and Passivation of Metal Oxide Photocathodes: Fixing and Moving Beyond NiO," Solar Energy Research Conference (SERC), Chapel Hill, NC, October 20, 2016
- 10) "Architectural Nanomaterials: Designing Semiconductor Morphology so Form Follows Function," IEEE Eastern North Carolina Photonics Chapter Meeting, Research Triangle Park, NC, March 16, 2016
- 9) "Architectural Silicon: Controlling the Composition and Morphology of Nanowires for Advanced Electronic and Photonic Device Functionality," The 9th International Conference on Advanced Materials and Devices (ICAMD), Jeju, South Korea, December 7-9, 2015
- 8) "Architectural Nanomaterials: Designing Semiconductor Morphology so Form Follows Function," Joint symposium of the MRS, ASM, and AVS local chapters, Raleigh, NC, November 13, 2015
- 7) "Designing Solar Photocathode Materials for Solar Fuels", NC Photochemistry Symposium, Charlotte, NC, October 10, 2015
- 6) "Architectural Nanomaterials: Designing Semiconductor Morphology so Form Follows Function," 27th Annual Packard Fellows Meeting, Monterey, CA, September 9-12, 2015
- 5) "Designing Photocathode Materials for Solar Fuels Photoelectrosynthesis: From the Lab to the Classroom," Cottrell Scholars Conference, Tucson, AZ, July 8-10, 2015
- 4) "Architectural Silicon: Controlling the Composition and Morphology of Nanowire Heterostructures on the Few-Nanometer Length Scale," The 9th International Conference on Silicon Epitaxy and Heterostructures, Montreal, Canada, May 18-22, 2015
- 3) "Encoding Dopants and Morphology in Silicon Nanowires: From Fundamentals to Applications," Joint "Nanowires Workshop" and "Nanowire Growth Workshop," Eindhoven, Netherlands, August 25-29, 2014
- 2) "Designing Sub-Wavelength Silicon Nanowires for Photovoltaics: Synthesis, Measurement, and Modeling," Materials Challenges in Alternative & Renewable Energy 2014, February 19, 2014
- 1) "High-Resolution Control of Silicon Nanowire Shape and Composition for Bottom-Up Nanophotonics," Nano Korea, July 11, 2013, Seoul, South Korea

(e.4) Invited University Presentations, Seminars, and Colloquia

- 23) University of California Berkeley, Department of Chemistry, September 24, 2021
- 22) Uppsala University, Department of Chemistry, May 20, 2021
- 22) Muhlenberg College, Department of Chemistry, November 13, 2020
- 21) University of Colorado Boulder, Physical Chemistry Colloquium, March 28, 2017
- 20) University of Chicago, Department of Chemistry, March 24, 2017
- 19) North Carolina Central University, Department of Chemistry, February 10, 2017
- 18) University of Wisconsin Madison, Department of Chemistry, October 10, 2016
- 17) Northwestern University, Department of Chemistry, September 30, 2016
- 16) University of Utah, Department of Chemistry, August 29, 2016
- 15) Cornell University, Department of Chemistry, May 16, 2016
- 14) Johns Hopkins University, Department of Chemistry, March 7, 2016
- 13) University of Texas at Austin, Department of Chemistry, February 25, 2016
- 12) Rice University, Department of Chemistry, February 22, 2016
- 11) Georgia Tech, Department of Chemistry, February 4, 2016
- 10) Emory University, Department of Chemistry, February 3, 2016
- 9) University of Illinois Urbana-Champaign, Department of Chemistry, January 21, 2016
- 8) Carnegie Mellon University, Department of Materials Science and Engineering, February 6, 2015.
- 7) Joint School of Nanoscience and Nanotechnology, University of North Carolina at Greensboro and North Carolina A&T University, October 17, 2014
- 6) University of North Carolina at Charlotte, Department of Chemistry, October 28, 2013
- 5) North Carolina A&T University, Department of Chemistry, September 26, 2013
- 4) Duke University, Department of Chemistry, April 30, 2013
- 3) College of William and Mary, Department of Chemistry, October 19, 2012
- 2) Appalachian State University, Department of Chemistry, October 28, 2011
- 1) North Carolina State University, Department of Physics, October 18, 2011

(f) Teaching Activities

Courses:

- 17) Fall 2022: Chemistry 481: Physical Chemistry I
Number of students: 40 (one section only)
- 16) Fall 2021: Chemistry 481: Physical Chemistry I
Number of students: 42 (one section only)
- 15) Fall 2019: Chemistry 470: Fundamentals of Materials Science
Number of students: 13 (one section only)
- 14) Spring 2019: Chemistry 481: Physical Chemistry I
Number of students: 22 (one section only)
- 13) Fall 2018: Chemistry 470: Fundamentals of Materials Science
Number of students: 17 (one section only)
- 12) Spring 2018: Chemistry 482L: Physical Chemistry Laboratory II
Number of students: 5 (Section 1); 7 (Section 2); 9 (Section 3)
- 11) Fall 2017: Chemistry 470: Fundamentals of Materials Science
Number of students: 15 (one section only)
- 10) Spring 2017: Chemistry 482L: Physical Chemistry Laboratory II
Number of students: 10 (Section 1); 8 (Section 2); 10 (Section 3)
- 9) Fall 2016: Chemistry 470: Fundamentals of Materials Science

- Number of students: 20 (one section only)
- 8) Fall 2015: Chemistry 470: Fundamentals of Materials Science
Number of students: 26 (one section only)
- 7) Spring 2015: Chemistry 481: Physical Chemistry I
Number of students: 22 (one section only)
- 6) Fall 2014: Chemistry 470: Fundamentals of Materials Science
Number of students: 19 (one section only)
- 5) Spring 2014: Chemistry 482L: Physical Chemistry Laboratory II
Number of students: 2 (Section 1); 3 (Section 2); 9 (Section 3)
- 4) Fall 2013: Chemistry 470: Fundamentals of Materials Science
Number of students: 19 (one section only)
- 3) Spring 2013: Chemistry 482L: Physical Chemistry Laboratory II
Number of students: 7 (Section 1); 7 (Section 2); 12 (Section 3)
- 2) Fall 2012: Chemistry 473: Chemistry and Physics of Surfaces
Number of students: 7 (one section only)
- 1) Fall 2011: Chemistry 470: Fundamentals of Materials Science
Number of students: 13 (one section only)

Current Ph.D. students:

- 12) Robert Castaneda: Fall 2022 – Present
- 11) Andrew Christy: Fall 2022 – Present (joint with Wei Zhang, Physics)
- 10) Owen Courtney: Fall 2022 – Present
- 9) Lee, Hyunjung: Spring 2022 – Present
- 8) Van Amberg, Samuel: Fall 2021 – Present
- 7) Bottum, Samuel: Fall 2020 – Present
- 6) Bryan, Alicia: Fall 2020 – Present
- 5) Orr, Andre: Fall 2020 – Present (joint with Matthew Lockett)
- 4) Litvin, Samantha: Fall 2019 – Present (NSF Graduate Research Fellow)
- 3) White, Kelley: Fall 2019 – Present
- 2) Lorenzo, Serafin: Fall 2018 – Present
- 1) Murphey, Corban: Fall 2018 – Present

Current post-doctoral students:

- 3) He, Shi: October 2021 – Present
- 2) Oyetade, Oluwaseun: August 2021 – Present
- 1) Park, Jin-Sung: September 2020 – Present

Former Ph.D. students:

- 13) Teitsworth, Taylor (Ph.D. May 2021)
- 12) Meyers, Jon (Ph.D. August 2021)
- 11) Taggart, Aaron (Ph.D. August 2020)
- 10) Custer, James (Ph.D. August 2020)
- 9) Kim, Seokhyoung (Ph.D. May 2019)
- 8) Celano, Thomas (Ph.D. May 2018)
- 7) McCullough, Shannon (Ph.D. August 2018)
- 6) Hill, David (Ph.D. August 2018)
- 5) Zhang, Xing (Ph.D. May 2017)
- 4) Pinion, Christopher (Ph.D. August 2017)
- 3) Moot, Taylor (Ph.D. December 2017)
- 2) Flynn, Cory (Ph.D. May 2016)
- 1) Christesen, Joseph (Ph.D. August 2016)

Former Master's students:

1) Morley, Sarah (M.A. Spring 2020)

Former post-doctoral fellows supervised:

1) Kim, Kyoung-Ho (November 2016 – August 2018)

(g) Grants & Funding

Active funding:

- 9) Ratcheting Electrons with Silicon Geometric Diodes for Quasi-ballistic Terahertz Rectennas
Role: Principal Investigator (no Co-PIs)
Percent effort: 2.9% (2023)
Source: National Science Foundation (Award ECCS-2201292)
Amount: \$410,000
Dates: 08/01/2022-07/31/2025
- 8) Thermodynamics and Kinetics of Hybrid Perovskite Amino-Deliquescence and Efflorescence
Role: Principal Investigator (no Co-PIs)
Percent effort: 2.9% (2023)
Source: National Science Foundation (Award CHE-2102469)
Amount: \$500,000
Dates: 09/01/2021-08/31/2024
- 7) Optical Bound States and Non-linearity in Geometrically-Modulated Dielectric Nanowires
Role: Principal Investigator (no Co-PIs)
Percent effort: 2.9% (2023)
Source: National Science Foundation (Award DMR-2121643)
Amount: \$545,613
Dates: 08/01/2021-07/31/2024
- 6) AI Accelerated Discovery of Solar Energy Materials
Role: Principal Investigator
Percent effort: 0%
Source: UNC Chapel Hill Creativity Hub Award
Amount: \$500,000
Dates: 07/01/2021-06/30/2024
- 5) REU SITE: Collaborative Research: Nanoscale Detectives -- Elucidating the Structure and Dynamics of Hybrid Perovskite Systems
Role: Principal Investigator
Percent effort: 0.83% (2022)
Source: National Science Foundation (Award EEC-2050764)
Amount: \$161,232
Dates: 09/15/2021-08/31/2024
- 4) Visualizing Charge Carrier Dynamics in Transition Metal Dichalcogenide Nanoflakes Using Femtosecond Pump-Probe Microscopy
Role: Principal Investigator (no Co-PIs); serving as the substitute PI for Prof. John Papanikolas while a rotating program manager at NSF
Percent effort: 0.83%
Source: National Science Foundation (Award DMR-1764228)
Amount: \$540,000
Dates: 08/01/2018-08/31/2022
- 3) Center for Hybrid Approaches in Solar Energy to Liquid Fuels (CHASE)
Role: Co-Principal Investigator, Thrust Leader, and Executive Committee member
Percent effort: 0.625%

- Source: Department of Energy, Basic Energy Sciences (Award DE-SC0021173)
Amount: \$40,000,000
Dates: 09/30/2020-09/29/2025
- 2) NNCI: North Carolina Research Triangle Nanotechnology Network (RTNN)
Role: Co-Principal Investigator and Site Director for UNC-Chapel Hill
Percent effort: 8.3% (2023)
Source: National Science Foundation (Award ECCS-2025064)
Amount: \$5,500,000 over 5 years
Dates: 09/01/2020-08/31/2025
 - 1) Quintuple P-N Junction Nanowires for Wireless Water Splitting in Particle Suspension Reactors
Role: Principal Investigator (no Co-PIs)
Percent effort: 0.0% (2023)
Source: National Science Foundation (Award CBET-1914711)
Amount: \$405,000
Dates: 09/01/2019-08/31/2023

Prior funding:

- 11) CAREER: Developing Advanced Morphological Control of Nanowires to Encode Photonic and Optoelectronic Functionality
Role: Principal Investigator (no Co-PIs)
Source: National Science Foundation (Award DMR-1555001)
Amount: \$550,000
Dates: 09/01/2016-08/31/2022
- 10) Packard Fellowship for Science and Engineering
Architectural Nanomaterials: Designing Form to Follow Function
Source: David and Lucile Packard Foundation
Amount: \$875,000
Dates: 11/01/2014-10/15/2022
- 9) MRI: Acquisition of a Nano-infrared Spectrometer
Role: Co-Principal Investigator
Source: National Science Foundation (Award DMR-1919887)
Amount: \$467,740
Dates: 09/01/2019-08/31/2020
- 8) UNC Energy Frontier Research Center: Alliance for Molecular Photoelectrode Design (AMPED)
Role: Senior Personnel
Source: Department of Energy, Basic Energy Sciences (Award DE-SC0001011)
Amount: \$1,800,000
Dates: 08/1/2018-07/31/2020
- 7) ROI: Center of Hybrid Materials Enabled Electronic Technology (CH-MEET)
Role: Co-Principal Investigator
Source: NC Research Opportunity Initiative
Amount: \$210,000 over 3 years (to Co-PI Cahoon)
Dates: 07/01/2017-06/30/2020
- 6) NNCI: North Carolina Research Triangle Nanotechnology Network (RTNN)
Role: Co-Principal Investigator and Site Director for UNC-Chapel Hill
Source: National Science Foundation (Award ECCS-1542015)
Amount: \$5,500,000 over 5 years
Dates: 09/16/2015-08/31/2021
- 5) Sloan Research Fellowship
Source: Alfred P. Sloan Foundation

- Amount: \$50,000 over 2 years
Dates: 09/15/2015-09/14/2017
- 4) Cottrell Scholar Award
Designing Photocathode Materials for Solar Fuel Photoelectrosynthesis
Source: Research Corporation for Science Advancement
Amount: \$75,000 over 3 years
Dates: 07/01/2015-06/30/2019
 - 3) UNC Energy Frontier Research Center: Solar Fuels Phase II (EFRC Director: Prof. T. J. Meyer)
Role: Senior Personnel
Source: Department of Energy, Basic Energy Sciences (Award DE-SC0001011)
Amount: Sub-award to PI, \$244,048 over 4 years
Dates: 08/1/2014-07/31/2018
 - 2) High-resolution morphological control of Si nanowires for bottom-up photonics and plasmonics
Role: Principal Investigator (no Co-PIs)
Source: National Science Foundation (Award DMR-1308695)
Amount: \$450,000 over 3 years
Dates: 09/01/2013-08/31/2016
 - 1) UNC Energy Frontier Research Center: Solar Fuels (EFRC Director: Prof. Thomas J. Meyer)
Role: Senior Personnel
Source: Department of Energy, Basic Energy Sciences (Award DE-SC0001011)
Amount: Sub-award to PI, \$116,642 over 2 years
Dates: 08/1/2012-07/31/2014

(h.1) Professional Service to Discipline

Conference organizer:

- 1) Co-organizer, Materials Research Society Fall 2016 National Meeting in Boston, MA
Symposium NM1: "Semiconducting Nanowires, Nanoribbons and Heterostructures—Synthesis, Characterizations and Functional Devices"
- 2) Co-organizer, Solar Energy Research Center (SERC) Fall 2015 Meeting in Chapel Hill, NC
- 3) Co-organizer, Materials Research Society Spring 2014 National Meeting in San Francisco, CA
Symposium F: "Controlling the Interaction between Light and Semiconductor Nanostructures for Energy Applications"

Reviewer:

- 1) Grant Proposals: Reviewer for National Science Foundation and Department of Energy, including virtual and on-site reviewing panels
- 2) Journal Manuscripts: *Science*, *Science Advances*, *Nature Nanotechnology*, *Nature Communications*, *Nano Letters*, *ACS Nano*, *Advanced Materials*, *Nanotechnology*, *Journal of Physical Chemistry*, *Journal of Chemical Physics*, *ACS Applied Materials and Interfaces*, *ACS Photonics*, *Physical Chemistry-Chemical Physics*, *RSC Advances*, *Optics Express*, *Applied Physics-A*, *Applied Optics*, *Chemistry of Materials*, *Pure and Applied Chemistry*, *Physica-Status-Solidi*, *Nanoscale*, *Nanoscale Research Letters*, *Journal of Crystal Growth*, *Energies*, *et al.*

Research Triangle Nanotechnology Network (RTNN) and National Nanotechnology Coordinated Infrastructure (NNCI):

- 3) Spring 2021–Current: Co-chair of the NNCI sub-committee: Research and Funding Opportunities
- 2) Fall 2015–Current: Executive Committee
- 1) Fall 2015–Current: UNC Site Director for the RTNN

(h.2) Professional Service within UNC-Chapel Hill

School of Medicine:

- 1) Member of the Core Facility Advocacy Committee

College of Arts and Sciences:

- 2) 2019–Present: Executive Director of Research Core Facilities
- 1) 2018–2019: Executive Director, Chapel Hill Analytical and Nanofabrication Laboratory

Department of Chemistry Committees:

- 14) Fall 2022–Spring 2023: Search Committees for CHANL, NMR, and X-ray core directors
- 13) Fall 2022–Spring 2023: Faculty Search Committee
- 12) Fall 2018–Current: Facilities Committee
- 11) Fall 2018–Spring 2020; Fall 2022–Current: Chemistry Executive Committee
- 10) Fall 2018: Faculty Search Committee
- 9) Fall 2017: Faculty Search Committee
- 8) Spring 2016: Department of Chemistry Strategic Planning Committee
- 7) Fall 2015: Faculty Search Committee
- 6) Fall 2014–Spring 2021: Safety Committee
- 5) Fall 2013–Spring 2019: Graduate Studies Committee
- 4) Fall 2013: Faculty Search Committee
- 3) Fall 2012–Spring 2013: Safety Committee
- 2) Fall 2011–Spring 2013: Graduate Recruitment Committee
- 1) Fall 2012: Faculty Search Committee

Center for Hybrid Approaches in Solar Energy to Liquid Fuels (CHASE)

- 2) Fall 2020–Current: Thrust Leader
- 1) Fall 2020–Current: Executive Committee

UNC Energy Frontier Research Center (EFRC) Committees:

- 4) Fall 2014–Spring 2020: EFRC Section Lead for the “Photocathode”
- 3) Fall 2013: EFRC Renewal Committee Member
- 2) Fall 2013–Summer 2014: EFRC Section Lead for “Interface Structure and Stabilization”
- 1) Spring 2013–Current: EFRC Executive Committee Member