

CURRICULUM VITAE

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Education

- MBA**, Entrepreneurial Focus, Liautaud School of Business, UIC **Fall 2017** (expected)
Relevant coursework: Marketing, Microeconomics, Financial Accounting, Corporate Finance, and Organizational Behavior
- Ph.D.**, Physical Chemistry, University of California, Berkeley **Fall 2002**
Dissertation Title: “The Reaction and Solvation Dynamics of Organometallic Compounds.”
Advisor: Prof. Charles B. Harris
- B.S.**, Chemistry, summa cum laude, University of North Carolina, Chapel Hill **Spring 1995**
Thesis Title: “Orientational Order of Water Confined in Anisotropic Cavities Studied by Computer Simulation.” Advisor: Prof. Edward T. Samulski

Professional Experience

- Associate Professor**, University of Illinois at Chicago **2013–Present**
Advanced methods for creating functional semiconductor quantum dots; supervised 6 graduate, 2 Master’s degree, and 8 undergraduate students. Courses taught: Physical Chemistry, Physical Chemistry Lab, Statistical Mechanics, and Introduction to Nanotechnology. Developed new lab modules, and wrote the PChem lab manual. *Presently serving as associate Director of Graduate Studies.*
- Assistant Professor**, University of Illinois at Chicago **2006–2013**
- Postdoctoral Research**, MIT **2003–2006**
with Prof. M. G. Bawendi and Prof. D. G. Nocera.
Developed nanoscopic biological imaging agents and high gain laser cavities for chemical and biological sensing applications.
- Graduate Research Assistant**, U.C. Berkeley **1997–2002**
with Prof. Charles B. Harris
Studied organometallic photochemistry using ultrafast laser spectroscopy. Used electronic structure methods to describe chemical species that cannot be studied using conventional spectroscopy. Developed novel theoretical models for mixed quantum / classical dynamics simulations.
- Analytical Chemist**, Research Triangle Institute **1995–1997**

UIC Publications, 2007–Present (* denotes undergraduate author, † denotes corresponding author)

25. Thakar, R.; Chen, Y.; Snee, P. T.† “Efficient Emission from Core / (Doped) Shell Nanoparticles: Applications for Chemical Sensing” *Nano Lett.*, **2007**, 7, 3429–3432.

26. Chen, Y.; Page, L.; Thakar, R.; Snee, P. T.[†] “Synthesis and Functionalization of Non-toxic Visible-emitting Nanocrystals.” *SPIE Proceedings*, **2008**, 6866, 686603.
27. Chen, Y.; Thakar, R.; Snee, P. T.[†] “Imparting Nanoparticle Function with Size-Controlled Amphiphilic Polymers” *J. Am. Chem. Soc.*, **2008**, 130, 3744-3745.
28. Shen, H. Jawaid, A. M.; Snee, P. T.[†] “Poly(ethylene glycol) Carbodiimide Coupling Reagents for the Biological and Chemical Functionalization of Water Soluble Nanoparticles” *ACS Nano*, **2009**, 3, 915-923.
29. Darnault, C. J. G.[†]; Bonina, S. M. C.; Uyusur, B.; Snee, P. T. “Visualization and Transport of Quantum Dot Nanomaterials in Porous Media” chapter of NATO Science for Peace and Security Series C: Environmental Security. Springer, Netherlands, ISBN: 978-1-4020-9490-3.
30. Sun, K.; Vasudev, M.; Jung, H.-S.; Yang, J; Kar, A.; Li, Y.; Reinhardt, K.; Snee, P. T.; Stroschio, M. A.[†]; Dutta, M. “Applications of Colloidal Quantum Dots” *Microelectron. J.* **2009**, 40, 644-649.
31. Bolotin, I. L.; Asunskis, D. J.; Jawaid, A. M.; Liu, LY.; Snee, P. T.; Hanley, L.[†] “Effects of Surface Chemistry on Nonlinear Absorption, Scattering, and Refraction of PbSe and PbS Nanocrystals” *J. Phys. Chem. C*, **2010**, 114, 16257–16262.
32. Uyusur, B.; Darnault, C. J. G.[†]; Snee, P. T.; Kokën, E; Jacobson A. R.; Wells, R. R. “Coupled Effects of Solution Chemistry and Hydrodynamics on the Mobility and Transport of Quantum Dot Nanomaterials in the Vadose Zone,” *J. Contam. Hydrol.*, **2010**, 118, 184–198.
33. Krooswyk, J. D.*; Tyrakowski, C. M.; Snee, P. T.[†] “Multivariable Response of Semiconductor Nanocrystal-Dye Sensors: the Case of pH” *J. Phys. Chem. C* **2010**, 114, 21348–21352.
34. Liu, D.; Snee, P. T.[†] “Water Soluble Semiconductor Nanocrystals Cap Exchanged with Metallated Ligands” *ACS Nano* **2011**, 5, 546–550.
35. Ho, C.-T.; Low, K.-B.; Klie, R. F.; Maeda, K.; Domen, K.; Meyer, R. J.[†]; Snee, P. T.[†] “Synthesis and Characterization of Semiconductor Tantalum Nitride Nanoparticles” *J. Phys. Chem. C*, **2011**, 115, 647–652.
36. Biswas, S; Dutta, M.; Snee, P. T.; Stroschio, M. A.[†] “Phonon Modes in Semiconductor Quantum Dots” *Chin. J. Phys.*, **2011**, 49, 92–99.
37. Zhang, X. Mohandessi, S.; Miller, L. W.; Snee, P. T.[†] “Water soluble CdSe/ZnS Nanocrystal Functionalization Using Small Chemical Activators” *Chem. Commun.* **2011**, 47, 3532–3534.
38. Page, L. E., Zhang, X.; Jawaid, A. M.; Snee, P. T.[†] “Detection of Toxic Mercury Ions Using a Ratiometric CdSe/ZnS Nanocrystal Sensor,” *Chem. Commun.* **2011**, 47, 7773–7775.
39. Jawaid, A. M.; Asunskis, D. J.; Snee, P. T.[†] “Shape-Controlled Colloidal Synthesis of Rock-Salt Lead Selenide Nanocrystals” *ACS Nano* **2011**, 5, 6465–6471.
40. Snee, P. T.[†]; Tyrakowski, C. M.; Isovich, A.*; Page, L. E.; Jawaid, A. M. “Quantifying Quantum Dots with Förster Resonant Energy Transfer” *J. Phys. Chem. C* **2011**, 115, 19578–19582.
41. Ho, C.-T.; Low, K.-B.; Jash, P.; Shen, H.-Y.; Snee, P. T.[†]; Meyer, R. J.[†] “Formation of Sol-gel Derived TaO_xN_y Photocatalysts” *Chem. Mater.* **2011**, 23, 4721–4725.
42. Tyrakowski, C. M.; Isovich, A.*; Snee, P. T.[†] “Water-solubilization and Functionalization of Semiconductor Quantum Dots” chapter of Methods in Molecular Biology. Humana Press, Springer, Netherlands, ISSN: 1064-3745.
43. Somers, R. C.; Snee, P. T.; Bawendi, M. G.[†]; Nocera, D. G.[†] “Energy Transfer of CdSe/ZnS Nanocrystals Encapsulated with Rhodamine-Dye Functionalized Poly(acrylic acid)” *J. Photochem. Photobiol. A*, **2012**, 248, 24–29.
44. Busby, E.; Thibert, A.; Fuzell, J.; Arrington, D. C.; Jawaid, A. M.; Snee, P. T.; Larsen, D. S.[†] “Ultrafast Exciton Dynamics in Colloidal Aluminum Phosphide Nanocrystals” *Chem. Phys. Lett.*, **2013**, 557, 129–133.
45. Thibert, A.; Busby, E.; Page, L. E.; Jawaid, A. M.; Snee, P. T.; Larsen, D. S.[†] “Primary charge carrier dynamics of water-solubilized CdZnS/ZnS core/shell and CdZnS/ZnS center dot Pd nanoparticle adducts” *Chem. Phys. Lett.*, **2013**, 573, 56–62.
46. Somers, R. C.; Lanning, R. M.; Snee, P. T.; Greytak, A. B.; Jain, R. K.; Bawendi, M. G.[†]; Nocera, D. G.[†] “A Nanocrystal-based Ratiometric pH Sensor for Natural pH Ranges” *Chem. Sci.* **2012**, 3, 2980-2985.
47. Jawaid, A. M.; Chattopadhyay, S.; Wink, D. J.; Page, L. E.; Snee, P. T.[†] “Cluster-Seeded Synthesis of Doped CdSe:Cu₄ Quantum Dots” *ACS Nano*, **2013**, 7, 3190–3197.
48. Ravindran; S.; Snee, P. T.; Eapen, A. S.; Sundivakkam, P.; Tiruppathi, C.; George, A.[†] “Acidic Domains in DPP Facilitates Endocytosis: Implications for Targeted Protein Delivery” *J. Bio. Chem.* **2013**, 288, 16098-16109.
49. Tyrakowski, C. M.; Snee, P. T.[†] “Ratiometric CdSe/ZnS Nanocrystal Protein Sensor” *Anal. Chem.*, **2014**, 86, 2380–2386.

50. Tyrakowski, C. M.; Snee, P. T.[†] “A primer on the synthesis, water-solubilization, and functionalization of quantum dots, their use as biological sensing agents, and present status” *Phys. Chem. Chem. Phys.*, **2014**, *16*, 837-855.
51. Padovano, J. D.; Ravindran, S.; Snee, P. T.; Ramachandran, A.; Bedran-Russo, A. K.; George, A.[†] “DMP1-derived Peptides Promote Remineralization of Human Dentin” *J. Dent. Res.*, **2015**, *94*, 608–614.
52. Shamirian, A.; Appelbe, O.; Zhang, Q.; Ganesh, B.; Kron, S. J.; Snee, P. T.[†] “A toolkit for bioimaging using near-infrared AgInS₂/ZnS quantum dots” *J. Mat. Chem. B.*, **2015**, *3*, 8188-8196.
53. Zhang, X.; Shamirian, A.; Jawaid, A. M.; Tyrakowski, C. M.; Page, L. E.; Das, A.; Chen, O.; Iovic, A.; Hassan, A.; Snee, P. T.[†] “Monolayer Silane-Coated, Water-Soluble Quantum Dots” *Small*, **2015**, *11*, 6091–6096.
54. Tyrakowski, C. M.; Shamirian, A.; Rowland, C. E.; Shen, H.; Das, A.; Schaller, R. D.; Snee, P. T.[†] “Bright Type II Quantum Dots” *Chem Mater.*, **2015**, *27*, 7276–7281.
55. Shamirian, A.; Ghai, A.* Snee, P. T. “QD-Based FRET Probes at a Glance” *Sensors*, **2015**, *15*, 13028-13051.
56. Uyuşur, B.; Snee, P. T.; Li, C.; Darnault, C. J. G.[†] “Quantitative Imaging and In Situ Concentration Measurements of Quantum Dot Nanomaterials in Variably Saturated Porous Media” *J. Nanomater.* **2016**, 8237029.
57. Das, A.; Snee, P. T.[†] “Synthetic Developments of Nontoxic Quantum Dots” *ChemPhysChem*, **2016**, *17*, 598-617.
58. Shamirian, A.; Samareh Afsari, H.; Wu, D.; Miller, L. W.; Snee, P. T.[†] “Ratiometric QD-FRET Sensing of Aqueous H₂S *in vitro*” *Anal. Chem.* **2016**, *88*, 6050–6056.
59. Das, A.; Snee, P. T.[†] “Arsenic Silylamide: A Safe and Effective Precursor for Arsenide Semiconductor Nanocrystal Synthesis” *Chem. Mater.* **2016**, *28*, 4058–4064.
60. Page, L. E.; Zhang, X.; Tyrakowski, C. M.; Ho, C.-T.; Snee, P. T.[†] “Synthesis and characterization of DNA-quantum dot conjugates for the fluorescent ratiometric detection of unlabelled DNA” *Analyst*, **2016**, *141*, 6251-6258.
61. Shamirian, A.; Hamid, S. H.; Hassan, A.; Miller, L. W.; Snee, P. T. “*In vitro* Detection of Hypoxia using a Ratiometric Quantum Dot-based Oxygen Sensor” *ACS Sensors*, **2016**, *1*, 1244–1250.
62. Hassan, A.; Shamirian, A.; Zhang, X.; Snee, P. T. “Anomalous Perturbation of the O₂ Sensitivity of Poly(aromatic) Hydrocarbons by Magnetic Quantum Dots.” submitted to *J. Phys. Chem C*.
63. Hassan, A.; Zhang, X.; Liu, X.; Jawaid, A.; Zadrozny, J.; Chattopadhyay, S.; Gulec, A.; Shamirian, A.; Zuo, X.; Freedman, D.; Klie, R. F.; Schaller, R. D.; Snee, P. T. “Semiconductor Dopant Electronic Dynamics, Surface States, and Charge Carrier-Modulated Bonding Are Revealed by Time-Resolved X-ray Spectroscopy.” submitted to *Science*.

Prior to UIC, 1997-2006

1. Terzis A.F.; Snee P.T.*; Samulski E.T.[†] “Orientational Order of Water Confined in Anisotropic Cavities” *Chem. Phys. Lett.*, **1997**, *264*, 481.
2. Yang, H.; Snee, P. T.; Kotz, K. T.; Payne, C. K.; Frei, H.[†]; Harris, C. B.[†] “Femtosecond Infrared Studies of a Prototypical One-Electron Oxidative-Addition Reaction: Chlorine Atom Abstraction by the Re(CO)₅ Radical” *J. Am. Chem. Soc.*, **1999**, *121*, 9227.
3. Snee, P. T.; Yang, H.; Kotz, K. T.; Payne, C. K.; Harris, C. B.[†] “Ultrafast Infrared Studies of the Reaction Mechanism of Silicon-Hydrogen Bond Activation by CpV(CO)₄” *J. Phys. Chem. A*, **1999**, *103*, 10426.
4. Kotz, K. T.; Yang, H.; Snee, P. T.; Payne, C. K.; Harris, C. B.[†] “Femtosecond Infrared Studies of Ligand Rearrangement Reactions: Silyl Hydride Products from Group 6 Carbonyls” *J. Organomet. Chem.*, **2000**, *596*, 16303.
5. Snee, P. T.; Payne, C. K.; Kotz, K. T.; Yang, H.; Harris, C. B.[†] “High Spin Reactivity Under Ambient Conditions: An Ultrafast UV-Pump IR-Probe Study” *J. Am. Chem. Soc.*, **2001**, *123*, 2255.
6. Yang, H.; Snee, P. T.; Kotz, K. T.; Payne, C. K.; Harris, C. B.[†] “Femtosecond Infrared Study of the Dynamics of Solvation and Solvent Caging” *J. Am. Chem. Soc.*, **2001**, *123*, 4204.
7. Snee, P. T.; Payne, C. K.; Mebane, S. D.; Kotz, K. T.; Harris, C. B.[†] “Dynamics of Photosubstitution Reactions of Fe(CO)₅: An Ultrafast Infrared Study of High Spin Reactivity” *J. Am. Chem. Soc.*, **2001**, *123*, 6909.
8. Kotz, K. T.; Yang, H.; Snee, P. T.; Payne, C. K.; Harris, C. B.[†] “Ultrafast Infrared Studies of Ligand Rearrangement at Coordinatively Unsaturated Transition Metal Centers” in *Ultrafast Phenomena XII*, Springer Verlag, Berlin. p 636, **2001**.
9. Payne, C. K.; Snee, P. T.; Yang, H.; Kotz, K. T.; Schafer, L. L.; Tilley, T. D.[†]; Harris, C. B.[†] “Intramolecular Rearrangements on Ultrafast Timescales: Femtosecond Infrared Studies of Ring Slip in (η¹-C₅Cl₅)Mn(CO)₅” *J. Am. Chem. Soc.*, **2001**, *123*, 7425.

10. Asplund, M. C.; Snee, P. T.; Yeston, J. S.; Wilkens, M. J.; Payne, C. K.; Yang, H.; Kotz, K. T.; Frei, H.[†]; Bergman, R. G.[†]; Harris, C. B.[†] “Ultrafast UV Pump / IR Probe Studies of C–H Activation in Linear, Cyclic and Aryl Hydrocarbons” *J. Am. Chem. Soc.*, **2002**, *124*, 10605.
11. Schaller, R. D.; Snee, P. T.; Johnson, J. C.; Lee, L. F.; Wilson, K. R.; Haber, L. H.*; Saykally, R. J.[†] “Nanoscope Interchain Aggregate Domain Formation in Conjugated Polymer Films Studied by Third Harmonic Generation (THG) Near-field Scanning Optical Microscopy (NSOM)” *J. Chem. Phys.*, **2002**, *117*, 6688.
12. Snee, P. T.; Garrett-Roe, S.; Harris, C. B.[†] “The Low Temperature Solvation Dynamics of An Excess Electron in Bulk and at Surface Interfaces” *J. Phys. Chem. B.*, **2003**, *107*, 13608. (cover).
13. Schaller, R. D.; Lee, L. F.; Nguyen, T.Q.; Snee, P.T.; Saykally, R.J.[†] “Characterization of Domain Ordering in Polymer and Dendrimer Thin Films Using Photoluminescence and Third Harmonic Generation (THG) Near-field Scanning Optical Microscopy (NSOM)” *Japanese Journal of Applied Physics Part 1-Regular Papers Short Notes & Review Papers.*, **2003**, *42*, 4799.
14. Caruge, J.-M.; Chan, Y.; Snee, P. T.; Bawendi, M. G.[†] “Multiexcitonic State Two State Lasing in a CdSe Nanocrystal Laser” *App. Phys. Lett.*, **2004**, *85*, 2460.
15. Snee, P. T.; Chan, Y.; Nocera, D. G.; Bawendi, M. G.[†] “Whispering Gallery Mode Lasing from a Semiconductor Nanocrystal / Microsphere Resonator Composite” *Adv. Materials*, **2005**, *17*, 1131.
16. Snee, P. T.; Shanoski, J.; Harris, C. B.[†] “The Mechanism of Intramolecular Rearrangement Studied Using Transition Path Sampling” *J. Am. Chem. Soc.*, **2005**, *127*, 1286.
17. Chan, Y.; Steckel, J. S.; Snee, P. T.; Bawendi, M. G.[†] “Blue Lasing from a CdS Nanocrystal Laser” *App. Phys. Lett.*, **2005**, *86*, 073102. *Highlighted in Laser Focus World, Spectra Photonics.*
18. Wun, A. W.; Snee, P. T.; Chan, Y.; Bawendi, M. G.[†]; Nocera, D. G.[†] “Non-linear Transduction Strategies for Chemo/biosensing on Small Length Scales” *J. Mater. Chem.*, **2005**, *15*, 2697.
19. Vezenov, D. V.; Mayers, B. T.; Conroy, R. S.; Whitesides, G. M.[†]; Snee, P. T.; Chan, Y.; Nocera, D. G.[†]; Bawendi, M. G.[†] “A Low-Threshold, High-Efficiency Microfluidic Waveguide Laser” *J. Am. Chem. Soc.*, **2005**, *127*, 8952. *Highlighted in Chemical and Engineering News.*
20. Pouya, S.; Koochesfahani, M.[†]; Snee, P. T.; Bawendi, M. G.[†]; Nocera, D. G.[†] “Single Quantum Dot (QD) Imaging of Fluid Flow Near Surfaces” *Experiments in Fluids*, **2005**, *39*, 784
21. Koochesfahani, M.[†]; Pouya, S.; Snee, P. T.; Bawendi, M. G.[†]; Nocera, D. G.[†] “Near-Surface Velocimetry Using Quantum Dots (QDs)” 6th International Symposium on Particle Image Velocimetry, PIV’05 Paper KN03, **2005**.
22. Chan, Y.; Snee, P. T.; Caruge, J.-M.; Yen, B. K.; Nocera, D. G.[†]; Bawendi, M. G.[†] “A Chemically Stable Nanocrystal Laser” *J. Am. Chem. Soc.*, **2006**, *128*, 3146.
23. Steckel, J. S.; Snee, P. T.; Coe-Sullivan, S.; Zimmer, J. P.; Halpert, J. P.; Anikeeva, P.; Kim, L.; Bulovic, V.[†]; Bawendi, M. G.[†] “Color-Saturated Green-Emitting QD-LEDs.” *Angew. Chemie*, **2006**, *45*, 5796.
24. Snee, P. T.; Somers, R. C.; Nair, G.; Zimmer, J. P.; Bawendi, M. G.[†]; Nocera, D. G.[†] “A Ratiometric CdSe/ZnS Nanocrystal pH Sensor.” *J. Am. Chem. Soc.*, **2006**, *128*, 13320.

Patents

1. Snee, P. T.; Chan, Y.; Nocera, D. G.; Bawendi, M. G. “Optical Feedback Structures and Methods of Making” US Patent 20060114960. Licensed to Life Technologies.
2. Snee, P. T.; Somers, R. C.; Bawendi, M. G.; Nocera, D. G. “Fluorescent Sensor and Methods,” US Patent 20090221088. Licensed to Life Technologies.
3. Mayers, B. T.; Conroy, R. S.; Vezenov, D. V.; Snee, P. T.; Chan, Y.-T.; Bawendi, M. G.; Whitesides, G. M. “Microfluidic Laser” US Patent 20100303119.
4. Porter-Maloney, V.; Wu, D, Pan, L.; Snee, P.; Shamirian, A. “Ratiometric Sensing Compound and Device Made from the Compound” patent pending.

Invited Seminars

- Fall Meeting of the APS Ohio-Region Section, Bowling Green State University, Bowling Green, OH, 2016 (host: Prof. Mikhail Zamkov)
- Michigan State University, East Lansing, MI, 2015 (host: Prof. James McCusker)
- American Vacuum Society: National Meeting, Baltimore, MD, 2014.
- Loyola University, Chicago, IL, 2014 (host: Prof. Jacob Cizek)
- Indiana University, Bloomington, IN, 2012 (host: Prof. Liang-shi Li).
- Florida State University, Tallahassee, FL, 2011 (host: Prof. Hedi Mattoussi).
- Princeton University, Princeton, NJ, 2011 (host: Prof. Haw Yang).

Gordon Research Conference: Clusters, Nanocrystals & Nanostructures, South Hadley, MA, 2011 (hot topic).
University of Michigan, Ann Arbor, MI, 2010 (host: Prof. Julie Biteen).
West Virginia University, Morgantown, WV, 2010 (host: Prof. Lloyd Carroll).
Marquette University, Milwaukee, WI, 2010 (host: Prof. Rajendra Rathore).
Argonne National Laboratory, Argonne, IL, 2010 (host: Prof. Richard Schaller).
Society for Applied Spectroscopy, Chicago Section, Chicago, IL, 2010.
Wright Patterson Air Force Base, Dayton, OH, 2010 (host: Dr. Thomas Cooper).
Illinois Institute of Technology, Chicago, IL, 2009 (host: Prof. Sandra Whaley-Bishnoi).
University of Notre Dame, South Bend, IN, 2009 (host: Prof. Masru Kuno).
Meeting of the Minds, College of Liberal Arts and Science, UIC, Chicago, IL, 2008.
SPIE: Colloidal Quantum Dots for Biomedical Applications, San Jose, CA, 2008.
Quantum Dots 2007, Ft. Lauderdale, FL, 2007.
Motorola, Schaumburg, IL, 2006 (host: Dr. Andrew Skipor).

Funding

1. University of Illinois (start-up) 2006-.
2. Motorola via University of Illinois Manufacturing Resource Center 2006-2007 \$20,000.
3. Motorola via University of Illinois Manufacturing Resource Center 2007-2008 \$20,000.
4. U.S. Air Force Surgeon General's Office of Modernization (FA7014-07-C-0047) 2008-2010, *as senior personnel*.
5. University of Illinois at Chicago Chancellor's Research Fund 2010-2011 \$40,000.
6. University of Illinois at Chicago Travel Fund, 2006-. *UIC funds junior faculty to attend conferences.*
7. American Chemical Society Petroleum Research Fund (50859-ND10), 2011-2013 \$100,000
8. Chicago Biomedical Consortium, 2013-2015, \$90,000.
9. Colgate-Palmolive, 2014, \$36,000.
10. Colgate-Palmolive, 2015, \$32,000.