Curriculum Vitae

Patanjali Kambhampati
Department of Chemistry, McGill University
801 Sherbrooke St. West, Montreal, QC, H3A0B8, Canada
Phone: 514.398.7228; e-mail: pat.kambhampati@mcgill.ca
Web: http://kambhampati-group.mcgill.ca/

Positions Held

- Professor, Department of Chemistry, McGill University, Canada. 1/2022 - present
- Associate member, Department of Physics, McGill University, Canada, 11/2010 - present
- Associate Professor, Department of Chemistry, McGill University, Canada. 5/2009 – 12/2021
- Assistant Professor, Department of Chemistry, McGill University, Canada. 7/2003 – 5/2009
- Research Engineer / Senior Research Engineer / Manager of Optical Development, Sabeus Photonics, CA, USA. 2/2001 – 5/2003
- Postdoctoral Research Associate, with Professor Paul Barbara, Department of Chemistry and Biochemistry, University of Texas at Austin, TX, USA. 1/1999-2/2001.

Education

Ph.D. Chemical Physics, 12/1998
Supervised by Professor Alan Campion
Department of Chemistry, University of Texas at Austin, Austin, TX, USA
Dissertation: Excited State Structure and Dynamics of Molecules Adsorbed on Surfaces.

Graduate Course Work, 1992-1993
Department of Chemistry, University of California, Los Angeles, Los Angeles, CA, USA

B.A. Chemistry, 1992
Carleton College, Northfield, MN, USA

Awards and Honors

International Advisory Board, Journal of Physical Chemistry Letters (2023)
John Polanyi Award, Chemical Institute of Canada (2022)
Lady Davis Fellowship as Visiting Professor at Hebrew University (2020)
Wares Research Prize, McGill University (2019)
Fessenden Prize in Science Innovation, McGill University (2012)
Fessenden Professorship, McGill University (2012)
Photonics Spectra Circle of Excellence Award (w/ Sabeus Photonics) (2003)
National Research Council Postdoctoral Fellowship (NIST) (1998) [declined award]
XVIth International Conference on Raman Spectroscopy Travel Fellowship (1998)
David Bruton Jr. Fellowship (1998)
University Continuing Education Fellowship (1997)
Hoechst-Celanese Academic Excellence Award (1997)

Department of Chemistry and Biochemistry Travel Fellowship (1997)
Department of Chemistry and Biochemistry Summer Tuition Fellowship (1997)
Welch Foundation Fellowship (1996)

Professional Societies and activities

Editorial Advisory Board, *Journal of Physical Chemistry Letters*, 2023 – onwards.

Materials Research Society, Electrochemical Society, Canadian Society for Chemistry, American Physical Society, Optical Society of America, American Chemical Society, Sigma Xi

Research Highlights

Departmental colloquia (>40)

MIT, Princeton, Columbia, U of Chicago, U of Toronto, Texas, Washington, Penn, Michigan, Northwestern, Illinois, Wisconsin, Minnesota, U of British Columbia, Rice, Texas A&M and others.

Collaborators

Theory:
Alex Zunger (National Renewable Energy Lab, USA), Oleg Prezhdo (University of Southern California, USA), Eran Rabani (University of California at Berkeley, USA), Yelena Simene (McGill University, Canada).

Spectroscopy:
Ian Butler (McGill University, Canada). Linda Reven (McGill University, Canada).

Materials:
Christopher Murphy (University of Pennsylvania, USA), QD Vision Inc. (Boston, USA), Arjan Houtepen (Delft, Netherlands), Dong Hee Son (Texas A&M University, USA). Sony Corporation (Tokyo, Japan).

Corporate Collaborators

Fastlite Inc. (France)
Few-cycle Inc. (Quebec, Canada)
Axis Photonique (Quebec, Canada)
NN-Labs (USA)

Invited review articles (11)

1. "Two-Dimensional Electronic Spectroscopy as a probe of Electronic Materials", H Seiler, P Brosseau, and P Kambhampati, *Phys. Chem. Chem. Phys.*, **Invited** (2023)
2. "Connecting the absorbing and the emitting states in semiconductor perovskite nanocrystals", A Ghosh, D Strandell, and P Kambhampati, *Nanoscale*, **15**, 2470 (2023).
3. "Solvation dynamics in ionic perovskites P. Kambhampati *J Phys Chem C*, **125,** 23571 (2021)
4. "Nanoparticles, Nanocrystals, and Quantum Dots: What are the Implications of Size in Colloidal Nanoscale Materials?", *J. Phys. Chem. Lett.* **12**, 4769 (2021)
5. "Understanding and Exploiting the Interface of Semiconductor Nanocrystals for Light Emissive Applications" , P. Kambhampati, T. Mack, and L. Jethi, *ACS Photonics* **4**, 412 (2017).

6. "Linking surface chemistry to optical properties of semiconductor nanocrystals", M. Krause and P. Kambhampati, *Phys. Chem. Chem. Phys*., **17**, 18882 (2015).
7. "On the kinetics and thermodynamics of excitons at the surface of semiconductor nanocrystals: Are there surface excitons?", P. Kambhampati, *Chem. Phys.,* **446**, 92 (2015).
8. "Multiexcitons in semiconductor nanocrystals: A platform for optoelectronics at high carrier concentration", P. Kambhampati, *J. Phys. Chem. Lett*, **3**, 1182 (2012).
9. "Hot Exciton Relaxation Dynamics in Semiconductor Quantum dots: Radiationless Transitions on the Nanoscale", P. Kambhampati, *J. Phys. Chem. C*, **115**, 22809 (2011). *Cover Article.*
10. "Unraveling the structure and dynamics of excitons in semiconductor quantum dots", P. Kambhampati, *Acc. Chem. Res.*, **44**, 1 (2011).

Primary research articles heighted in media (7)

1. "Polaronic quantum confinement in bulk CsPbBr3 perovskite crystals revealed by state-resolved pump/probe spectroscopy", C. Sonnichsen, D. Strandell, P. Brosseau, and P. Kambhampati, *Phys. Rev. Research* **3**, 023147 (2021)
    i. *Recipient of media coverage from McGill*
2. "Atomic fluctuations in electronic materials revealed by dephasing", S Palato, H Seiler, P Nijjar, O Prezdho, P Kambhampati, *Proc. Nation. Acad. Sci*, **117**, 11940 (2020).
    i. *Recipient of media coverage from McGill*
3. "Two-dimensional electronic spectroscopy reveals liquid-like lineshape dynamics in CsPbI 3 perovskite nanocrystals" , H. Seiler, S. Palato, C. Sonnichsen, H. Baker, E. Socie, D. P. Strandell and P. Kambhampati, *Nat. Commun.* **10**, 4962 (2019).
    i. *Recipient of media coverage from McGill*
4. "Terahertz bandwidth all-optical modulation and logic using multiexcitons in semiconductor nanocrystals", J. Saari, M. Krause, B. Walsh, and P. Kambhampati, *Nano Lett*, **13**, 722 (2013).
    i. *Recipient of media coverage including >20 science news websites, including coverage in Laser Focus World*
5. "Controlling Piezoelectric Response in Semiconductor Quantum Dots via Impulsive Charge Localization", P. Tyagi, R.R. Cooney, S.L. Sewall, D.M. Sagar, and P. Kambhampati, *Nano Lett.* **10,** 3062 (2010).
    i. *Recipient of media coverage including >20 science news websites, Montreal Gazette, Vancouver Sun, and Television coverage in Global TV Montreal (2010)*
6. "Gain control in semiconductor quantum dots via state-resolved optical pumping", R.R. Cooney, S.L. Sewall, D.M. Sagar, and P. Kambhampati, *Phys. Rev. Lett*, **102**, 127404 (2009).
    i. *Recipient of media coverage in Nature Photonics, "Research Highlights", **3**, 310 (2009) and > 10 science news websites. "Top Ten Discoveries of the Year" in Quebec Science magazine (2010).*
7. "Breaking the Phonon Bottleneck for Holes in Semiconductor Quantum Dots", R.R. Cooney, S.L. Sewall, K.E.H. Anderson, E.A. Dias, and P. Kambhampati, *Phys. Rev. Lett.*, **98**, 177403 (2007).
    i. *Physical Review Letters Editors' Suggestion. Was one of ~ five papers from all Chemistry Departments in the World and one of ~ five papers from all Departments in all fields of Science in Canada so selected by the editors of Physical Review Letters in 2007.*

Patents Awarded

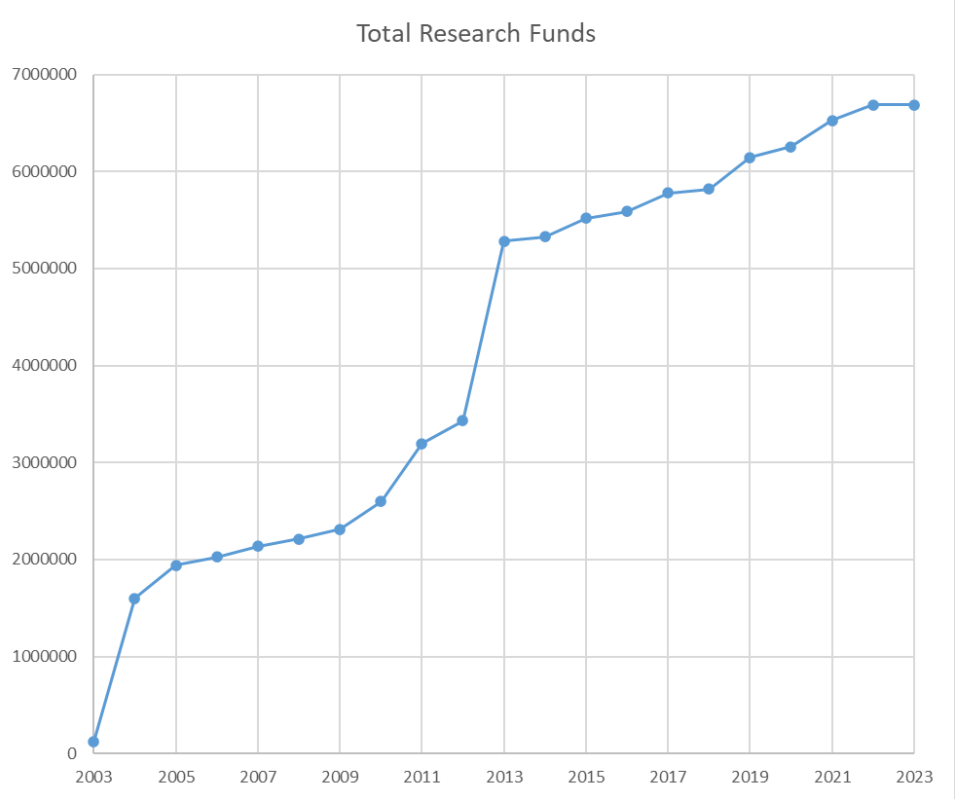
1. US 8,565,281, Method of Pumping Quantum Dots, October 22, 2013
2. US 8,860,939, Method And System For Optical Spectroscopy, October 14, 2014
3. US 9,400,269, Systems for detecting target chemicals and methods for their preparation and use, July 26, 2016
4. US 16/411,208, Method and system for tuning an output optical pulse, January 7, 2020

Infrastructure created

- $4,000,000 in infrastructure funding to date comprised of two femtosecond laser labs of $2M each.
- Labs feature three world-class spectroscopy instruments, Coherent Multidimensional Electronic Spectroscopy, State-Resolved Pump-Probe spectroscopy, and spectrally resolved time-resolved emission spectroscopy.

Full details of funding, publications, talks, student training

Funding:



32) “Unraveling atomistic effects in quantum materials via advanced experiment and theory in collaboration.” NSERC Alliance Quantum. $25,000 (2022). Collaboration with E Rabani (UC Berkeley).

31) “Probing dynamics in perovskite nanocrystals with quantum confinement and doping”, NSERC Alliance International. $25,000 (2022). Collaboration with DH Son (Texas A&M University)

30) “A unified approach to probing the dynamics of perovskites, McGill Sustainability Science Institute Grant (PI, with B Siwick and D Cooke. 34% to PK). $40,000/year – 1 year, (2021).
29) “The Product life cycle of an excitation in a perovskite semiconductor”, Sony Faculty Innovation Award. US$100,000/year – 1 year, (2021).
28) “Evaluating covalency and ionicity in semiconductor nanocrystals”, FQRNT Equipe (PI, with Mark Andrews and Linda Reven, 60% to PK). $63,500/year – 3 years, (2020 - 2023).
27) “Nonlinear Electronic Resonance Imaging (NERI)”, Wares Science Innovation Prospectors Fund, $50,000/year – 1 years, (2019).
26) “A simple fiber based light source for femtosecond laser spectroscopy”, Idea to Innovation Grant, Natural Sciences and Engineering Research Council of Canada, $125,000/year – 1 years, (2019).
25) “A spectroscopic journey through space and time in nanoscale materials”, Discovery Grant, Natural Sciences and Engineering Research Council of Canada, $48,000/year – 5 years, (2019 – 2024).
24) “White light emitting diodes via semiconductor nanocrystals”, Collaborative Research and Development Grant, Natural Sciences and Engineering Research Council of Canada, $100,000 (2019).
23) “Tools to complete Coherent Multidimensional Ultrafast Spectrometer”, Research Tools and Instruments Grant, Natural Sciences and Engineering Research Council of Canada, $148,313 (2016).
22) “Femtosecond laser micromachining of GaN”, Engage Grant, Natural Sciences and Engineering Research Council of Canada, $25,000 (2016).
21) “Development of Streak Camera System”, Engage Grant, Natural Sciences and Engineering Research Council of Canada, $25,000 (2015).
20) “Commercial Coherent Two Dimensional Electronic Spectrometer”, Idea to Innovation Grant, Natural Sciences and Engineering Research Council of Canada, $125,000 (2015).
19) “Nanoscale Excitonics: From Materials Chemistry to Ultrafast Photonics”, Discovery Grant, Natural Sciences and Engineering Research Council of Canada, $43,000/year – 5 years, (2014 – 2019).
18) “Tools for Nanoscience and Nanotechnology”, Leading Edge Fund, Canada Foundation for Innovation, co-applicant in team grant with Project Leader Peter Grutter (McGill, Physics) PK’s portion $1,792,799 (2013).
17) “Semiconductor quantum dots as a novel platform for THz radiation sources”, (w/ David Cooke, McGill Physics), McGill Collaborative Research and Development Fund, McGill University, $15,000 (2012). 1 year. 50% to PK.
16) “Commercial coherent multidimensional optical spectrometer”, Fessenden Professorship in Science Innovation, McGill University, $70,000 (2012). 1 year.
15) “Process yield and reliability optimization of nanowire white light emitting diodes on low cost, large area Si substrates”, (w/ Z. Mi, McGill ECE), Idea to Innovation grant, NSERC, $187,500 (2012). 2 years. 50% to PK.
14) “L’éclairage ecoénergétique à semi-conducteurs sans phosphore”, (w/ Z. Mi, McGill ECE), FQRNT MDEIE, $842,500 (2011). 2 years. 50% to PK.
13) “Tools for two dimensional optical spectroscopy”, $90,000, Natural Sciences and Engineering Research Council of Canada, Research Tools and Instruments grant (2011)
13) “Unraveling exciton dynamics in quantum dots”, Discovery Grant, Natural Sciences and Engineering Research Council of Canada, $61,000/year – 5 years, (2010 – 2015).
12) “Hybrid nanostructure based optoelectronic device for energy efficient white light emission”, (w/ Z. Mi, McGill ECE), Idea 2 Innovation Grant, Natural Sciences and Engineering Research Council of Canada, $125,000, (2009 – 2010). 50% to PK.

11) Infrastructure Operating Fund, Canada Foundation for Innovation, $26,935, (2011). 100% to PK.
10) “Research platform on nanostructured materials and devices for optoelectronics”, Leading Edge Fund, Canada Foundation for Innovation, co-applicant in team grant with Project Leader Richard Leonelli (University of Montreal) PK’s portion $224,460 (2010).
9) “State-resolved exciton dynamics in semiconductor quantum dots”, Discovery Grant, Natural Sciences and Engineering Research Council of Canada, $40,000/year – 5 years, (2009 – 2010).
8) “Investigating dynamics and charge transport in semiconductor quantum dots and their nanostructures”, Discovery Grant, Natural Sciences and Engineering Research Council of Canada, $41,000/year – 2 years, (2007 – 2009). 100% to PK.
7) “Exploring Spintronic Nanomaterials using Magnetic Quantum Dots”, McGill India Strategic Research Initiative, $37,500/year, (2007 - 2008). 100% to PK.
6) Infrastructure Operating Fund, Canada Foundation for Innovation, $161,235, (2004). 100% to PK.
5) “Neurophotonics Centre”, Innovation Fund, Canada Foundation for Innovation, co-applicant in team grant with Project Leader Yves De Koninck, Laser Infrastructure for New Materials Spectroscopy Lab, $250,000, (2004). 100% to PK.
4) “Étude par spectrometrie ultrarapide de matériaux nanostructures”, Operating grant, Nouveaux Chercheurs Program, Fonds Quebecois de la Recherche sur la Nature et les Technologies, $15,400/year – 3 years, (2004 – 2007). 100% to PK.
3) “Étude par spectrometrie ultrarapide de matériaux nanostructures”, Equipment grant, Nouveaux Chercheurs Program, Fonds Quebecois de la Recherche sur la Nature et les Technologies, $45,500, (2004). 100% to PK.
2) “Ultrafast Spectroscopic Investigations of Nanostructured and Photonic Materials”, Discovery Grant, Natural Sciences and Engineering Research Council of Canada, $39,936/year – 3 years, (2004 – 2007). 100% to PK.
1) “Unified Laboratory for Ultrafast Spectroscopic Investigations of Nanostructured Materials”, New Opportunities Fund, Canada Foundation for Innovation, $1,343,748, (2004). 100% to PK.
0) “Ultrafast spectroscopy of nanoscale materials”, Startup, McGill University, $125,000 (2003).

Publications

Principal Investigator:

93) “Electronic structural dynamics within the fine structure of excitons and multiexcitons in perovskite nanocrystals”, D Strandell and Patanjali Kambhampati, *Submitted*, (2023).
92) “Breaking Phonon Bottlenecks through Efficient Auger processes in Bulk Perovskite Nanocrystals”, H Baker, C Mora Perez, C Sonnichsen, D Strandell, O Prezhdo, and P Kambhampati, *ACS Nano*, **Accepted** (2022)
91) “The absorbing state of a bulk perovskite nanocrystal transforms into a quantum confined emitting state”, D Strandell, H Seiler, C Sonnichsen, and P Kambhampati, *Submitted* (2023)
90) “New ultrafast hole relaxation channels in quantum dots revealed by two-dimensional electronic spectroscopy”, P Brosseau, J Geuchies, D Jasrasaria, A Houtepen, E Rabani and P Kambhampati, *Nature Communications Physics*, **Accepted** (2022).
89) “Connecting the absorbing and the emitting states in semiconductor perovskite nanocrystals”, A Ghosh, D Strandell, and P Kambhampati, *Nanoscale*, **15**, 2470 (2023) (2023).

88) “Watching excitations in perovskites undergo ultrafast relaxation to their emitting state”, D Strandell, C Sonnichsen, and P Kambhampati, *J Phys Chem C*, **126**, 20505 (2022)
87) “Ligand-Flexible Synthesis of Strongly Confined Perovskite Nanocrystals: A Microwave Synthetic Approach”, G Romero Esquivel, V Toader, L Reven, and P Kambhampati, *Nanoscale*, **14**, 15789 (2022).
86) “The Temperature Dependence of the Photoluminescence of CsPbBr3 Nanocrystals Reveals Phase Transitions and Homogeneous Linewidths”, D Strandell and P Kambhampati, *J Phys Chem C*, **125**, 27504 (2022)
85) “Learning about the Structural Dynamics of Semiconductor Perovskites from Electron Solvation Dynamics”, P Kambhampati, *J Phys Chem C*, **125**, 23571 (2021)
84) “Resonance Raman Vibrational Mode Enhancement of Adsorbed Benzenethiols on CdSe Is Predominantly Franck–Condon in Nature and Governed by Symmetry”, TG Mack, J Spinelli, MP Andrews, P Kambhampati, *J Phys Chem Lett*, **12**, 7935 (2021)
83) “OPA-driven hollow-core fiber as a tunable, broadband source for coherent multidimensional spectroscopy”, C Sonnichsen, P Brosseau, C Reid, P Kambhampati, *Opt Express, **29**,* 28352 (2021)
82) “Polaronic quantum confinement in bulk CsPbBr3 perovskite crystals revealed by state-resolved pump/probe spectroscopy”, C. Sonnichsen, D. Strandell, P. Brosseau, and P. Kambhampati, Phys. Rev. Research **3**, 023147 (2021)
81*) “*Nanoparticles, Nanocrystals, and Quantum Dots: What are the Implications of Size in Colloidal Nanoscale Materials?”, P Kambhampati, *J. Phys. Chem. Lett.* **12**, 4769 (2021)
80) “Fifth order spectroscopy of multi-quantum coherence in quantum dots”, P Brosseau, S Palato, H Seiler, P Kambhampati, *J Chem Phys,* **153**, 234703 (2020)
79) “An analysis of hollow-core fiber for applications in coherent femtosecond spectroscopies”, S Palato, H Seiler, C Sonnichsen, H Baker, R Zifkin, J McGowan, P Kambhampati, *J. Appl. Phys.* **128**, 103107 (2020)
78) “Emitting State of Bulk CsPbBr3 Perovskite Nanocrystals Reveals a Quantum-Confined Excitonic Structure”, H Baker, D Strandell, P Kambhampati, *J Phys Chem C,* 124, 18816 (2020)
77) “Atomic fluctuations in electronic materials revealed by dephasing”, S Palato, H Seiler, P Nijjar, O Prezdho, P Kambhampati, *Proc. Nation. Acad. Sci*, **117**, 11940 (2020).
76) “Investigating the electronic structure of confined multiexcitons with nonlinear spectroscopies” , S. Palato, H. Seiler, H. Baker, C. Sonnichsen, P. Brosseau, and P. Kambhampati, *J. Chem. Phys*. **152**, 104710 (2020)
75) “Two-dimensional electronic spectroscopy reveals liquid-like lineshape dynamics in CsPbI 3 perovskite nanocrystals” , H. Seiler, S. Palato, C. Sonnichsen, H. Baker, E. Socie, D. P. Strandell and P. Kambhampati, *Nat. Commun.* **10**, 4962 (2019).
74) “A Strategy for Exploiting Self-Trapped Excitons in Semiconductor Nanocrystals for White Light Generation”, T Mack, L Jethi, P Kambhampati, *ACS Photonics*, **6**, 1118 (2019)
73) “Photophysical Action Spectra of emission from semiconductor nanocrystals reveals violations to Vavilov Rule behavior from hot carrier effects.”, B Li, P Brosseau, D Strandell, P Kambhampati, *J Phys Chem C*, **123**, 5092 (2019)
72) “Excited state phononic processes in semiconductor nanocrystals revealed by excitonic state-resolved pump/probe spectroscopy”, B Walsh, C Sonnichsen, T Mack, J Saari, M Krause, R Nick, S Coe-Sullivan, P Kambhampati, *J Phys Chem* C, **123,** 3868 (2019).
71) “Direct observation of electronic mixing excitonic states of nano-crystals and their passivating ligands”, T Mack, L Jethi, P Kambhampati, *J Phys Chem C*, **123**, 5084 (2019)
70) “Efficient optical gain in CdSe/CdS Dot-in-Rod nanocrystals”, C Sonnichsen, T Kipp, X Tang, P Kambhampati, *ACS Photonics*, **6**, 382 (2019)

69) “Investigating exciton structure and dynamics in colloidal CdSe quantum dots with two-dimensional electronic spectroscopy”, H Seiler, S Palato, P Kambhampati, *J. Chem. Phys.,* **149**, 074702 (2018)

68) “Seeing Multiexcitons through Sample Inhomogeneity: Band-Edge Biexciton Structure in CdSe Nanocrystals Revealed by Two-Dimensional Electronic Spectroscopy”, H Seiler, S Palato, C Sonnichsen, H Baker, P Kambhampati, *Nano letters*, **18**, 2999 (2018).

67) “Electron Dynamics at the Surface of Semiconductor Nanocrystals”, Samuel Palato, Hélène Seiler, Lucie McGovern, Timothy G. Mack, Lakshay Jethi, and Patanjali Kambhampati, *J. Phys. Chem. C*, 121, 26519 (2017)

66) “Temperature Dependence of Emission Line Widths from Semiconductor Nanocrystals Reveals Vibronic Contributions to Line Broadening Processes”, Timothy G. Mack, Lakshay Jethi, and Patanjali Kambhampati, *J. Phys. Chem. C*, **121**, 28537 (2017)

65) “Extending Semiconductor Nanocrystals from the Quantum Dot Regime to the Molecular Cluster Regime”, Lakshay Jethi, Timothy G. Mack, and Patanjali Kambhampati*, *J. Phys. Chem. C,* **121**, 26102 (2017)

64) “Coherent Multi-Dimensional Spectroscopy at Optical Frequencies in a Single Beam with Optical Readout Coherent Multi-Dimensional Spectroscopy at Optical Frequencies in a Single Beam with Optical Readout”, H. Seiler, S. Palato, and P. Kambhampati, *J. Chem. Phys.,* **147**, 094203 (2017).

63) “Understanding and Exploiting the Interface of Semiconductor Nanocrystals for Light Emissive Applications” , P. Kambhampati, T. Mack, and L. Jethi, *ACS Photonics* **4,** 412 (2017).

62) “Simple Fiber-Based Solution for Coherent Multidimensional Spectroscopy in the Visible Regime”, H. Seiler, S. Palato, B. Schmidt, and P. Kambhampati, *Opt. Lett*. **42**, 3 (2017).

61) “The Effect of Exciton-Delocalizing Thiols on Intrinsic Dual Emitting Semiconductor Nanocrystals”, L Jethi, T Mack, M Krause, S Drake, and P. Kambhampati, *Chem. Phys. Chem.* **17**, 665 (2016).

60) “Surface and interface effects on non-radiative exciton recombination and relaxation dynamics in CdSe/Cd,Zn,S nanocrystals”, B Walsh, J Saari, M. Krause, R Nick, S Coe-Sullivan,, and P. Kambhampati, *Chem. Phys.* **471**, 11 (2016).

59) “Interfacial Electronic Structure in Graded Shell Nanocrystals Dictates Their Performance for Optical Gain”, B Walsh, J Saari, M. Krause, T. Mack, R Nick, S Coe-Sullivan, and P. Kambhampati, *J. Phys. Chem. C.* **120**, 19409 (2016).

58) “Ligand Surface Chemistry Dictates Light Emission from Nanocrystals”, M. Krause, T. Mack, L. Jethi, and P. Kambhampati, *J. Phys. Chem. Lett.* **6**, 4292 (2015).

57) “Kilohertz generation of high contrast polarization states for visible femtosecond pulses via phase-locked acousto-optic pulse shapers”, H. Seiler, B. Walsh, S. Palato, V. Croazatier, N. Forget and P. Kambhampati, *J. Appl. Phys.*, **118**, 103110 (2015).

56) “Controlling the surface of semiconductor nanocrystals for efficient light emission from single excitons to multiexcitons”, B. Walsh, J. Saari, M. Krause, R. Nick, S. Coe-Sullivan, and P. Kambhampati, *J. Phys. Chem. C*, **119**, 16383 (2015).

55) “Unraveling photoluminescence quenching pathways in semiconductor nanocrystals”, M. Krause, T. Mack, L. Jethi, A. Moniodis, J. Mooney and P. Kambhampati, *Chem. Phys. Lett.* **633**, 65 (2015).

54) “Linking surface chemistry to optical properties of semiconductor nanocrystals”, M. Krause and P. Kambhampati, Phys. Chem. Chem. Phys., **17**, 18882 (2015).

53) “Towards Ratiometric Nanothermometry via Intrinsic Dual Emission from Surface Engineered Semiconductor Nanocrystals”, L. Jethi, M. Krause, and P. Kambhampati, *J. Phys. Chem. Lett.*, **6**, 718 (2015).

52) “On the kinetics and thermodynamics of excitons at the surface of semiconductor nanocrystals: Are there surface excitons?”, P. Kambhampati, Chem. Phys., **445**, 92 (2015) – Invited Perspective Article.
51) “Connecting the Dots: the Kinetics and Thermodynamics of Hot, Cold, and Surface Trapped Excitons in Semiconductor Nanocrystals”, J. Mooney, M. Krause, and P. Kambhampati, *J. Phys. Chem. C.*, **118**, 7730 (2014).
50) “Control of phonons in semiconductor quantum dots via femtosecond pulse chirp-influenced wavepacket dynamics and polarization”, J. Mooney, J. Saari, A.M. Kelley, M.M. Krause, and P. Kambhampati, *J. Phys. Chem. B*, **117**, 15651 (2013) - Invited article for Michael Fayer Festschrift.
49) “Spectral and spatial contributions to white light generation from InGaN/GaN dot-in-a-wire nanostructures”, Y. Kamali, B.R. Walsh, J.D. Mooney, H. Nguyen, C. Brosseau, R. Leonelli, Z. Mi, and P. Kambhampati, *J. Appl. Phys.*, **114**, 136305 (2013).
48) “Get the Basics Right: Jacobian Conversion of Wavelength and Energy Scales for Quantitative Analysis of Emission Spectra”, J. Mooney and P. Kambhampati, *J. Phys. Chem. Lett.*, **4**, 3316 (2013) – Invited Guest Commentary.
47) “A microscopic picture of surface charge trapping in semiconductor nanocrystals”, J. Mooney, M. Krause, J. Saari, and P. Kambhampati, *J. Chem. Phys*, **138**, 204705 (2013).
46) “Wavefunction Engineering of the Surface of Semiconductor Nanocrystals for Designer White Light Emitters”, M. Krause, J. Mooney, and P. Kambhampati, *ACS Nano*, **7**, 5922 (2013).
45) “Two-color two-dimensional electronic spectroscopy using dual acousto-optic pulse shapers for complete amplitude, phase, and polarization control of femtosecond laser pulses.”, P. Tyagi, J.I. Saari, B.R. Walsh, A. Kabir, V. Crozatier, N. Forget, and P. Kambhampati, *J. Phys. Chem. A*, **117**, 6264 (2013) - Invited article for John Wright Festschrift.
44) “Ultrafast Electron Trapping at the Surface of Semiconductor Nanocrystals: Excitonic and Biexcitonic Processes”, J.I. Saari, E.A. Dias, D. Reifsnyder, M.M. Krause, B.R. Walsh, C.B. Murray, and Patanjali Kambhampati, *J. Phys. Chem. B*, **117**, 4412 (2013) – Invited article for Paul Barbara Festschrift.
43) “Terahertz bandwidth all-optical modulation and logic using multiexcitons in semiconductor nanocrystals”, J. Saari, M. Krause, B. Walsh, and P. Kambhampati, *Nano Lett*, **13**, 722 (2013).
42) “Challenge to the deep-trap model of the surface in semiconductor nanocrystals”, J. Mooney, M. Krause, J. Saari, and P. Kambhampati, *Phys. Rev. B (Rapid Communication)*, **87**, 081201(R) (2013).
41) “Multiexcitons in semiconductor nanocrystals: A platform for optoelectronics at high carrier concentration”, P. Kambhampati, *J. Phys. Chem. Lett*, **3**, 1182 (2012). – Invited Perspectives Article.
40) “Independent control of electron and hole localization in core/barrier/shell nanostructures”, P. Tyagi, and P. Kambhampati, *J. Phys. Chem. C*, **116**, 8154 (2012).
39) “Improving optical gain performance in semiconductor quantum dots via coupled quantum shells”, E.A. Dias, J.I. Saari, P. Tyagi, and P. Kambhampati, *J. Phys. Chem. C*, **116**, 5407 (2012).
38) “State-Resolved Observation in Real Time of the Structural Dynamics of Multiexcitons in Semiconductor Nanocrystals”, S.L. Sewall, R.R. Cooney, E.A. Dias, P. Tyagi, and P. Kambhampati, *Phys. Rev. B,* **84**, 235304 (2011).

37) “Hot Exciton Relaxation Dynamics in Semiconductor Quantum dots: Radiationless Transitions on the Nanoscale”, P. Kambhampati, *J. Phys. Chem. C*, **115**, 22809 (2011). – Invited Feature Article, Cover Article.
36) “Fundamentals of the Quantum Confinement Effect”, P. Kambhampati, Book chapter in *Handbook of Photoluminescent Semiconductor Materials – Taylor & Francis*, (2011) - Invited
35) “Colloidal and Self-Assembled Quantum Dots for Optical Gain.”, P. Kambhampati, Z. Mi, and R.R. Cooney, *Nanoscience Comprehensive - Elsevier*, In: Andrews DL, Scholes, GD and Wiederrecht GP (eds.), Comprehensive Nanoscience and Technology, volume 1, pp. 493–542 Oxford: Academic Press (2011).
34) “False multiple exciton recombination and multiple exciton generation signals in semiconductor quantum dots arise from surface charge trapping”, P. Tyagi, and P. Kambhampati, *J. Chem. Phys.*, **134**, 094706 (2011).
32) “Large piezoelectric response in semiconductor quantum dots revealed by coherent acoustic phonons”, P. Tyagi, R. Cooney, S. Sewall, D.M. Sagar, J Saari, and P. Kambhampati, In *Ultrafast Phenomena XVII*, Oxford University Press, M. Chergui, D. Jonas, E. Riedle, R. Schoenlein, A. Taylor, Eds. (2011).
32) “Probing multiexcitons in quantum dots via femtosecond pump/probe and two-dimensional electronic spectroscopy”, P. Tyagi, S Sewall, P. Wen, J Saari, D. Arias, K. Nelson, and P. Kambhampati, In *Ultrafast Phenomena XVII*, Oxford University Press, M. Chergui, D. Jonas, E. Riedle, R. Schoenlein, A. Taylor, Eds. (2011).
31) “Unraveling the structure and dynamics of excitons in semiconductor quantum dots”, P. Kambhampati, *Acc. Chem. Res.*, **44**, 1 (2011) - Invited.
30) “State resolved exciton dynamics in quantum dots”, P. Kambhampati, *Proc. SPIE.*, **7758** (2010).
29) “Controlling Piezoelectric Response in Semiconductor Quantum Dots via Impulsive Charge Localization”, P. Tyagi, R.R. Cooney, S.L. Sewall, D.M. Sagar, and P. Kambhampati, *Nano Lett.* **10,** 3062 (2010).
28) “State-resolved manipulations of optical gain in semiconductor quantum dots: Size universality, gain tailoring, and surface effects”, R.R. Cooney, S.L. Sewall, D.M. Sagar, and P. Kambhampati, *J. Chem. Phys.*, **131**, 164706, (2009).
27) “Direct observation of the structure of band-edge biexcitons in colloidal semiconductor CdSe quantum dots”, S.L. Sewall, A. Franceschetti, R.R. Cooney, A. Zunger, and P. Kambhampati, *Phys. Rev. B.*, 80, 081310(R) (2009).
26) “Experimental tests of effective mass vs. atomistic pictures of quantum dot electronic structure”, S.L. Sewall, R.R. Cooney, and P. Kambhampati, *Appl. Phys. Lett.,* **94**, 243116 (2009).
25) “Gain control in semiconductor quantum dots via state-resolved optical pumping”, R.R. Cooney, S.L. Sewall, D.M. Sagar, and P. Kambhampati, *Phys. Rev. Lett*, **102**, 127404 (2009).
24) “Single dot spectroscopy of core/barrier/shell nanocrystals”, E.A. Dias, A. Petrik, D.S. English, and P. Kambhampati, *J. Phys. Chem. C*, **112**, 14229 (2008) - Letter.
23) “State-to-state exciton dynamics in quantum dots: size dependent biexciton interactions and excited state trapping dynamics”, S.L. Sewall, R.R. Cooney, K.E.H. Anderson, D.M. Sagar, E.A. Dias, and P. Kambhampati, *J. Chem. Phys.*, **129**, 084701 (2008).
22) “Size dependent, state-resolved studies of exciton-phonon couplings in strongly confined semiconductor quantum dots”, D. M. Sagar, Ryan R. Cooney, Samuel L. Sewall, Eva A. Dias, Mirela M. Barsan, Ian S. Butler, and Patanjali Kambhampati, *Phys. Rev. B.*, **77**, 235321 (2008).

21) “State-resolved exciton-phonon couplings in CdSe semiconductor quantum dots”, D.M. Sagar, R.R. Cooney, S.L. Sewall,, and P. Kambhampati, *J. Phys. Chem. C.,* **112**, 9124 (2008) - Letter.
20) “Noise Analysis and Noise Reduction Methods in kilohertz Pump-Probe Experiments”, K.E.H. Anderson, S.L. Sewall, R.R. Cooney, and P. Kambhampati, *Rev. Sci. Instrum.*, **78**, 073101 (2007).
19) “Unified Picture of Electron and Hole Relaxation Pathways in Semiconductor Quantum Dots”, R.R. Cooney, S.L. Sewall, E.A. Dias, D.M. Sagar, K.E.H. Anderson, and P. Kambhampati, *Phys. Rev. B.*, **78**, 245311 (2007).
18) “Breaking the Phonon Bottleneck for Holes in Semiconductor Quantum Dots”, R.R. Cooney, S.L. Sewall, K.E.H. Anderson, E.A. Dias, and P. Kambhampati, *Phys. Rev. Lett.*, **98**, 177403 (2007).
17) “Light Harvesting and Carrier Transport in Core/Barrier/Shell Semiconductor Nanocrystals”, E.A. Dias, S.L. Sewall, and P. Kambhampati, *J. Phys. Chem. C*, **111**, 708 (2007).
16) “State-to-state exciton dynamics in semiconductor quantum dots”, S.L. Sewall, R.R. Cooney, K.E.H. Anderson, E.A. Dias and P. Kambhampati, *Phys. Rev. B.*, **74**, 235328 (2006).

Postdoctoral:

15) “A Femtosecond Multi-Color Pump-Probe Study of Ultrafast Electron Transfer of $(NH_3)_5Ru^{III}NCRu^{II}(CN)_5^-$ in Aqueous Solution”, D.H. Son, P. Kambhampati, T.W. Kee and P.F. Barbara, *J. Phys. Chem. A*, 106, 4591 (2002).
14) “Solvation Dynamics of the Hydrated Electron Depends on its Initial Degree of Electron Delocalization”, P. Kambhampati, D.H. Son, T.W. Kee and P.F. Barbara, *J. Phys. Chem. A*, 106, 2374 (2002).
13) “One-Photon UV Detrapping of the Hydrated Electron”, D.H. Son, P. Kambhampati, T.W. Kee and P.F. Barbara, *Chem. Phys. Lett.*, 342, 571 (2001).
12) “A Unified Electron Transfer Model for the Different Precursors and Excited States of the Hydrated Electron”, T.W. Kee, D.H. Son, P. Kambhampati, and P.F. Barbara, *J. Phys. Chem. A,* 105, 8434 (2001).
11) “Delocalizing Electrons in Water with Light”, D.H. Son, P. Kambhampati, T.W. Kee and P.F. Barbara, *J. Phys. Chem. A,* 105, 8269 (2001).
10) “Solvent Effects on Vibrational Coherence and Ultrafast Reaction Dynamics in the Multi-color Pump-Probe Spectroscopy of Intervalence Electron Transfer”, P. Kambhampati, D.H. Son, T.W. Kee and P.F. Barbara, *J. Phys. Chem. A*, 104, 10637 (2000).
9) “Femtosecond Multicolor Pump-Probe Investigations of Ultrafast Electron Transfer of $(NH_3)_5Ru^{III}NCRu^{II}(CN)_5^-$ in Aqueous Solution”, D.H. Son, P. Kambhampati, T.W. Kee and P.F. Barbara, In *Ultrafast Phenomena XII*, Springer Series in Chemical Physics, T. Elsaesser, Ed. (2000).

Doctoral:

8) “Probing Photoinduced Charge Transfer at Atomically Smooth Metal Surfaces using Surface Enhanced Raman Scattering”, P. Kambhampati, O.-K Song and A. Campion, *Phys. Status Solidi A*, 175, 233 (1999).
7) “Surface Enhanced Raman Scattering as a Probe of Adsorbate-Substrate Charge-Transfer Excitations”, P. Kambhampati and A. Campion, *Surf. Sci.*, 427, 115 (1999). (Invited paper)
6) “Adsorbate-Substrate Charge-Transfer Excited States: Dynamics, Localization, and SERS”, P. Kambhampati and A. Campion, *Proceedings of the XVIth International Conference on Raman Spectroscopy*, Wiley Interscience, New York (1998).

5) “Chemical Enhancement in Surface Enhanced Raman Scattering”, P. Kambhampati and A. Campion, *Proceedings of the XVIth International Conference on Raman Spectroscopy*, Wiley Interscience, New York (1998). (Invited paper)
4) “Two Dimensional Localization of Adsorbate/Substrate Charge-Transfer Excited States of Molecules Adsorbed on Metal Surfaces”, P. Kambhampati, M.C. Foster and A. Campion, *J. Chem. Phys*, 110, 551 (1999).
3) “Surface Enhanced Raman Scattering”, A. Campion and P. Kambhampati, *Chem. Soc. Rev.*, 27, 241 (1998). (Invited paper)
2) “On the Chemical Mechanism of Surface Enhanced Raman Scattering: Experiment and Theory”, P. Kambhampati, C.M. Child, M. C. Foster and A. Campion, *J. Chem. Phys.*, 108 , 5013 (1998).
1) “On the Role of Charge Transfer Resonances in the Chemical Mechanism of Surface Enhanced Raman Scattering”, P. Kambhampati, C.M. Child and A. Campion, *J. Chem. Soc., Faraday Trans.*, 92, 4775 (1996). (Invited paper)

Scientific Presentations

Principal Investigator:

Invited Colloquia at Universities and National Labs:

48) “Surface Science on the Nanoscale and Optical Analogs of 2D-NMR”, *Department of Physics, Ottawa University*, Canada, 2018.
47) “Surface Science on the Nanoscale and Optical Analogs of 2D-NMR”, *Department of Chemistry, University of Oregon*, USA, 2018.
46) “Surface Science on the Nanoscale and Optical Analogs of 2D-NMR”, *Department of Chemistry, University of Southern California*, USA, April 2018.
45) “Surface Science on the Nanoscale and Optical Analogs of 2D-NMR”, *Department of Chemistry, UCLA*, USA, 2018.
44) “Surface Science on the Nanoscale and Optical Analogs of 2D-NMR”, *Department of Chemistry, Texas A&M University*, USA, 2018.
43) “Excitons in Semiconductor Quantum Dots: Design principles for lasers, optical switches, and LEDs”, *Department of Physics, Concordia University*, Canada, November 2016.
42) “Excitons in Semiconductor Quantum Dots: Design principles for lasers, optical switches, and LEDs”, *Department of Chemistry, University of Toronto*, Canada, September 2016.
41) “Excitons in Semiconductor Quantum Dots: Design principles for lasers, optical switches, and LEDs”, *Department of Electrical Engineering, University of Toronto*, Canada, June 2014.
40) “Excitons in Semiconductor Quantum Dots: Design principles for lasers, optical switches, and LEDs”, *Department of Chemistry, Wichita State University, USA,* April 2014.
39) “Excitons in Semiconductor Quantum Dots: Design principles for lasers, optical switches, and LEDs”, *Department of Chemistry, University of Minnesota*, USA, September 2013.
38) “Excitons in Semiconductor Quantum Dots: Design principles for lasers, optical switches, and LEDs”, *Department of Chemistry, University of Wisconsin at Madison*, USA, April 2013.
37) “Excitons in Semiconductor Quantum Dots: Design principles for lasers, optical switches, and LEDs”, *Department of Chemistry, University of Illinois at Urbana-Champaign*, USA, March 2013.
36) “Excitons in Semiconductor Quantum Dots: Design principles for lasers, optical switches, and LEDs”, *Department of Physics, University of Michigan*, USA, November 2012.
35) “Excitons in Semiconductor Quantum Dots: Design principles for lasers, optical switches, and LEDs”, *Department of Chemistry, Michigan State University*, USA, November 2012.

34) “Excitons in Semiconductor Quantum Dots: Design principles for lasers, optical switches, and LEDs”, *Department of Physics, McGill University*, USA, September 2012.
33) “Excitonics: Unraveling exciton dynamics in quantum dots”, *Columbia University*, USA, September 2011.
32) “Excitonics: Unraveling exciton dynamics in quantum dots”, *Department of Chemistry, University of Pennsylvania*, USA, September 2011.
31) “Excitonics: Unraveling exciton dynamics in quantum dots”, *Atomic/Molecular/Optical Science Seminar, University of British Columbia*, Canada, April 2011.
30) “Excitonics: Unraveling exciton dynamics in quantum dots”, *Department of Chemistry, University of Victoria*, Canada, April 2011.
29) “Excitonics: Unraveling exciton dynamics in quantum dots”, *Department of Chemistry, Simon Fraser University*, Canada, April 2011.
28) “Excitonics: Unraveling exciton dynamics in quantum dots”, *Department of Chemistry, Emory University,* USA, February 2011.
27) “Excitonics: Unraveling exciton dynamics in quantum dots”, *Department of Chemistry, Princeton University*, USA, February 2011.
25) “Excitonics: Unraveling exciton dynamics in quantum dots”, *Materials Research Science and Engineering Center, University of Chicago*, USA, November 2010.
24) “Excitonics: Unraveling exciton dynamics in quantum dots”, *Materials Research Science and Engineering Center, Northwestern University*, USA, November 2010.
23) “Excitonics: Unraveling exciton dynamics in quantum dots”, *Department of Chemistry, University of Washington*, USA, October 2010.
22) “State-Resolved Exciton Dynamics in Quantum Dots”, *MIT/Harvard Center for Excitonics,* USA, April 2010.
21) “State-Resolved Exciton Dynamics in Quantum Dots”, *Department of Physics, University de Montreal,* Canada, February 2010.
20) “State-Resolved Exciton Dynamics in Quantum Dots”, in *Modern Optics Seminar Series, Massachusetts Institute of Technology,* USA, December 2009.
19) “State-Resolved Exciton Dynamics in Quantum Dots”, *Department of Physics, McGill University,* Canada, October 2009
18) “State-Resolved Exciton Dynamics in Quantum Dots”, *Department of Chemistry, Queens University,* Canada, September 2009
17) “State-Resolved Exciton Dynamics in Quantum Dots”, *Naval Research Laboratory,* USA, August 2009.
16) “State-Resolved Exciton Dynamics in Quantum Dots”, *Department of Chemistry, Rice University,* USA, February 2009
15) “State-Resolved Exciton Dynamics in Quantum Dots”, *Department of Chemistry, Texas A&M University,* USA, February 2009
14) “State-Resolved Exciton Dynamics in Quantum Dots”, *IGERT Optics Seminar, University of Colorado & Joint Institute for Laboratory Astrophysics,* USA, October 2008.
13) “State-Resolved Exciton Dynamics in Quantum Dots”, *Department of Physics, McGill University,* Canada, September 2008
12) “State-Resolved Exciton Dynamics in Quantum Dots”, *Department of Biomedical Engineering, McGill University,* Canada, May 2008
11) “State-Resolved Exciton Dynamics in Quantum Dots”, *National Research Council – Institute for Microstructural Sciences,* Ottawa, Canada, May 2008
10) “State-Resolved Exciton Dynamics in Quantum Dots”, *Department of Chemistry, University of Sherbrooke,* Canada, March 2008

9) “Ultrafast Dynamics in Nanoscale Semiconductors”, *Department of Chemistry, University of Texas,* USA, February 2008
8) “State-Resolved Exciton Dynamics in Quantum Dots”, *Department of Chemistry, McGill University,* Canada, January 2008
7) “Ultrafast Dynamics in Nanoscale Semiconductors”, *Department of Chemistry, University of Maryland*, USA, November 2007
6) “Ultrafast Dynamics in Nanoscale Semiconductors”, *Department of Chemistry, McMaster University*, Canada, October 2007
5) “Ultrafast Dynamics in Nanoscale Semiconductors”, *Department of Chemistry, University of Toronto*, Canada, October 2007
4) “Ultrafast Dynamics in Nanoscale Semiconductors”, *Centre for Optics and Photonics of Lasers, University of Laval*, Canada, January 2007
3) “Ultrafast Dynamics in Nanoscale Semiconductors”, *Physics Department, University of Montreal*, January 2007
2) “Moving Charges Around in Semiconductor Nanocrystal Environments”, *American Chemical Society Lexington Section*, University of Kentucky, USA, November 2005
1) “Moving Charges Around in Semiconductor Nanocrystal Environments”, *National Research Council – Steacie Institute for Molecular Sciences*, Ottawa, Canada, November 2005

Conference presentations:

68) “2DE spectroscopy of perovskites and quantum dots”, International Conference on Ultrafast Phenomena, Montreal Canada, June 2022 (Talk)
67) “2DE spectroscopy of perovskites and quantum dots”, Coherent Multidimensional Spectroscopy Conference, Austin USA, July 2022. (Invited talk)
66) “Solvation Dynamics of Perovskites”, McGill Molecular Science Mini-Meeting, Montreal, Canada, June 2022 (Invited talk)
65) “Solvation Dynamics of Perovskites”, Ludwig Maximilians Univerisity, Munich, Germany, May 2022 (Invited talk)
64) “Solvation Dynamics of Perovskites”, Perovskite Society of India, India, April 2022 (Invited talk)
63) “Solvation Dynamics of Perovskites”, NanoGe Conference, Barcelona Spain, October 2021 (Invited talk)
62) “Collinear Two-Dimensional Electronic Spectroscopy”, Pacifichem Conference, Honolulu, USA, December 2021 (Invited talk)
61) “Collinear Two-Dimensional Electronic Spectroscopy”, Coherent Multidimensional Spectroscopy Conference, Chicago, USA, July 2020 (Invited talk)
60) “Ultrafast polaron and exciton dynamics in perovskite nanocrystals”, Gordon Research Conference on Nanocrystals, Switzerland, July 2020 (Invited talk)
59) “On the nature of the surface of semiconductor nanocrystals”, American Chemical Society Annual Meeting, Orlando, USA, April 2019 (Invited talk)
58) “White light generation from the surface of nanocrystals”, Photonics North Conference, Niagara Canada, June 2020 (Invited talk).
57) “Surface Science on the Nanoscale and Optical Analogs of 2D-NMR”, *Symposium of Chemical Physics, University of Waterloo*, Canada, July 2018. (Invited talk)
56) “On the nature of the surface of semiconductor nanocrystals”,10th International Conference on Quantum Dots, Toronto, Canada July 2018 (Invited talk)
55) “On the nature of the surface of semiconductor nanocrystals”, American Chemical Society Annual Meeting, New Orleans, USA, March 2018 (Invited talk)

54) “On the nature of the surface of semiconductor nanocrystals”, International Conference on Fundamental Processes in Semiconductor Nanocrystals, Nano Ge meeting, Spain, September 2017 (Invited talk)
53) “Coherent Two-Dimensional Electronic Spectroscopy using dual phase locked pulse shapers for polarization shaping”, Canadian Society of Chemistry Annual Meeting, Toronto, Canada, May 2017 (Invited talk)
52) “On the nature of the surface of semiconductor nanocrystals”, Gordon Reseach Conference on Semiconductor Nanocrystals, Vermont USA, August 2017 (poster)
51) “On the nature of the surface of semiconductor nanocrystals”, Light Opening up Frontier of DNA and Nanocrystal Superstructures, SPIRITS Conference, Japan, February 2016 (Plenary Lecture)
50) “Coherent Two-Dimensional Electronic Spectroscopy using dual phase locked pulse shapers for polarization shaping”, Pacifichem Conference, Hawaii USA, December 2015 (Invited talk, declined)
49) “Excitons in quantum dots as a platform for advanced optoelectronic devices”, Canadian Society for Chemistry Annual Meeting, Ottawa Canada, May 2015 (Invited talk)
48) “Excitons in quantum dots as a platform for advanced optoelectronic devices”, Center for Ultrafast Imaging International Symposium, Max Planck Institute for Structural Dynamics, Hamburg Germany, November 2014 (Invited talk)
47) “Excitons in quantum dots as a platform for advanced optoelectronic devices”, International Conference on Fundamental Processes in Semiconductor Nanocrystals, Oxford, United Kingdom, September 2014 (Invited talk)
46) “Excitons in quantum dots as a platform for advanced optoelectronic devices”, Gordon Research Conference on Semiconductor Nanocrystals, Providence Rhode Island USA, July 2014 (Invited talk)
45) “Excitons in quantum dots as a platform for advanced optoelectronic devices”, 6th International Conference on Nano Science and Technology, India, March 2014 (Invited talk)
44) “Excitons in quantum dots as a platform for advanced optoelectronic devices”, T*he Dead Sea Workshop on Exciton dynamics in Natural and Man-made Systems*, Hebrew University, Israel, February 2013 (Invited talk)
43) Complete electric field shaping for coherent multidimensional spectroscopy using dual acousto-optic pulse shapers”, *International Conference on Ultrafast Phenomena*, Lausanne, Switzerland, July 2012 (poster)
42) “Excitons in quantum dots as a platform for advanced optoelectronics”, *Photonics North*, Montreal, Canada, May 2012 (Invited talk)
41) “The structure and dynamics of multiexcitons in quantum dots”, *American Chemical Society,* Annual Meeting, Philadelphia, USA, August 2012 (Invited Talk)
40) “A unified picture of the nature of the surface of semiconductor nanocrystals”, *Materials Research Society,* Annual Meeting, Boston, USA, November 2011
39) “The structural dynamics of multiexcitons in semiconductor quantum dots”, *Materials Research Society,* Annual Meeting, Boston, USA, November 2011
38) “The structure and dynamics of multiexcitons in quantum dots”, *International Conference on Photochemistry,* XXV Meeting, Beijing, China, August 2011 (Invited Talk)
37) “The structure and dynamics of multiexcitons in quantum dots”, *American Chemical Society,* Annual Meeting, Denver, USA, August 2011 (Invited Talk)
36) “The structure and dynamics of multiexcitons in quantum dots”, *Gordon Research Conference,* Mount Holyoke, MA, USA, August 2011.

35) “The structure and dynamics of multiexcitons in quantum dots”, Grande conférence sur les matériaux de pointe: Energy and molecular materials, *Université de Montréal,* Canada, November 2010
34) “State-resolved exciton dynamics”, *Physical Chemistry of Interfaces and Nanomaterials" in SPIE NanoScience and Engineering conference*, San Diego USA, August 2010 (Invited talk)
33) “A multipath picture of coherent phonon generation mechanism in quantum dots *Materials Research Society,* Annual Meeting, Boston DC USA, November 2009 (Talk)
32) “The eigenstate spectrum of multiexcitons in quantum dots”, *Materials Research Society,* Annual Meeting, Boston DC USA, November 2009 (Talk)
31) “Coupled quantum dot / quantum shell systems: single particle blinking and femtosecond dynamics”, *Materials Research Society,* Annual Meeting, Boston DC USA, November 2009 (Talk)
30) “State-Resolved Exciton Dynamics in Quantum Dots”, *American Chemical Society,* Annual Meeting, Washington DC USA, August 2009 (Talk)
29) “Coupled quantum dot / quantum shell systems: single particle blinking and femtosecond dynamics”, *American Chemical Society,* Annual Meeting, Washington DC USA, August 2009 (Invited talk)
28) “State-Resolved Exciton Dynamics in Quantum Dots”, *Gordon Research Conference,* Mount Holyoke, MA, USA, July 2009 (Poster)
27) “State-Resolved Exciton Dynamics in Quantum Dots”, *Excited State Processes in Electronic and Bio Nanomaterials,* Santa Fe, USA, July 2009 (Invited talk)
26) “State-Resolved Exciton Dynamics in Quantum Dots”, *Canadian Society for Chemistry,* Annual Meeting, Canada, June 2009 (Invited talk)
25) “Coupled quantum dot / quantum shell systems: single particle blinking and femtosecond dynamics”, *American Physical Society*, Annual Condensed Matter Meeting, Pittsburgh, March 2009 (Talk).
24) “Creating an artificial periodic table using quantum dots.”, *American Physical Society*, Annual Condensed Matter Meeting, Pittsburgh, March 2009 (Talk).
23) “State-resolved studies of coherent phonons in quantum dots”, *Optical Society of America*, Annual meeting, Rochester, October 2008 (talk)
22) “An excitonic state-resolved approach to coherent phonons in quantum dots: Generation and relaxation”, *American Chemical Society*, Annual meeting, New Orleans, April 2008 (poster)
21) “State-resolved optical pumping and single exciton gain in CdSe quantum dots”, *American Chemical Society*, Annual meeting, New Orleans, April 2008 (talk)
20) “An excitonic state-resolved approach to coherent phonons in quantum dots: Generation and relaxation”, *American Physical Society*, Annual meeting, New Orleans, March 2008 (poster)
19) “Coupled quantum dot / quantum shell systems: optical gain, ultrafast charge transport, and single particle blinking”, *American Physical Society*, Annual meeting, New Orleans, March 2008 (talk)
18) “State-resolved optical pumping and single exciton gain in CdSe quantum dots”, *Materials Research Society*, Annual Meeting, Boston, November 2007 (Talk).
17) “Light harvesting and carrier transport in core/barrier/shell semiconductor nanocrystals”, *Canadian Society for Chemistry*, 90th Annual Meeting, Winnipeg, May 2007 (Talk)
16) “Ultrafast Dynamics in Nanoscale Semiconductors”, *Canadian Society for Chemistry*, 90th Annual Meeting, Winnipeg, May 2007 (Invited Talk)

15) “Light harvesting and carrier transport in core/barrier/shell semiconductor nanocrystals.”, *American Chemical Society*, 233rd National Meeting, Chicago, March 2007 (Poster).
14) “State-to-state femtosecond relaxation dynamics of excitons in semiconductor quantum dots.”, *American Chemical Society*, 233rd National Meeting, Chicago, March 2007 (Talk).
13) “Light harvesting and carrier transport in core/barrier/shell semiconductor nanocrystals.”, *American Physical Society*, Annual Condensed Matter Meeting, Denver, March 2007 (Poster).
12) “State-to-state femtosecond relaxation dynamics of excitons in semiconductor quantum dots.”, *American Physical Society*, Annual Condensed Matter Meeting, Denver, March 2007 (Talk).
11) “Evidence for Ultrafast Carrier Transport in Barrier Separated Quantum Dot / Quantum Shell Structures”, *Materials Research Society*, Annual Meeting, Boston, November 2006 (Poster).
10) “Initial Excitonic State Selective Ultrafast Dynamics of Semiconductor Quantum Dots”, *Materials Research Society*, Annual Meeting, Boston, November 2006 (Talk).
9) “Initial State Selective Femtosecond Dynamics of Semiconductor Quantum Dots”, *Optical Society of America*, Annual Meeting, Rochester, USA, October 2006 (Talk).

Postdoctoral:

8) “Spatial Migration and Photochemistry of the Hydrated Electron”, 220th American Chemical Society Meeting, Washington D.C, August 2000. (Talk)
7) “A comparison of the femtosecond dynamics of the photoinjected and equilibrated hydrated electron”, Radiation Chemistry, Gordon Conference, Plymouth, NH, June 2000. (Poster)
6) “Ultrafast Dynamics of Intervalence Electron Transfer”, Chemistry and Physics of Liquids, Gordon Conference, Plymouth, NH, June 1999. (Poster)

Doctoral:

5) “Surface Enhanced Raman Scattering on an Atomically Smooth Metal Surface”, Symposium on Vibrational Spectroscopy at Surfaces, Federation of Analytical Chemistry and Spectroscopy Societies, Austin, TX, October 1998. (Invited Talk)
4) “Adsorbate-Substrate Charge-Transfer Excited States: Excited State Dynamics, Spatial Localization and Surface Enhanced Raman Scattering on an Atomically Smooth Metal Surface”, XVIth International Conference on Raman Spectroscopy, Cape Town, South Africa, September 1998. (Poster)
3) “Chemical Recognition of Localized Surface Electronic Structure in Adsorbate-Substrate Charge Transfer Excited States”, 215th American Chemical Society Meeting, Dallas, TX, March 1998. (Talk)
2) “On the Surface Structure Dependence of Excited States of Molecules Adsorbed on Metal Surfaces: The Influence on the Chemical Mechanism of Surface Enhanced Raman Scattering”, 5th North American Chemical Congress, Cancun, Mexico, November 1997. (Poster)
1) “Charge Transfer Excitations and Surface Enhanced Raman Scattering: Dependence upon Crystal Face”, 213th American Chemical Society Meeting, San Francisco, CA, April 1997. (Poster)

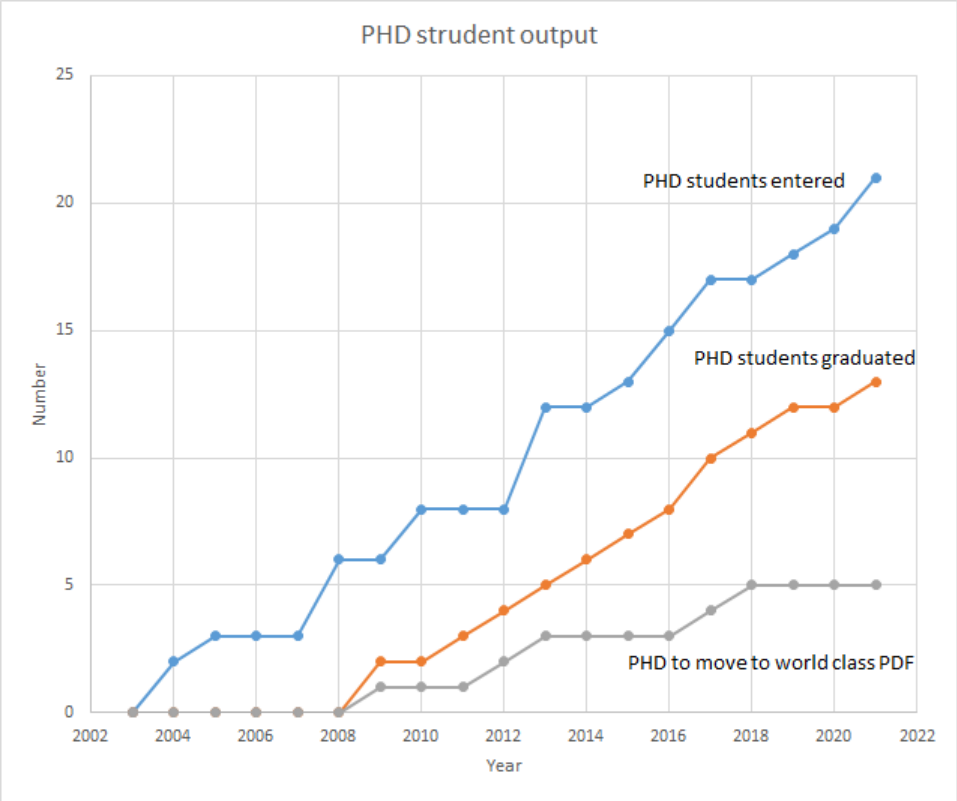
Research Supervision

Postdoctoral:

1. M. Sagar Dodderi, 7/2006 – 10/2008. Femtosecond laser spectroscopy.
2. Youssef Kamali, 4/2012 – 4/2013. Spectroscopic characterization of quantum dot LEDs.

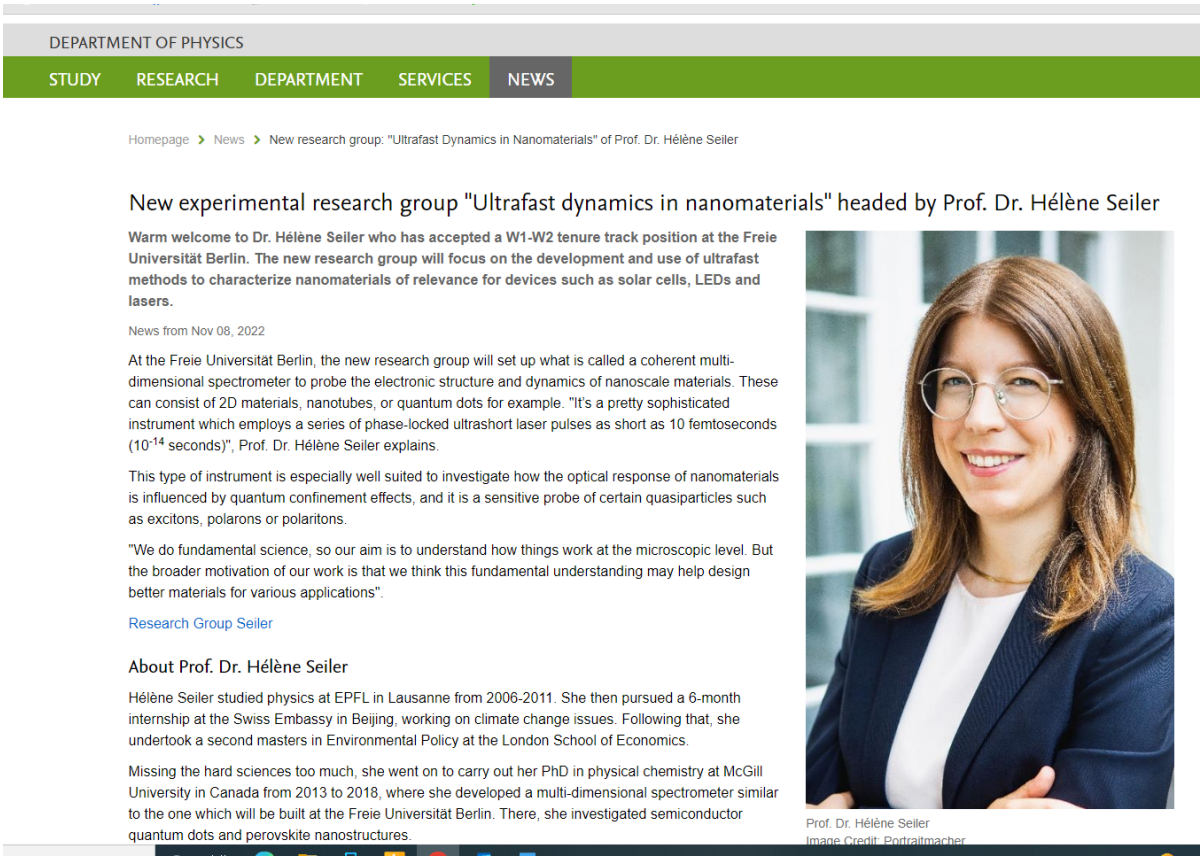
3. Amin Kabir, 9/2012 – 9/2013. Coherent multidimensional spectroscopy. Professor of Physics at University of Bahamas
4. Arnab Ghosh, 2/2022 -

Doctoral:



1. Samuel Sewall, Ph.D. student, 1/2004 – 10/2009.
    - State-resolved dynamics of excitons and multiexcitons in quantum dots.
    - McGill Graduate Studies Fellowship (2004). T. Sterry Hunt Award (2004, 2007), Alexander McFee Award (2005, 2007), David Simkin Award (2007), Robert Zamboni Chemistry Prize (2008), Alma Mater Travel Grant (2008), J.W. McConnell Fellowship (2008), McGill Majors Fellowship.
    - PHD 12/2009
    - Presently Instructor in McGill University Department of Chemistry
2. Ryan Cooney, Ph.D. student, 9/2004 – 9/2009.
    - State-resolved dynamics and optical gain in quantum dots
    - T. Sterry Hunt Award (2007), FQRNT Doctoral Fellowship (2008), CSC Montreal 2001 Travel Award (2008), Governor General's Medal (2010, *best PHD thesis in University*), Ambridge Award (2010, *best PHD thesis in Faculty of Science*), Carl Winkler Award (2010, *best PHD thesis in Department of Chemistry*), Udho Parsini Diwan Award (2010, best paper in Chemistry Department), NSERC Postdoctoral Fellowship (2010).
    - PHD 11/2009.
    - NSERC PDF with RJD Miller at University of Toronto
    - Presently staff scientist at Canadian Space Agency

3. Eva Dias, Ph.D. student, 9/2005 – 12/2011.
    - Synthesis and ultrafast dynamics of core/barrier/shell nanostructures
    - NSERC CGS-M Fellowship (2005), NSERC PGS-M Fellowship (2006), NSERC PGS-D2 Fellowship (2007-2008), David Simkin Award (2008), GREAT Award (2009), CSC Montreal Award (2009), Zamboni Award (2010).
    - PHD 2011
4. Pooja Tyagi, Ph.D. student, 9/2008 – 12/2012.
    - Femtosecond spectroscopy of nanostructures
    - Max Binz Fellowship (2009), David Simkin Award (2010), GREAT Award (2010), Chan Fellowship (2010), Pall Dissertation Fellowship
    - PHD 2012
    - PDF at MIT
5. Jonathan Mooney, Ph.D. student, 9/2008 – 5/2014
    - Femtosecond spectroscopy of nanostructures
    - Steward Fellowship (2010), FQRNT Fellowship (2011), T Sterry Hunt Award (2011), GREAT Award (2012, 2013)
    - PHD 2014
    - Presently at McGill Law School
6. Jonathan Saari, Ph.D. student, 9/2008 – 12/2013
    - Femtosecond spectroscopy of nanostructures
    - GREAT Award (2012, 2013)
    - PHD 2013.
    - PDF at ETH Zurich. Presently Founder and CTO of Airy 3D.
7. Michael Krause, Ph.D. student, 1/2010 – /2015
    - Femtosecond spectroscopy of nanostructures
    - David Simkin Award (2012), Molson & Hilton Hart Fellowship (2012), T. Sterry Hunt Award (2011), GREAT Award (2013, 2014), CSC 2001 Award (2014), GEF Travel (2015), Whitehead Award (2015).
    - PhD 2014
    - Presently at Boston Consulting
8. Brenna Walsh, Ph.D. student, 9/2010 – 2016
    - Femtosecond spectroscopy of nanostructures
    - GREAT Award (2013)
    - PhD in 2016
    - Presently environmental consultant
9. Helene Seiler, Ph.D. student, 1/2013 – 2017
    - Development and application of Coherent Multidimensional Spectroscopy
    - Doctoral Mobility (Swiss National Research Foundation), Whitehead award (2015), Swiss Travel Grant (2016), GEF Travel (2015), GREAT Award (2016), Departmental Travel Award (2017)
    - PhD in 2017
    - Presently Assistant Professor at Free University of Berlin, Germany: https://www.physik.fu-berlin.de/en/news/2022-helene-seiler.html



DEPARTMENT OF PHYSICS

STUDY RESEARCH DEPARTMENT SERVICES NEWS

Homepage > News > New research group: "Ultrafast Dynamics in Nanomaterials" of Prof. Dr. Hélène Seiler

New experimental research group "Ultrafast dynamics in nanomaterials" headed by Prof. Dr. Hélène Seiler

Warm welcome to Dr. Hélène Seiler who has accepted a W1-W2 tenure track position at the Freie Universität Berlin. The new research group will focus on the development and use of ultrafast methods to characterize nanomaterials of relevance for devices such as solar cells, LEDs and lasers.

News from Nov 08, 2022

At the Freie Universität Berlin, the new research group will set up what is called a coherent multi-dimensional spectrometer to probe the electronic structure and dynamics of nanoscale materials. These can consist of 2D materials, nanotubes, or quantum dots for example. "It's a pretty sophisticated instrument which employs a series of phase-locked ultrashort laser pulses as short as 10 femtoseconds (10^{-14} seconds)", Prof. Dr. Hélène Seiler explains.

This type of instrument is especially well suited to investigate how the optical response of nanomaterials is influenced by quantum confinement effects, and it is a sensitive probe of certain quasiparticles such as excitons, polarons or polaritons.

"We do fundamental science, so our aim is to understand how things work at the microscopic level. But the broader motivation of our work is that we think this fundamental understanding may help design better materials for various applications".

Research Group Seiler

About Prof. Dr. Hélène Seiler

Hélène Seiler studied physics at EPFL in Lausanne from 2006-2011. She then pursued a 6-month internship at the Swiss Embassy in Beijing, working on climate change issues. Following that, she undertook a second masters in Environmental Policy at the London School of Economics.

Missing the hard sciences too much, she went on to carry out her PhD in physical chemistry at McGill University in Canada from 2013 to 2018, where she developed a multi-dimensional spectrometer similar to the one which will be built at the Freie Universität Berlin. There, she investigated semiconductor quantum dots and perovskite nanostructures.

Prof. Dr. Hélène Seiler
Image Credit: Portraitmacher

10. Lakshay Jethi, Ph.D. student, 1/2013 – 2017
    - Synthesis and characterization of semiconductor quantum dots
    - T. Sterry Hunt Award (2015), GREAT Award (2016), GEF travel Award (2017)
    - Presently consultant and Boston Consultants
11. Samuel Palato, Ph.D. student, 9/2013 – present
    - Development and application of Coherent Multidimensional Spectroscopy
    - Hydro Quebec Doctoral Award (2013), NSERC CGSD (2013, 2014, 2015, 2016), GREAT Award (2016), Departmental Travel Award (2017)
    - Presently PDF at Fritz Haber Institut, Germany.
12. Timothy Mack, Ph.D. student, 9/2013 – 2019 (shared with Mark Andrews, Chemistry)
    - Synthesis and characterization of semiconductor quantum dots
    - Bourse de doctorat Hydro-Québec en science (2015), T. Sterry Hunt Award in Chemistry (2014), GREAT travel Award (2016), GEF travel Award (2015, 2017)
    - Employed
13. Colin Sonnichsen, Ph.D Student, 9/2015 – 1/2021
    - Development and application of Coherent Multidimensional Spectroscopy
    - T. Sterry Hunt Award (2017), GREAT travel Award (2017), Hart Award (2017)
    - PhD 2021
14. Patrick Brosseau, Ph.D. Student, 9/2018 – present
    - Development and application of Coherent Multidimensional Spectroscopy
15. Harry Baker, Ph.D student, 9/2016 – 9/2021
    - Development and application of Coherent Multidimensional Spectroscopy
16. Dallas Strandell, Ph.D. student, 9/2017 – present
    - Synthesis and characterization of semiconductor quantum dots
17. Cameron Reid, Ph.D. student, 9/2018 – 9/2021

- Ultrafast spectroscopy
- Majors Fellowship (2020)

18. Davide Zenatti, Ph.D. student, 9/2022 – present
    - Ultrafast spectroscopy
19. Priya Nagpal, Ph.D. student, 9/2022 – present
    - Ultrafast spectroscopy

Masters:

1. Kevin Anderson, M.Sc. (8/2006), 1/2004 – 8/2006.
    - Fabrication of nanostructures and systems programming, data acquisition and fitting.
    - Presently patent agent
2. Gregory Bell, M.Sc., (2016) (shared with David Cooke, Physics)
    - Ultrafast THz spectroscopy
    - Presently lab instructor in McGill Physics
3. Patrick Brosseau, M.Sc. (2018)
    - Two-Dimensional Electronic Spectroscopy
    - Presently PHD student in Kambhampati group
4. Gabriela Esquivel, Ph.D. student, 9/2017 – present (shared with Linda Reven, Chemistry)
    - Synthesis and characterization of semiconductor quantum dots
5. Kayla Cummings-Premack, M.Sc. student, 9/2020 – 8/2022
    - Ultrafast spectroscopy

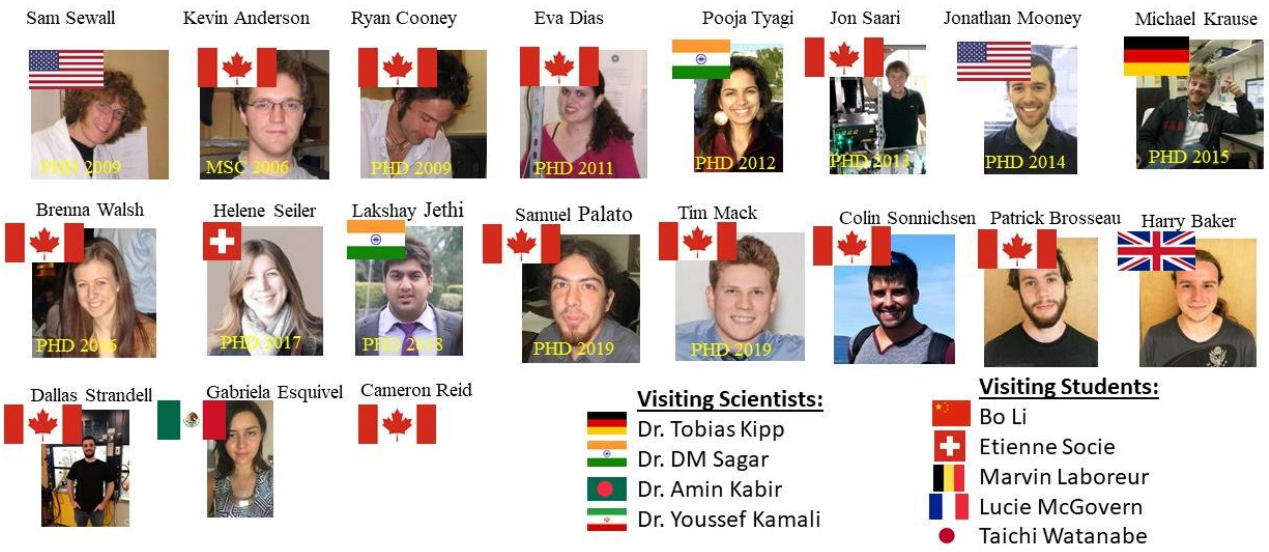
Undergraduate:

1. Madeleine Jensen-Fontaine, undergraduate summer student, 5/2004 – 8/2004. Fabrication of nanostructures.
2. Quanyan Zhu, undergraduate summer student, 5/2005 – 8/2005. Systems programming.
3. Ashlee Jollymore, CHEM 480 honors project, 9/2005 – 5/2006. Fabrication of nanostructures.
4. Anita Chan, CHEM 480 honors project, 9/2006 – 5/2007. Fabrication and calculations of nanostructures.
5. Jonathan Mooney, undergraduate summer student, 5/2007 – 8/2007. Raman spectroscopy of quantum dots. PHD student at McGill.
6. Josue Lucate, undergraduate honors student, 9/2008 – 4/2009. Synthesis of quantum dots and nanostructures. PHD student at McGill.
7. Klaudia Jumaa, NSERC summer student, 5/2009 – 8/2009. MD in Radiology.
8. Luigi De Marco, NSERC summer student, 5/2009 – 8/2009. PHD student at MIT.
9. Olivia Dinica, CHEM 480 honors project, 9/2009 – 4/2010. PHD student at Texas
10. Genevieve Clark. Chem 480 honors project. 5/2011 – 8/2011. PHD student at Washington
11. Sebastien Drake. Chem 470/480 honors project. 5/2015 – 8/2015.
12. Arnold Downey. McGill Chemistry Honors Project. 2017 – 2018
13. Rigel Zifkin. McGill Physics Undergraduate Honors Project. 2017 – 2018.
14. Joseph McGowan. McGill Physics Undergraduate Honors Project. 2017 – 2018.
15. Juliana Spinelli. McGill Chemistry Honors Project. 2018
16. Xinpu Chen. McGill Chemistry Honors Project. 2018 – 2019.
17. Chandler Bossaer. McGill Physics. Research Project. 2018.

18. Jack (Win) Felgenhauer, McGill Chemistry Summer Research Project. 2021
19. Samihat Rahman. Carleton College, Summer Research Fellow. 2021
20. Michel Mongeau, McGill Chemistry Honors Project, 2022 - 2023

Visiting researchers:

1. Dr. Tobias Kipp, Institut of Physical Chemistry, University of Hamburg, Germany. 2016 – 2017.
2. Taichi Watanabe. 3 month visiting PHD researcher from Department of Applied Physics, Osaka City University, Japan. 2017.
3. Lucie McGovern, 4 month visiting MSC researcher from École Normale Supérieure – PSL Research University, Paris, France. 2016.
4. Etienne Socie, 4 month visiting MSC researcher from École polytechnique fédérale de Lausanne. 2017.
5. Bo Li, 10 month visiting PHD researcher from Dept. of Physics, Harbin Institute of Technology, China. 2017 – 2018.
6. Marvin Laboureur, visiting MSC researcher from Department of Materials Science, University of Namur, Belgium. 2018.



Refereeing Reviewing and Service Activities

1. Granting Agencies: Natural Sciences and Engineering Research Council of Canada, Canada Foundation for Innovation, Department of Energy (USA), National Science Foundation (USA), as well as international refereeing for funding agencies in Germany, Israel, Belgium.
2. I review 50 papers a year for the following Journals: *Accounts of Chemical Research, ACS Nano, Applied Physics Letters, Applied Physics A, Applied Physics B, Chemical Physics Letters, Journal of the American Chemical Society, Journal of Chemical Physics, Journal of Luminescence, Journal of Physical Chemistry B, Journal of Physical Chemistry C, Journal of Physical Chemistry Letters, Nano Letters, Nature Nanotechnology, Optical Materials, Physical Review B, Physical Review Letters, Physics Letters A*
3. Beam Time Allocation Committee, Advanced Laser Light Source, INRS (2007, 2008, 2009, 2010).

4. Solar Energy Utilization Panel, United States Department of Energy, Washington D.C., (2/2007).[1]
5. National Science Foundation (USA) review panel, Washington D.C. (2011).[2]
6. Energy Frontiers Research Center Panel, United States Department of Energy, Washington D.C., (2/2015).[3]

Scientific Professional Activities

1. *Co-organizer*, Electrochemical Society, Quantum Dot session, Quebec City, Canada (2005).
2. *Session Chair*, Photoprocesses in Chemical Systems: New Directions for Photonics Applications, Canadian Society for Chemistry, Annual Meeting (2007)
3. *Session Chair*, Physical Chemistry of Interfaces and Nanomaterials" in SPIE NanoScience and Engineering conference, San Diego USA, August 2010.
4. *Co-organizer*, Canadian Society for Chemistry, Annual Meeting, Physical & Theoretical Chemistry Division, Montreal Canada, May 2011
5. *Co-organizer*, Materials Research Society, Annual Meeting, Symposium on Semiconductor Nanocrystals, Boston USA, November 2011
6. *Co-organizer,* Cross Border Workshop on Ultrafast Laser Science, Montreal (2012)
7. *Guest Editor* for special edition of the Journal of Physical Chemistry B – "Paul F. Barbara Festschrift" (2013)
8. *Discussion Leader*, Gordon Conference on Clusters and Nanocrystals, Mount Holyoke MA USA (2013)
9. Editorial Advisory Board, *Journal of Physical Chemistry Letters*, 2023 - onwards

TEACHING ACTIVITIES

Courses Taught

1. Chemistry 203, "Physical Chemistry for Life Sciences", (2006, 2007). 3 credits, 40 - 70 students, 39 hours, 39 lectures given.
2. Chemistry 204, "Physical Chemistry for the Biological Sciences", (2004, 2005, 2015, 201, 2020). 3 credits, 80 - 100 students, 39 hours, 39 lectures given.
3. Chemistry 213, "Physical Chemistry for Life Sciences – Quantum Mechanics", (2021). 3 credits, 70 students, 39 hours, 39 lectures given.
4. Chemistry 233, "Physical Chemistry for Engineers", (2014, 2015, 2018). 3 credits, 40 - 70 students, 39 hours, 39 lectures given.
5. Chemistry 243, 2 credits, "Physical Chemistry II – Thermodynamics and Kinetics", (2008, 2009). 2 credits, 35 students, 26 lectures in class, 26 lectures given
6. Chemistry 355, "Spectroscopy", (2011, 2012). 3 credits, 40 students, 39 hours, 39 lectures given.
7. Chemistry 534, "Nanoscience", guest lecture on quantum dots (2005, 2011, 2012)
8. Chemistry 556, 3 credits, "Advanced Quantum Mechanics", (2004 – 2008, 2010 - 2014). 3 credits, 8 students, 39 hours, 39 lectures given.

[1] On site review panel
[2] On site review panel
[3] On site review panel

9. Chemistry 647, “Special Topics”, (2004); Femtosecond Spectroscopy and Dynamics section of team taught course

SERVICE ACTIVITIES

Departmental Service:

1. Undergraduate Summer Research Coordinator (2007, 2008)
2. U3 Academic Advisor, Department of Chemistry, McGill University (2006-2007)
3. Curriculum committee, Department of Chemistry, McGill University (2003-2007).
4. U2 Academic Advisor, Department of Chemistry, McGill University (2005-2006)
5. U1 Academic Advisor, Department of Chemistry, McGill University (2004-2005)
6. U0 Academic Advisor, Department of Chemistry, McGill University (2004)
7. Faculty Search Committee, Department of Chemistry, McGill University (2004 - 2011)
8. Graduate Admissions Committee, Department of Chemistry, McGill University, (2011 – 2021)
9. Instruments Committee (2011, 2012, 2013, 2014, 2015, 2016, 2017)
10. McGill Chemical Society (2011, 2012)
11. Chemical Physics Convenor (2011, 2012, 2013)
12. Scholarship Committee (2011)
13. Graduate Recruiting Committee (2012)
14. Safety Committee (2019)
15. Research Statistics Advisor (2019)

University Service:

1. Committee on *“Survival Guide for New Faculty and Staff”,* Faculty of Science, McGill University (2008).
2. “*Books and Beakers”,* Faculty of Arts & Science Research Event, McGill University, March 2008
3. Fundraising meetings with McGill alumni, Faculty of Science, McGill University, Austin & Houston, TX, USA, February 2008.
4. *“Building the Future: How Nanotechnology is Changing our World”,* public lecture for McGill Alumni Association of Houston, McGill University fundraising, Houston, USA, February 2008 (Invited Talk).
5. *“Science Opportunities in Multiple Environments”,* Business Panel, Science Undergraduate Society, McGill University, January 2008 (Invited Talk)
6. Dean’s Breakfast for Returning Alumni, Homecoming 2007, McGill University (Fall 2007)
7. *“McGill’s Nanotools: Present and Future”*, member of Ad hoc advisory committee to the Dean of Science, Faculty of Science, McGill University (2007-2008)
8. Committee on Student Standing, Faculty of Science, McGill University (2007, 2008)
9. *“Soup and Science”,* Faculty of Science, McGill University (1/2007)
10. *“The Role of Timescale in Research: results from an odd trajectory”,* Society of Chemical Industry, Montreal, Canada, May 2004. (Invited Talk)

Thesis Committees:

1. Romain-Pierre Stomp Internal Examiner
2. Simiso Mkhonta Internal Examiner.
3. Samuel Clarke Internal Examiner.

4. Carla Spina Internal Examiner.
5. Vanessa Huxter (University of Toronto) External Examiner
6. Lynda Cockins Internal Examiner
7. Till Hagedorn Internal Examiner
8. Mehdi El-Ouali Internal Examiner
9. Tim Rochenchuck Internal Examiner.
10. Hieu Nguyen, Internal Examiner
11. Anderson, Kevin Internal/Supervisor
12. Bell, Gregory Internal/Cosupervisor2
13. Brosseau, Patrick Supervisor
14. Brosseau, Patrick Internal/Supervisor
15. Bruhacs, Andrew Internal Examiner
16. Chatelain, Robert Internal Examiner
17. Chowdhury, Mohammad External Member/Oral Defense
18. Cooney, Ryan Internal/Supervisor
19. Dias, Eva Supervisor
20. Jethi, Lakshay Supervisor
21. Krause, Michael Supervisor
22. Liu, Xianhe Internal Examiner
23. Mack, Timothy Supervisor1
24. Mooney, Jonathan Supervisor1
25. Morrison, Vance Internal Examiner
26. Otto, Martin External Member/Oral Defense
27. Palato, Samuel Supervisor
28. Palato, Samuel Supervisor
29. Rashid, Roksana Tonny Internal Examiner
30. Razavi-Pour, Sayyed Hadi External Member/Oral Defense
31. Saari, Jonathan Supervisor
32. Seiler, Hélène Supervisor
33. Sewall, Samuel Lewis Internal/Supervisor
34. Tyagi, Pooja Supervisor
35. Valverde Chávez, David Internal Examiner
36. Walsh, Brenna Supervisor
37. Zhang, Shaofei Internal Examiner
38. Zhang, Qungze (INRS), External Examiner
39. Rigel Zifken, Physics, Committee member
40. Qihua Zhang, Electrical Engineering, Committee member

References:

R.J. Dwayne Miller, University Professor
Departments of Chemistry & Physics, University of Toronto.
dmiller@lphys.chem.utoronto.ca

Gregory Scholes, William S Tod Professor of Chemistry
Department of Chemistry, Princeton University
gscholes@princeton.edu

Philippe Guyot-Sionnest, Professor
Departments of Chemistry & Physics, University of Chicago.
pgs@uchicago.edu

Moungi Bawendi, Lester Wolfe Professor in Chemistry
Department of Chemistry, MIT
mgb@mit.edu

Greg Engel, Professor
Department of Chemistry, University of Chicago
gsengel@uchicago.edu

Keith Nelson, Haslam and Dewey Professor of Chemistry
Department of Chemistry, MIT
kanelson@mit.edu

Benjamin Schwartz, Professor
Department of Chemistry, UCLA
schwartz@chem.ucla.edu

Albert Stolow, Canada Research Chair in Molecular Photonics
Department of Chemistry, Ottawa University
astolow@uottawa.ca

Xiaoyang Zhu , Howard Family Professor of Nanoscience
Department of Chemistry, Columbia University
xz2324@columbia.edu