

Curriculum Vitae

Patanjali Kambhampati
Department of Chemistry, McGill University
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Positions Held

- Associate member, Department of Physics, McGill University, Canada, 11/2010 - present
- Associate Professor, Department of Chemistry, McGill University, Canada. 5/2009 – present
- 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

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

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.

Invited review articles (6)

- “Semiconductor nanocrystals for light emissive technologies”, P. Kambhampati, *ACS Photonics*, **Submitted** (2016).
- “Linking surface chemistry to optical properties of semiconductor nanocrystals”, M. Krause and P. Kambhampati, *Phys. Chem. Chem. Phys.*, **17**, 18882 (2015).
- “On the kinetics and thermodynamics of excitons at the surface of semiconductor nanocrystals: Are there surface excitons?”, P. Kambhampati, *Chem. Phys.*, **446**, 92 (2015).
- “Multiexcitons in semiconductor nanocrystals: A platform for optoelectronics at high carrier concentration”, P. Kambhampati, *J. Phys. Chem. Lett.*, **3**, 1182 (2012).
- “Hot Exciton Relaxation Dynamics in Semiconductor Quantum dots: Radiationless Transitions on the Nanoscale”, P. Kambhampati, *J. Phys. Chem. C*, **115**, 22809 (2011). *Cover Article*.
- “Unraveling the structure and dynamics of excitons in semiconductor quantum dots”, P. Kambhampati, *Acc. Chem. Res.*, **44**, 1 (2011).

Primary research articles heightened in media (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).
Recipient of media coverage including >20 science news websites, including coverage in Laser Focus World
- “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).
Recipient of media coverage including >20 science news websites, Montreal Gazette, Vancouver Sun, and Television coverage in Global TV Montreal (2010)
- “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).
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).
- “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).
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.

Intellectual property and technology transfer

- “*Optical switching using multiexcitons in semiconductor nanocrystals / quantum dots*”, Report of Invention, McGill University ROI 13004, filed May 2012.
- “*Engineering white light emission from semiconductor nanocrystals / quantum dots*”, Report of Invention, McGill University ROI 1311, filed May 2012.
- “*Automated Coherent Two Dimensional Optical Spectrometer*”, Report of Invention, McGill University, filed March 2012.
- “*Method of pumping quantum dots lasers and amplifiers*”, Provisional US Patent: US 12/961,631.
- Consultancy and/or development efforts with Intellectual Ventures, NN-Labs (USA), QD Vision (USA), Fastlite (France)

Infrastructure created

- \$4,000,000 in infrastructure funding to date
- Two femtosecond laser labs of \$2M each.
- Featuring two state-of-the-art coherent 2D electronic spectroscopy instruments, dual OPA pump/probe spectroscopy, and time resolved emission spectroscopy with 1 ps time resolution

Quantitative analysis of research output

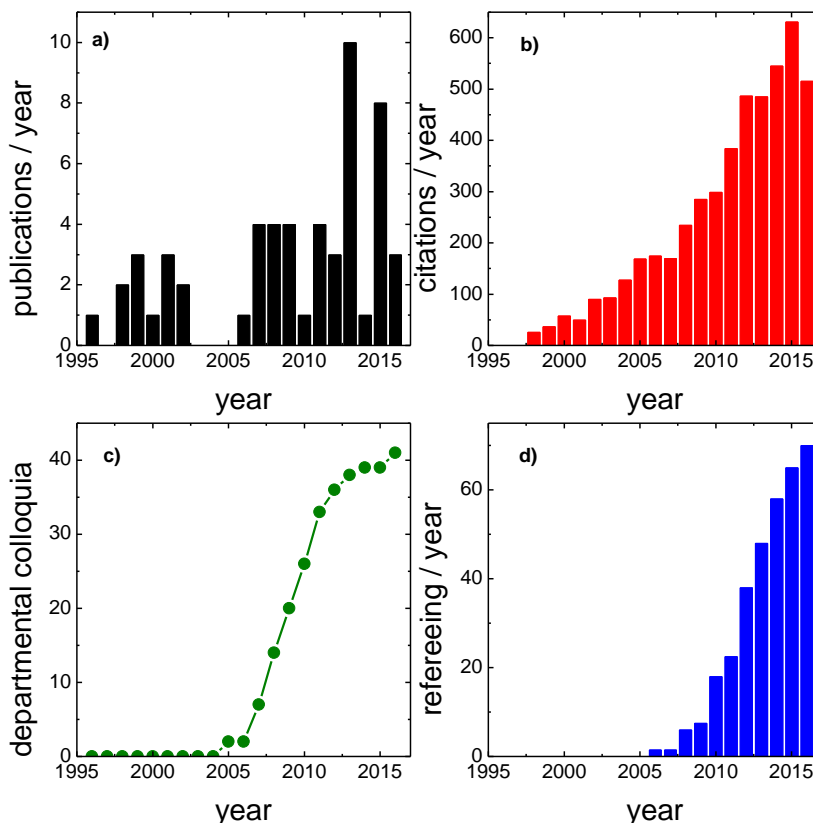


Figure 1: Quantitative analysis of research output. a) Publications per year. PI publications began in 2006. I was not doing research between 2001 – 2005, during which I was involved with a startup company (2.5 years) and also during which my lab at McGill was being renovated (2 years). b) Citations per year. c) Invited colloquia at Universities per year. d) Manuscripts refereed per year. (current year values are projections)

Full details of funding, publications, talks, student training

Funding:

- 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 Excitronics: 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 écoénergétique 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) “Neurophotronics 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 spectrométrie ultrarapide de matériaux nanostructures”, Operating grant, Nouveaux Chercheurs Program, Fonds Québécois de la Recherche sur la Nature et les Technologies, \$15,400/year – 3 years, (2004 – 2007). 100% to PK.
- 3) “Étude par spectrométrie ultrarapide de matériaux nanostructures”, Equipment grant, Nouveaux Chercheurs Program, Fonds Québécois 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.

Publications

Principal Investigator:

- 63) “Semiconductor nanocrystals for light emissive technologies”, P. Kambhampati, T Mack, L Jethi, ACS Photonics, **Submitted** (2017).
- 62) “A simple fibre based solution for coherent multidimensional spectroscopy in the visible regime, H Seiler, S Palato, B Schmidt, and P Kambhampati, *Opt. Lett.* **In Press**, (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. Reifsnnyder, 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 $(\text{NH}_3)_5\text{Ru}^{\text{III}}\text{NCRu}^{\text{II}}(\text{CN})_5^-$ 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 $(\text{NH}_3)_5\text{Ru}^{\text{III}}\text{NCRu}^{\text{II}}(\text{CN})_5^-$ 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:

- 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.
- 26) "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
- 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:

- 50) "On the nature of the surface of semiconductor nanocrystals", International Conference on Fundamental Processes in Semiconductor Nanocrystals, Spain, September 2017 (Invited talk)

- 49) "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)
- 48) "On the nature of the surface of semiconductor nanocrystals", Gordon Research Conference on Semiconductor Nanocrystals, Vermont USA, August 2017 (poster)
- 47) "Coherent Two-Dimensional Electronic Spectroscopy using dual phase locked pulse shapers for polarization shaping", Pacificchem Conference, Hawaii USA, December 2015 (Invited talk, declined)
- 46) "Excitons in quantum dots as a platform for advanced optoelectronic devices", Canadian Society for Chemistry Annual Meeting, Ottawa Canada, May 2015 (Invited talk)
- 45) "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)
- 44) "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)
- 43) "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)
- 42) "Excitons in quantum dots as a platform for advanced optoelectronic devices", 6th International Conference on Nano Science and Technology, India, March 2014 (Invited talk)
- 41) "Excitons in quantum dots as a platform for advanced optoelectronic devices", *The Dead Sea Workshop on Exciton dynamics in Natural and Man-made Systems*, Hebrew University, Israel, February 2013 (Invited talk)
- 40) Complete electric field shaping for coherent multidimensional spectroscopy using dual acousto-optic pulse shapers", *International Conference on Ultrafast Phenomena*, Lausanne, Switzerland, July 2012 (poster)
- 39) "Excitons in quantum dots as a platform for advanced optoelectronics", *Photonics North*, Montreal, Canada, May 2012 (Invited talk)
- 38) "The structure and dynamics of multiexcitons in quantum dots", *American Chemical Society*, Annual Meeting, Philadelphia, USA, August 2012 (Invited Talk)
- 37) "A unified picture of the nature of the surface of semiconductor nanocrystals", *Materials Research Society*, Annual Meeting, Boston, USA, November 2011
- 36) "The structural dynamics of multiexcitons in semiconductor quantum dots", *Materials Research Society*, Annual Meeting, Boston, USA, November 2011
- 35) "The structure and dynamics of multiexcitons in quantum dots", *International Conference on Photochemistry*, XXV Meeting, Beijing, China, August 2011 (Invited Talk)
- 35) "The structure and dynamics of multiexcitons in quantum dots", *American Chemical Society*, Annual Meeting, Denver, USA, August 2011 (Invited Talk)
- 35) "The structure and dynamics of multiexcitons in quantum dots", *Gordon Research Conference*, Mount Holyoke, MA, USA, August 2011.
- 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.
 - a. Professor of Physics at University of Bahamas
3. Amin Kabir, 9/2012 – 9/2013. Coherent multidimensional spectroscopy.
 - a. Professor of Physics at University of Bahamas

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.
 - a. Femtosecond spectroscopy of nanostructures
 - b. Max Binz Fellowship (2009), David Simkin Award (2010), GREAT Award (2010), Chan Fellowship (2010), Pall Dissertation Fellowship
 - c. PHD 2012
 - d. PDF at MIT
 5. Jonathan Mooney, Ph.D. student, 9/2008 – 5/2014
 - a. Femtosecond spectroscopy of nanostructures
 - b. Steward Fellowship (2010), FQRNT Fellowship (2011)
 - c. PHD 2014
 - d. Presently at McGill Law School
 6. Jonathan Saari, Ph.D. student, 9/2008 – 12/2013
 - a. Femtosecond spectroscopy of nanostructures
 - b. PHD 2013.
 - c. PDF at ETH Zurich.
 7. Michael Krause, Ph.D. student, 1/2010 – /2015
 - a. Femtosecond spectroscopy of nanostructures
 - b. David Simkin Award (2012), Molson & Hilton Hart Fellowship (2012)
 8. Brenna Walsh, Ph.D. student, 9/2010 – 2016
 9. Helene Seiler, Ph.D. student, 1/2013 – present
 - a. Doc.Mobility (Swiss National Research Foundation)
 - b. Whitehead award
 - c. Swiss Travel Grant
 10. Lakshay Jethi, Ph.D. student, 1/2013 – present
 11. Samuel Palato, Ph.D. student, 9/2013 – present
 - a. NSERC CGS-M
 12. Timothy Mack, Ph.D. student, 9/2013 – present (shared with Mark Andrews, Chemistry)

- a. Bourse de doctorat Hydro-Québec en science
 - b. T. Sterry Hunt Award in Chemistry
13. Colin Sonnichsen, Ph.D Student, 9/2015 – present
 14. Patrick Brosseau, Ph.D Student, 9/2016 – present
 15. Harry Baker, Ph.D student, 9/2016 - present

Masters:

1. Kevin Anderson, M.Sc. (8/2006), 1/2004 – 8/2006.
 - a. Fabrication of nanostructures and systems programming, data acquisition and fitting.
 - b. Presently patent agent
2. Gregory Bell, M.Sc. student, 1/2015 – 2016 (shared with David Cooke, Physics)

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.

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. 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).

- Solar Energy Utilization Panel, United States Department of Energy, Washington D.C., (2/2007).¹
- National Science Foundation (USA) review panel, Washington D.C. (2011).²

Scientific Professional Activities

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

TEACHING ACTIVITIES

Courses Taught

- Chemistry 204, "Physical Chemistry for the Biological Sciences", (2004, 2005). 3 credits, 80 - 100 students, 39 hours, 39 lectures given.
- Chemistry 213, "Physical Chemistry I - Thermodynamics", (2006, 2007). 3 credits, 40 - 70 students, 39 hours, 39 lectures given.
- Chemistry 243, 2 credits, "Physical Chemistry II – Thermodynamics and Kinetics", (2008, 2009). 2 credits, 35 students, 26 lectures in class, 26 lectures given
- Chemistry 355, "Spectroscopy", (2011, 2012). 3 credits, 40 students, 39 hours, 39 lectures given.
- Chemistry 534, "Nanoscience", guest lecture on quantum dots (2005, 2011, 2012)
- Chemistry 556, 3 credits, "Advanced Quantum Mechanics", (2004 – 2008, 2010 - 2014). 3 credits, 8 students, 39 hours, 39 lectures given.
- Chemistry 647, "Special Topics", (2004); Femtosecond Spectroscopy and Dynamics section of team taught course

SERVICE ACTIVITIES

Departmental Service:

- Undergraduate Summer Research Coordinator (2007, 2008)
- U3 Academic Advisor, Department of Chemistry, McGill University (2006-2007)
- Curriculum committee, Department of Chemistry, McGill University (2003-2007).

¹ On site review panel

² On site review panel

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 - 2014)

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 (Grutter), Physics, Ph.D., 2005.
2. Simiso Mkhonta (Grant), Physics, Ph.D., 2008.
3. Vance Morrison (Siwick), Physics, M.Sc., 2008.
4. Samuel Clarke (Nadeau), Biomedical Engineering, Ph.D., 2008.
5. Carla Spina (Bohle), Chemistry, Ph.D., 2009.
6. Vanessa Huxter (Scholes, University of Toronto), Chemistry, Ph.D., 2009
7. Ryan Cooney (Kambhampati), Chemistry, Ph.D., 2009.
8. Samuel Sewall (Kambhampati), Chemistry, Ph.D., 2009.
9. Lynda Cockins (Grutter), Physics, Ph.D., 2010
10. Till Hagedorn (Grutter), Physics, Ph.D., 2010
11. Mehdi El-Ouali (Grutter), Physics, Ph.D., 2010
12. Tim Rothenchuck (Chen and Szkopek), Electrical Engineering, M.S., 2011.
13. Eva Dias (Kambhampati), Chemistry, Ph.D. 2011
14. Pooja Tyagi (Kambhampati), Chemistry, Ph.D. 2012
15. Jonathan Saari (Kambhampati), Chemistry, Ph.D. 2013
16. Vance Morrison (Siwick), Physics, Ph.D. 2014
17. Jonathan Mooney (Kambhampati), Chemistry, Ph.D. 2014
18. Robert Chalelaine (Siwick), Physics, Ph.D 2014
19. Hieu Nguyen (Mi), Electrical and Computer Engineering, Ph. D. 2012

References:

Paul Barbara (deceased), Richard J.V. Johnson-Welch Chair in Chemistry - *PDF supervisor*
Department of Chemistry, University of Texas.

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Department of Chemistry, MIT
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Alan Campion, University Distinguished Teaching Professor - *PHD supervisor*
Department of Chemistry, University of Texas.
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Department of Chemistry, Georgia Tech.
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Keith Nelson, Professor
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kanelson@mit.edu