

## Curriculum Vitae

### I. PERSONAL DATA

#### Pavle Radovanovic

Professor

Department of Chemistry

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#### Degrees

B.Sc.	University of Novi Sad (Serbia)	1996
M.Sc.	Georgetown University (USA)	1999
Ph.D.	University of Washington (USA)	2004

#### Awards and Honors

2023	Award for Research Excellence in Materials Chemistry, Canadian Society for Chemistry, Chemical Institute of Canada (for outstanding contributions to materials chemistry)
2022	Elected Fellow of the International Association of Advanced Materials (FIAAM)
2021	IAAM Scientist Medal, International Association of Advanced Materials
2021	Waterloo Institute for Nanotechnology Research Leader Award
2020	Discovery Accelerator Supplement Award, Natural Sciences and Engineering Research Council of Canada
2019	Waterloo Institute for Nanotechnology Research Leader Award
2019	Keith Laidler Award, Canadian Society for Chemistry, Chemical Institute of Canada (for outstanding early-career contributions to physical chemistry in Canada)
2018	Invited Visiting Professor, University of California, Berkeley
2015	Keynote Lecturer at YoungChem 2015, International Congress organized by the Chemical Scientific Society Flogistone (the largest chemistry student organization in Europe), Krakow, Poland
2015	<i>Chemistry of Materials</i> Reviewer Award, Chemistry of Materials Editorial Board, American Chemical Society

2014	Canadian National Committee for the International Union of Pure and Applied Chemistry (CNC-IUPAC) Award
2013	Invited Article for the Journal of Materials Chemistry 2014 Emerging Investigators Themed Issue (selected young investigators “with potential to influence future directions in materials chemistry”)
2013-2017	Canada Research Chair, Natural Sciences and Engineering Research Council of Canada (renewed)
2012	Mobility Award, Office of Science and Technology, French Ministry of Foreign Affairs and Embassy of France in Canada
2012	Idea to Innovation Award, Natural Sciences and Engineering Research Council of Canada
2011-2016	Early Researcher Award, Ontario Ministry of Research and Innovation
2008-2012	Canada Research Chair, Natural Sciences and Engineering Research Council of Canada
2003-2004	David M. Ritter Fellowship for Excellence in Graduate Research, Department of Chemistry, University of Washington
2003	Silver Award, Materials Research Society
2003	Sigma Xi Scientific Society Graduate Research Award
2000-2003	NSF-IGERT Fellowship, National Science Foundation and Center for Nanotechnology at the University of Washington
1996	Annual Award for Exceptional Academic Achievements, Faculty of Natural Sciences and Mathematics, University of Novi Sad
1995	Presidential Award for Outstanding Academic Achievements, Office of the President, University of Novi Sad

## Employment

Years	Position or Rank	Institution
2017-date	Professor	University of Waterloo
2012-2017	Associate Professor	University of Waterloo
2006-2012	Assistant Professor	University of Waterloo
2004-2006	Postdoctoral Fellow	Harvard University

## II. RESEARCH AND SCHOLARSHIP

### Research Interests

The research in my group focuses the design, synthesis, and fundamental physico-chemical properties of low-dimensional quantum materials, including materials for semiconductor quantum devices that exhibit correlated degrees of freedom (charge, spin, plasmon and

exciton, phonon etc.). My group uses a unique combination of spectroscopic, magneto-optical, and magnetic techniques together with theoretical modelling to quantitatively investigate the principles governing the coexistence of and interactions between different functional properties of materials of reduced dimensions.

## List of Publications

### Journal Articles

1. Tandon, B; Radovanovic, P. V. "Size Control of the Mechanism of Exciton Polarization in Metal Oxide Nanocrystals through Fermi Level Pinning" *ACS Nano*, **2023**, *17*, 14069–14078.
2. Kenny-Wilby, A.; Jaics, G.; Zhang, C.; Yin, P.; Radovanovic, P. V. "Revisiting Plasmonic Properties of Complex Semiconductor Nanocrystals Using Magnetic Circular Dichroism Spectroscopy: A Cautionary Tale" *J. Phys. Chem. C* **2023**, *127*, 1087-1096.
3. Yin, P.; Chen, S.; Radovanovic, P. V. "Properties of Free Charge Carriers Govern Exciton Polarization in Plasmonic Semiconductor Nanocrystals" *J. Phys. Chem. Lett.* **2022**, *13*, 5545–5552.
4. Ghobadifard, M.; Radovanovic, P. V.; Mohebbi, S. "Novel CoFe<sub>2</sub>O<sub>4</sub>/CuBi<sub>2</sub>O<sub>4</sub> Heterojunction p–n Semiconductor as Visible-Light-Driven Nanophotocatalyst for C (OH)–H Bond Activation" *Appl. Organomet. Chem.* **2022**, *36*, e6612.
5. Rosales-Solano, H.; Galievsky, V.; Murtada, K.; Radovanovic, P. V.; Pawliszyn, J. "Profiling of Unsaturated Lipids by Raman Spectroscopy Directly on Solid State Microextraction Probes" *Anal. Chem.* **2022**, *94*, 606-611.
6. Nguyen, K.; Radovanovic, P. V. "Defects and Impurities in Colloidal Ga<sub>2</sub>O<sub>3</sub> Nanocrystals: New Opportunities for Photonics and Lighting" *Can. J. Chem.* **2022**, *100*, 1-8. **Invited Review article.**
7. Zhang, C.; Yin, P.; Lu, W.; Galievsky, V.; Radovanovic, P. V. "On the Origin of d<sup>0</sup> Magnetism in Transparent Metal Oxide Nanocrystals" *J. Phys. Chem. C* **2021**, *125*, 27714–27722.
8. Ghobadifard, M.; Safaei, E.; Radovanovic, P. V.; Mohebbi, S. "A Porphyrin-Conjugated TiO<sub>2</sub>/CoFe<sub>2</sub>O<sub>4</sub> Nanostructure Photocatalyst for the Selective Production of Aldehydes under Visible Light" *New. J. Chem.* **2021**, *45*, 8032-8044.
9. Yin, P.; Lu, W.; Radovanovic P. V. "Plasmon Resonances in Semiconductor Nanocrystals for Sustainable Technologies", *ChemSusChem* **2020**, *13*, 4885-4893. **Editor-in-Chief invited article.**

10. Stanish, P. C.; Yin, P.; Radovanovic, P. V. “Extending Afterglow Emission of Ga<sub>2</sub>O<sub>3</sub> Nanocrystals by Dy<sup>3+</sup> Dopant-Induced Carrier Trapping: Toward Design of Persistent Colloidal Nanophosphors” *Chem. Mater.*, **2020**, *32*, 7516-7523.
11. Zhang, C.; Yin, P.; Radovanovic, P. V. “Manipulating Plasmonic Properties of Sb-Doped SnO<sub>2</sub> Nanocrystals by Controlling Dopant Oxidation State via Synthesis Method and Processing Conditions” *ESC Transactions* **2020**, *98*, 77-86. **Invited article.**
12. Ghobadifard, M.; Mohebbi, S.; Radovanovic, P. V. “Selective Oxidation of Alcohols by Using CoFe<sub>2</sub>O<sub>4</sub>/Ag<sub>2</sub>MoO<sub>4</sub> as a Visible-Light-Driven Heterogeneous Photocatalyst” *New. J. Chem.* **2020**, *44*, 2858-2867.
13. Yin, P.; Tan, Y.; Ward, M. J.; Hegde, M.; Radovanovic, P. V. “Effect of Dopant Activation and Plasmon Damping on Carrier Polarization in In<sub>2</sub>O<sub>3</sub> Nanocrystals” *J. Phys. Chem. C* **2019**, *123*, 29829-29837.
14. Yin, P.; Garnet, N. S.; Hegde, M.; Tan, Y.; Radovanovic, P. V. “Faceting-Controlled Zeeman Splitting in Plasmonic TiO<sub>2</sub> Nanocrystals” *Nano Lett.*, **2019**, *19*, 6695-6702.
15. Stanish, P. C.; Siu, H.; Radovanovic, P. V. “Inorganic Phosphors for Teaching a Holistic Approach to Functional Materials Investigation: From Synthesis and Characterization to Applications of Thermo- and Mechanoluminescence” *J. Chem. Educ.*, **2019**, *96*, 1008-1014.
16. Ghodsi, V.; Radovanovic, P. V. “Synergistic Effect of the Electronic Structure and Defect Formation Leads to High Photocatalytic Efficiency of Gallium Tin Oxide Nanocrystals” *J. Phys. Chem. C* **2019**, *123*, 433-442
17. Yin, P.; Hegde, M.; Tan, Y.; Chen, S.; Garnet, N.; Radovanovic, P. V. “Controlling the Mechanism of Excitonic Splitting in In<sub>2</sub>O<sub>3</sub> Nanocrystals by Carrier Delocalization” *ACS Nano* **2018**, *12*, 11211-11218.
18. Jin, S.; Lu, W.; Stanish, P. C.; Radovanovic, P. V. “Compositional Control of the Photocatalytic Activity of Ga<sub>2</sub>O<sub>3</sub> Nanocrystals Enabled by Defect-Induced Carrier Trapping” *Chem. Phys. Lett.* **2018**, *706*, 509-514.
19. Yin, P.; Tan, Y.; Fang, H.; Radovanovic, P. V. “Plasmon-Induced Carrier Polarization in Semiconductor Nanocrystals”, *Nat. Nanotechnol.* **2018**, *13*, 463-467.
20. Ghodsi, V.; Radovanovic, P. V. “Turning Weakly Luminescent SnO<sub>2</sub> Nanocrystals into Tunable and Efficient Light Emitters by Aliovalent Alloying” *Chem. Mater.* **2018**, *30*, 3578-3587.
21. Wang, Y.; Hegde, M.; Chen, S.; Yin, P.; Radovanovic, P. V. “Control of the Spontaneous Formation of Oxide Overlayers on GaP Nanowires Grown by Chemical Vapor Deposition”, *AIMS Mater. Sci.* **2018**, *5*, 105-115. Invited article for the *Topical Section of Crystalline Materials*.

22. Fang, H.; Hegde, M.; Yin, P.; Radovanovic, P. V. "Tuning Plasmon Resonance of In<sub>2</sub>O<sub>3</sub> Nanocrystals Throughout Mid-Infrared Region by Competition between Electron Activation and Trapping", *Chem. Mater.* **2017**, *29*, 4970-4979.
23. Fernandes, B.; Stanish, P. C.; Miskovic, Z. L.; Radovanovic, P. V. "Photoluminescence Decay Dynamics in  $\gamma$ -Ga<sub>2</sub>O<sub>3</sub> Nanocrystals: the Role of Exclusion Distance at Short Time Scales" *Chem. Phys. Lett.* **2017**, *684*, 135-140.
24. Ghodsi, V.; Jin, S.; Byers, J. C.; Pan, Y.; Radovanovic, P. V. "Anomalous Photocatalytic Activity of Nanocrystalline  $\gamma$ -Phase Ga<sub>2</sub>O<sub>3</sub> Enabled by the Long-Lived Defect Trap States" *J. Phys. Chem. C*, **2017**, *121*, 9433-9441.
25. Garnet, N. S.; Ghodsi, V.; Hutfluss, L. N.; Yin, P.; Hegde, M.; Radovanovic, Pavle V. "Probing the Role of Dopant Oxidation State in the Magnetism of Diluted Magnetic Oxides Using Fe-Doped In<sub>2</sub>O<sub>3</sub> and SnO<sub>2</sub> Nanocrystals" *J. Phys. Chem. C*, **2017**, *121*, 1918-1927.
26. Stanish, P. C.; Radovanovic, P. V. "Surface-Enabled Energy Transfer in Ga<sub>2</sub>O<sub>3</sub>-CdSe /CdS Nanocrystal Composite Films: Tunable All-Inorganic Rare Earth Element-Free White-Emitting Phosphor" *J. Phys. Chem. C*, **2016**, *120*, 19566-19573.
27. Ghodsi, V.; Layek, A.; Yildirim, B.; Hegde, M.; Radovanovic, P. V. "Native Defects Determine Phase-Dependent Photoluminescence Behavior of Eu<sup>2+</sup> and Eu<sup>3+</sup> in In<sub>2</sub>O<sub>3</sub> Nanocrystals" *Chem. Commun.*, **2016**, *52*, 4353-4356.
28. Stanish, P. C.; Radovanovic, P. V. "Energy Transfer between Conjugated Colloidal Ga<sub>2</sub>O<sub>3</sub> and CdSe/CdS Core/Shell Nanocrystals for White Light Emitting Applications" *Nanomaterials*, **2016**, *6*, 32. **Invited feature article.**
29. Layek, A.; Yildirim, B.; Ghodsi, V.; Hutfluss, L. N.; Hegde, M.; Wang, T.; Radovanovic, P. V. "Dual Europium Luminescence Centers in Colloidal Ga<sub>2</sub>O<sub>3</sub> Nanocrystals: Controlled in Situ Reduction of Eu(III) and Stabilization of Eu(II)" *Chem. Mater.*, **2015**, *27*, 6030-6037.
30. Hegde, M.; Hosein, I. D.; Radovanovic, P. V. "Molecular Origin of Valence Band Anisotropy in Single  $\beta$ -Ga<sub>2</sub>O<sub>3</sub> Nanowires Investigated by Polarized X-ray Absorption Imaging" *J. Phys. Chem. C*, **2015**, *119*, 17450-17457.
31. Layek, A.; Stanish, P. C.; Chirmanov, V.; Radovanovic, P. V. "Hybrid ZnO-Based Nanoconjugate for Efficient and Sustainable White Light Generation" *Chem. Mater.*, **2015**, *27*, 1021-1030.
32. Chirmanov, V.; Stanish, P. C.; Layek, A.; Radovanovic, P. V. "Distance-Dependent Energy Transfer between Ga<sub>2</sub>O<sub>3</sub> Nanocrystal Defect States and Conjugated Organic Fluorophores in Hybrid White Light-Emitting Nanophosphors" *J. Phys. Chem. C*, **2015**, *119*, 5687-5696.

33. Hutfluss, L. N.; Radovanovic, P. V. "Controlling the Mechanism of Phase Transformation of Colloidal  $\text{In}_2\text{O}_3$  Nanocrystals" *J. Am. Chem. Soc.*, **2015**, *137*, 1101-1108.
34. Sun, X.; Radovanovic, P. V.; Cui, B. "Advances in Spinel  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  Anode Material for Lithium-Ion Batteries" *New J. Chem.*, **2015**, *39*, 38-63.
35. Farvid, S. S.; Sabergharesou, T.; Hutfluss, L. N.; Hegde, M.; Prouzet, E.; Radovanovic, P. V. "Evidence of Charge-Transfer Ferromagnetism in Transparent Diluted Magnetic Oxide Nanocrystals: Switching the Mechanism of Magnetic Interactions" *J. Am. Chem. Soc.*, **2014**, *136*, 7669-7679.
36. Sun, X.; Hedge, M.; Wang, J.; Zhang, Y.; Liao, J.; Radovanovic, P. V.; Cui, B. "Structural Analysis and Electrochemical Studies of Carbon Coated  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  Particles Used as Anode for Lithium Ion Battery" *ESC Transactions*, **2014**, *58*, 79-88.
37. Hosein, I. D.; Hegde, M.; Radovanovic, P. V. "Morphology and Faceting of One-Dimensional Gallium Oxide Nanostructures" *J. Cryst. Growth*, **2014**, *396*, 24-32.
38. Sun, X.; Hegde, M.; Wang, J.; Zhang, Y.; Radovanovic, P. V.; Cui, B. "Structure and Electrochemical Properties of Spinel  $\text{Li}_4\text{Ti}_5\text{O}_{12}$  Nanocomposites as Anode for Lithium-Ion Battery" *Int. J. Electrochem. Sci.*, **2014**, *9*, 1583-1596.
39. Wang, T.; Layek, A.; Radovanovic, P. V. "Correlation between Native Defects and Dopants in Colloidal Lanthanide-Doped  $\text{Ga}_2\text{O}_3$  Nanocrystals: A Path to Enhancing Functionality and Controlling Optical Properties" *J. Mater. Chem. C*, **2014**, *2*, 3212-3222. Invited paper for **2014 Emerging Investigators Themed Issue**.
40. Wang, T.; Chirmanov, V.; Chiu, W. H. M.; Radovanovic, P. V. "Generating Tunable White Light by Resonance Energy Transfer in Transparent Dye-Conjugated Metal Oxide Nanocrystals" *J. Am. Chem. Soc.*, **2013**, *135*, 14520-14523.
41. Hegde, M., Hosein, I. D., Radovanovic, P. V. "Introducing and Manipulating Magnetic Dopant Exchange Interactions in III-V Semiconductor Nanowires" *SPIE Int. Soc. Opt. Eng.*, **2013**, *8813*, 8813-97. **Invited paper**.
42. Sabergharesou, T.; Wang, T.; Radovanovic, P. V. "Electronic Structure and Magnetic Properties of sub-3 nm Diameter Mn-Doped  $\text{SnO}_2$  Nanocrystals and Nanowires" *Appl. Phys. Lett.* **2013**, *103*, 012401/1-5.
43. Sun, X.; Bai, X.; Wang, Y.; Hegde, M.; Hosein, I. D.; Radovanovic, P. V.; Guo, Y. G.; Cui, B. "Comparison of structural analysis and electrochemical studies of C- $\text{Li}_4\text{Ti}_5\text{O}_{12}$  and CNT- $\text{Li}_4\text{Ti}_5\text{O}_{12}$  nanocomposites particles used as anode for lithium ion battery" *Mater. Res. Soc. Symp. Proc.*, **2013**, *1541*, mrss13-1541-f09-01.

44. Farvid, S. S.; Hegde, M.; Radovanovic, P. V. "Influence of the Host Lattice Electronic Structure on Dilute Magnetic Interactions in Polymorphic Cr(III)-Doped In<sub>2</sub>O<sub>3</sub> Nanocrystals" *Chem. Mater.*, **2013**, *25*, 233-244.
45. Sun, X.; Iqbal, A.; Hosein, I. D.; Yacaman, M. J.; Tang, Z. Y.; Radovanovic, P. V.; Cui, B. "Structure Characterization and Electrochemical Characteristics of Carbon Nanotube-Spinel Li<sub>4</sub>Ti<sub>5</sub>O<sub>12</sub> Nanoparticles" *Mater. Res. Soc. Symp. Proc.*, **2012**, *1440*, mrss12-1440-o09-34.
46. Hegde, M.; Wang, T.; Miskovic, Z. L.; Radovanovic, P. V. "Origin of Size-Dependent Photoluminescence Decay Dynamics in Colloidal  $\gamma$ -Ga<sub>2</sub>O<sub>3</sub> Nanocrystals" *Appl. Phys. Lett.*, **2012**, *100*, 141903.
47. Farvid, S. S.; Radovanovic, P. V. "Phase Transformation of Colloidal In<sub>2</sub>O<sub>3</sub> Nanocrystals Driven by the Interface Nucleation Mechanism: A Kinetic Study" *J. Am. Chem. Soc.*, **2012**, *134*, 7015-7024.
48. Ju, L.; Sabergharesou, T.; Stamplecoskie, K. G.; Hegde, M.; Wang, T.; Combe, N.; Wu H.; Radovanovic, P. V. "Interplay between Size, Composition and Phase Transition of Nanocrystalline Cr<sup>3+</sup>-Doped BaTiO<sub>3</sub> as a Path to Multiferroism in Perovskite-Type Oxides" *J. Am. Chem. Soc.*, **2012**, *134*, 1136-1146.
49. Hegde, M.; Farvid, S. S.; Radovanovic, P. V. "Electronic Structure and Magnetism of Mn Dopants in GaN Nanowires: Ensemble vs Single Nanowire Measurements" *Appl. Phys. Lett.*, **2011**, *99*, 222504.
50. Wang, T.; Radovanovic, P. V. "Size-Dependent Electron Transfer and Trapping in Strongly Luminescent Colloidal Gallium Oxide Nanocrystals" *J. Phys. Chem. C*, **2011**, *115*, 18473-18478.
51. Hegde, M.; Farvid, S. S.; Hosein, I. D.; Radovanovic, P. V. "Tuning Manganese Dopant Spin Interactions in Single GaN Nanowires at Room Temperature" *ACS Nano*, **2011**, *5*, 6365-6373.
52. Wang, T.; Radovanovic, P. V. "In situ Enhancement of the Blue Photoluminescence of Colloidal Ga<sub>2</sub>O<sub>3</sub> Nanocrystals by Promotion of Defect Formation in Reducing Conditions" *Chem. Commun.*, **2011**, *47*, 7161-7163.
53. Farvid, S. S.; Wang, T.; Radovanovic, P. V. "Colloidal Gallium Indium Oxide Nanocrystals: A Multifunctional Light Emitting Phosphor Broadly Tunable by Alloy Composition" *J. Am. Chem. Soc.*, **2011**, *133*, 6711-6719.
54. Wang, T.; Radovanovic, P. V. "Free Electron Concentration in Colloidal Indium Tin Oxide Nanocrystals Determined by Their Size and Structure" *J. Phys. Chem. C*, **2011**, *115*, 406-413.

55. Farvid, S. S.; Wang, T.; Radovanovic, P. V. "Spectroscopic and Magnetic Properties of Colloidal Transition Metal-Doped Transparent Conducting Oxide Nanocrystals as Building Blocks for Spintronic Materials" *SPIE Int. Soc. Opt. Eng.*, **2010**, 7760, 77600B. **Invited paper.**
56. Wang, T.; Farvid, S. S.; Abulikemu, M.; Radovanovic, P. V. "Size-Tunable Phosphorescence in Colloidal Metastable  $\gamma$ -Ga<sub>2</sub>O<sub>3</sub> Nanocrystals" *J. Am. Chem. Soc.*, **2010**, 132, 9250-9252.
57. Dave, N.; Pautler, B. G.; Farvid, S. S.; Radovanovic, P. V. "Synthesis and Surface Control of Colloidal Cr<sup>3+</sup>-Doped SnO<sub>2</sub> Transparent Magnetic Semiconductor Nanocrystals" *Nanotechnology*, **2010**, 21, 134023.
58. Farvid, S. S.; Dave, N.; Radovanovic, P. V. "Phase-Controlled Synthesis of Colloidal In<sub>2</sub>O<sub>3</sub> Nanocrystals via Size-Structure Correlation" *Chem. Mater.*, **2010**, 22, 9-11.
59. Radovanovic, P. V. "Keeping Track of Dopants" *Nat. Nanotech.* **2009**, 4, 282-283.
60. Farvid, S. S.; Dave, N.; Wang, T.; Radovanovic, P. V. "Dopant-Induced Manipulation of the Growth and Structural Metastability of Colloidal Indium Oxide Nanocrystals" *J. Phys. Chem. C*, **2009**, 113, 15928-15933
61. Farvid, S. S.; Ju, L.; Worden, M.; Radovanovic, P. V. "Colloidal Chromium-Doped In<sub>2</sub>O<sub>3</sub> Nanocrystals as Building Blocks for High-*T<sub>C</sub>* Ferromagnetic Transparent Conducting Oxide Structures" *J. Phys. Chem. C*, **2008**, 112, 17755-17759.
62. Stamplecoskie, K. G.; Ju, L.; Farvid, S. S.; Radovanovic, P. V. "General Control of Transition-Metal-Doped GaN Nanowire Growth: Toward Understanding the Mechanism of Dopant Incorporation" *Nano Lett.*, **2008**, 8, 2674-2681.
63. Radovanovic, P. V.; Stamplecoskie, K. G.; Pautler, B. G. "Dopant Ion Concentration Dependence of Growth and Faceting of Manganese-Doped GaN Nanowires" *J. Am. Chem. Soc.*, **2007**, 129, 10980-10981.
64. Radovanovic, P. V.; Barrelet, C. J.; Gradecak, S.; Qian, F.; Lieber, C. M. "General Synthesis of Manganese-Doped II-VI and III-V Semiconductor Nanowires" *Nano Lett.*, **2005**, 5, 1407-1411.
65. Archer, P. I.; Radovanovic, P. V.; Heald, S. M.; Gamelin, D. R. "Low-Temperature Activation and Deactivation of High-Curie-Temperature Ferromagnetism in a New Diluted Magnetic Semiconductor: Ni<sup>2+</sup>-Doped SnO<sub>2</sub>" *J. Am. Chem. Soc.*, **2005**, 127, 14479-14487.
66. Radovanovic, P. V.; Gamelin, D. R. "High Temperature Ferromagnetism in Nanocrystalline Ni<sup>2+</sup>-Doped ZnO" *Phys. Rev. Lett.*, **2003**, 91, 157202.
67. Radovanovic, P. V.; Norberg, N. S.; McNally, K. E.; Gamelin, D. R. "Colloidal Transition-Metal-Doped ZnO Quantum Dots" *J. Am. Chem. Soc.* **2002**, 124, 15192-15193.



68. Radovanovic, P. V.; Gamelin, D. R. “Magnetic Circular Dichroism Spectroscopy of  $\text{Co}^{2+}$ :CdS Diluted Magnetic Semiconductor Quantum Dots ” *SPIE Int. Soc. Opt. Eng.*, **2002**, 4809, 51-61.

69. Radovanovic, P. V.; Gamelin, D. R. “Isocrystalline Core/Shell Synthesis of High Quality Diluted Magnetic Semiconductor Quantum Dots: Ligand-Field Spectroscopic Studies” *SPIE Int. Soc. Opt. Eng.*, **2002**, 4807, 223-231.

70. Radovanovic, P. V.; Gamelin, D. R. “Electronic Absorption Spectroscopy of Cobalt Ions in Diluted Magnetic Semiconductor Quantum Dots: Demonstration of an Isocrystalline Core/Shell Synthetic Method” *J. Am. Chem. Soc.* **2001**, 123, 12207-12214.

### *Chapters in Books*

1. Radovanovic, P. V. Defect-Induced Optical and Magnetic Properties in Transparent Conducting Oxide Nanostructures. In *Functional Metal Oxides: New Science and Novel Applications*. Ogale, S. B.; Venkatesan, T. V.; Blamire, M. (Editors); Wiley-VCH: Weinheim, **2013**, Chapter 5, pp. 163-194. **Invited book chapter.**

### *Books/Patents*

1. Radovanovic, P. V. “Material, System and Method Making Use of Plasmon Resonance” *US Patent Application 16/632,476*, pending, published on May 27, 2021.

2. Radovanovic, P. V. “Light Emitting Materials and Systems and Method for Production Thereof” *US Patent 10,584,281*, granted on March 10, 2020

3. Radovanovic, P. V. and Wang T. “Light Emitting Material and Method for Production Thereof” *Canadian Patent 2,910,550*, granted on September 22, 2020.

4. Radovanovic, P. V.; Wang, T. “Light Emitting Material and Method of Production Thereof” *US Patent 9,676,996*, granted on June 13, 2017.

### **List of Invited Addresses**

2023	NanoSeries 2023 Conference, Madrid, Spain
2023	Canadian Chemistry Conference (Canadian Society for Chemistry), Vancouver, BC Research Excellence in Materials Chemistry Award lecture (keynote)
2023	Materials World 2023, virtual conference on materials science and engineering
2022	Canadian Chemistry Conference (Canadian Society for Chemistry), Calgary, AB

2022	4 <sup>th</sup> World Congress on Lasers, Optics and Photonics (WCLOP-2022), virtual meeting
2022	8 <sup>th</sup> Nano Boston Conference (NWC Boston-2022), Boston, MA, virtual meeting
2021	European Advanced Materials Congress (EAMC 2021), Stockholm, Sweden
2021	IAAM Scientist Medal Lecture, Advanced Materials Lecture Series, International Association of Advanced Material, virtual talk
2020	11 <sup>th</sup> International Conference on Quantum Dots (QD 2020), Munich, Germany
2020	238 <sup>th</sup> Electrochemical Society Meeting and PRiME 2020, Honolulu, HI
2020	Photonics North 2020, Niagara Falls, ON
2020	International Conference and Exhibition on Advanced Energy Materials (Energy Materials-2020), Athens, Greece (keynote lecture)
2019	Jiangsu Industrial Technology Research Institute, Foshan, China
2019	Department of Engineering Physics, McMaster University
2019	American Chemical Society Fall Meeting, San Diego, CA (August 25-28)
2019	102 <sup>nd</sup> Canadian Chemistry Conference and Exhibition (Physical, Theoretical, and Computation Division Symposium), Quebec City, QC (June 3-7, 2019)
2018	International Conference on Nano-Structured Materials and Devices (ICNSMD-2018), New Delhi, India
2018	Sustainable Industrial Processing Summit (SIPS-2018), Rio de Janeiro, Brazil (keynote lecture)
2018	14 <sup>th</sup> International Conference on Modern Materials and Technologies and 8 <sup>th</sup> Forum on New Materials (CIMTEC 2018), Perugia, Italy
2018	IEEE-San Francisco Bay Area Nanotechnology Council 14 <sup>th</sup> Annual International Invitational Symposium, Milpitas, CA (plenary talk)
2018	Nano World Conference (NWC 2018), San Francisco, CA
2018	3 <sup>rd</sup> International Conference on Nanotechnology Modeling and Simulation (ICNMS'18), Budapest, Hungary (keynote lecture, declined due to Visiting Professorship)
2017	National University of Science and Technology (MISiS), Moscow, Russia
2017	Nano and Giga Challenges in Electronics, Photonics and Renewable Energy (NGC 2018), Tomsk, Russia
2017	16 <sup>th</sup> World Nano Conference (Nano 2017), Milan, Italy (keynote lecture)
2017	Department of Chemistry, University of Guelph
2017	Department of Chemistry, McMaster University
2017	Department of Chemistry, Dalhousie University

2016	CHINano 2016, Suzhou, China
2016	International Conference on Applied Crystallography (Crystallography 2016), Houston
2016	Georgia Institute of Technology, Department of Chemistry
2016	6 <sup>th</sup> International Conference and Exhibition on Materials Science and Engineering, Atlanta, GA
2016	Emerging Technologies Meeting: Communications, Microsystems, Optoelectronics, Sensors (ETCMOS), Montreal, QC
2016	Energy, Materials, Nanotechnology (EMN) Meeting on Nanowires, Amsterdam, Netherlands
2015	YoungChem 2015, International Congress organized by Chemical Scientific Society Flogiston, the largest chemistry student organization in Europe, Krakow, Poland (keynote lecture).
2015	American Chemical Society Meeting, Boston, MA (August 16-20, 2015)
2015	Canada-Taiwan Nanotechnology Workshop, Waterloo, ON
2014	Beijing Normal University, Department of Chemistry
2014	Beijing University of Science and Technology, School of Mathematics and Physics
2014	Beijing Institute of Technology (BIT), Department of Materials Science and Engineering
2014	4 <sup>th</sup> Annual World Congress of Nanoscience & Technology (NanoS&T-2014), Qingdao, China
2014	Collaborative Conference on 3D and Materials Research (CC3DMR), Incheon/Seoul, South Korea
2014	Canadian Chemistry Conference (Canadian Society for Chemistry), Symposium on Surface Chemistry of Soft Materials and Photonics, Vancouver, BC
2014	Canadian Chemistry Conference (Canadian Society for Chemistry), Symposium on Nanomaterials and Nanostructured Surfaces, Vancouver, BC
2014	Canadian Chemistry Conference (Canadian Society for Chemistry), Symposium on Nanomaterials for Stretchable, Flexible and Printable Electronics, Vancouver, BC
2014	IUPAC International Conference on Applied Chemistry, Suva, Fiji
2013	3 <sup>rd</sup> International Conference on Advanced Nanoscience and Nanotechnology (ICANN 2013), Guwahati-Assam, India
2013	SPIE Optics & Photonics (NanoScience and Engineering Conference) Spintronics VI
2013	16 <sup>th</sup> Canadian Semiconductor Science and Technology Conference, Thunder Bay, ON
2012	Institut Polytechnique de Grenoble (INP-Grenoble), Laboratoire des Matériaux et du Génie Physique, Grenoble, France
2012	Universite de Bordeaux 1, Department of Chemistry
2012	College de France, Laboratoire de Chimie de la Matière Condensée de Paris, Paris, France
2012	American Chemical Society Meeting, Philadelphia, PA (August 19-23, 2012)

2012	CMOS Emerging Technologies Meeting, Vancouver, BC
2012	Canadian Chemistry Conference (Canadian Society for Chemistry), Surface Science Division Symposium, Calgary, AB
2012	Institute of Advanced Functional Materials, University of Bordeaux, France
2012	Emerging Technology Workshop, Suzhou Industrial Park, Suzhou, China
2012	Institute of Functional Nano & Soft Materials, Soochow University, Suzhou, China
2012	Max-Planck Insitut für Intelligente Systeme, Stuttgart, Germany
2011	XEROX Corporation, Research Centre of Canada
2011	WIN-Soochow Nanotechnology Workshop, Waterloo, ON
2011	WIN-Bordeaux/Aquitaine Workshop, Waterloo, ON
2011	University at Buffalo (The State University of New York), Department of Physics
2011	University of Western Ontario, Department of Chemistry
2010	University of Washington, Department of Chemistry
2010	Simon Fraser University, Department of Chemistry
2010	NW 2010 (International Workshop on Growth and Physics of Nanowires), Crete, Greece
2010	University of Guelph, Department of Physics
2010	SPIE Optics & Photonics (NanoScience and Engineering Conference), Spintronics III
2010	Canadian Light Source (CLS), University of Saskatchewan
2010	University of Guelph, Department of Chemistry
2009	Wilfrid Laurier University, Department of Chemistry
2009	Joint “Nano and Giga Challenges in Electronics, Photonics and Renewable Energy 2009” and “14 <sup>th</sup> Canadian Semiconductor Technology Conference”, Hamilton, ON
2009	92 <sup>nd</sup> Canadian Chemistry Conference (Canadian Society for Chemistry), Symposium
2007	Emerging Materials Knowledge Nanotechnology Workshop

## Research Funding Record

Investigators	Funding Agency and Program	Total Amount (\$)	Project Period
Pavle Radovanovic	Quantum Quest Seed Fund, Canada First Research Excellence Fund	100,000	2022-2024
Pavle Radovanovic	NSERC, GRF-RTI Award	20,000	2021-2023
Pavle Radovanovic	NSERC, Discovery Accelerator Supplement Award	120,000	2020-2025
Pavle Radovanovic	NSERC, Discovery Grant	395,000	2020-2025

Pavle Radovanovic	WatCo, Prototype Device Development/Demonstration Project	30,000	2019-2020
Pavle Radovanovic (lead PI, 2 co-applicants)	NSERC-Strategic Partnership Grant (48%)	772,280	2018-2022
Pavle Radovanovic	NSERC-Engage	25,000	2018
Pavle Radovanovic	NSERC, Idea-to-Innovation Market Assessment Grant	19,775	2017-2018
Pavle Radovanovic	Quantum Quest Seed Fund, Canada First Research Excellence Fund	199,834	2017-2021
Pavle Radovanovic	NSERC, Research Tools and Instruments	150,000	2016-2018
Pavle Radovanovic	NSERC, Engage	25,000	2016-2017
Pavle Radovanovic	NSERC, Discovery Grant	295,000	2015-2020
Pavle Radovanovic	Collaborative Waterloo-Bordeaux Research Grants	100,000	2015-2017
Pavle Radovanovic	NSERC, Idea-to-Innovation Market Assessment Grant	14,990	2015-2016
Pavle Radovanovic	ACS-Petroleum Research Fund, New Directions Grant	100,000 (USD)	2015-2016
Pavle Radovanovic	Ontario Centers of Excellence, Market Readiness, Phase I	50,000	2013-2014
Pavle Radovanovic	NSERC, Research Tools and Instruments	117,370	2013-2015
Pavle Radovanovic	NSERC, Canada Research Chair Program (renewed)	500,000	2013-2017
Pavle Radovanovic	Canadian Light Source, User Operational Grant	52,000	2013-2014
Pavle Radovanovic	C4 Consortium, Proof-of-Principle Grant	35,000	2012-2013
Pavle Radovanovic	NSERC, Idea to Innovation Award	122,250	2012-2013
Pavle Radovanovic	Ontario Ministry of Research and Innovation, Early Researcher Award	150,000	2011-2016
Pavle Radovanovic	NSERC, Discovery Grant	200,000	2010-2015
Pavle Radovanovic	Canadian Light Source, User Operational Grant	145,000	2010-2011
Pavle Radovanovic	NSERC, Canada Research Chair Program	500,000	2008-2012

Pavle Radovanovic	Canada Foundation for Innovation, Leaders Opportunity Fund	205,000	2008-2010
Pavle Radovanovic	Ontario Research Fund, Research Infrastructure	205,000	2008-2010
Pavle Radovanovic	NSERC, Discovery Grant	109,500	2007-2010
Pavle Radovanovic	NSERC, Research Tools and Instruments	148,900	2007

Based on the Canadian funding system reported are net amounts that do not include overhead costs

### III. TEACHING ACTIVITIES

#### Record of Courses Taught

Term	Course	Title	G/UG	Load
Winter 2007	CHEM 452	Special Topics in Physical Chemistry (Electronic Structure of Bulk and Nanoscale Materials)	Undergraduate	100 %
Fall 2007	CHEM 356	Introduction to Quantum Mechanics	Undergraduate	100 %
Fall 2007	NE 101	Class Professor Seminar	Undergraduate	N/A
Winter 2008	NE 102	Class Professor Seminar	Undergraduate	N/A
Fall 2008	NE 352	Surfaces and Interfaces	Undergraduate	100 %
Fall 2008	NE 201	Class Professor Seminar	Undergraduate	N/A
Spring 2009	NE 202	Class Professor Seminar	Undergraduate	N/A
Fall 2009	CHEM 356	Introduction to Quantum Mechanics	Undergraduate	100 %
Spring 2010	NE 301	Class Professor Seminar	Undergraduate	N/A
Fall 2010	NE 302	Class Professor Seminar	Undergraduate	N/A
Winter 2011	NANO 701	Fundamentals of Nanotechnology: Nanoscale Surfaces and Interfaces	Graduate	100 %
Winter 2011	NANO 702	Nanotechnology Tools: Spectromicroscopy	Graduate	100 %
Fall 2011	CHEM 356	Introduction to Quantum Mechanics	Undergraduate	100 %
Fall 2011	NE 401	Class Professor Seminar	Undergraduate	N/A
Winter 2012	NANO 701	Fundamentals of Nanotechnology: Nanoscale Surfaces and Interfaces	Graduate	100 %

Winter 2012	NANO 702	Nanotechnology Tools: Spectromicroscopy	Graduate	100 %
Winter 2012	NE 402	Class Professor Seminar	Undergraduate	N/A
Winter 2013	NANO 701	Fundamentals of Nanotechnology: Nanoscale Surfaces and Interfaces	Graduate	100 %
Winter 2013	NANO 702	Nanotechnology Tools: Spectromicroscopy	Graduate	100 %
Fall 2013	NE 352	Surfaces and Interfaces	Undergraduate	100 %
Winter 2014	NANO 701	Fundamentals of Nanotechnology: Nanoscale Surfaces and Interfaces	Graduate	100 %
Winter 2014	NANO 702	Nanotechnology Tools: Spectromicroscopy	Graduate	100 %
Winter 2015	NANO 701	Fundamentals of Nanotechnology: Nanoscale Surfaces and Interfaces	Graduate	100 %
Winter 2015	NANO 702	Nanotechnology Tools: Spectromicroscopy	Graduate	100 %
Fall 2015	NE 232	Quantum Mechanics	Undergraduate	100 %
Winter 2016	NANO 701	Fundamentals of Nanotechnology: Nanoscale Surfaces and Interfaces	Graduate	100 %
Winter 2016	NANO 702	Nanotechnology Tools: Spectromicroscopy	Graduate	100 %
Winter 2017	NANO 701	Fundamentals of Nanotechnology: Nanoscale Surfaces and Interfaces	Graduate	100 %
Winter 2017	NANO 702	Nanotechnology Tools: Spectromicroscopy	Graduate	100 %
Fall 2017	NANO 701	Fundamentals of Nanotechnology: Nanoscale Surfaces and Interfaces	Graduate	100 %
Fall 2017	NANO 702	Nanotechnology Tools: Spectromicroscopy	Graduate	100 %
Winter 2019	NANO 701	Fundamentals of Nanotechnology: Nanoscale Surfaces and Interfaces	Graduate	100 %
Winter 2019	NANO 702	Nanotechnology Tools: Spectromicroscopy	Graduate	100 %
Winter 2020	NANO 701	Fundamentals of Nanotechnology: Nanoscale Surfaces and Interfaces	Graduate	100 %
Winter 2020	NANO 702	Nanotechnology Tools: Spectromicroscopy	Graduate	100 %
Fall 2020	CHEM 400	Special Topic in Chemistry: Electronic Structure and Properties of Materials	Undergraduate	100 %
Winter 2021	NANO 701	Fundamentals of Nanotechnology: Surfaces and Interfaces	Graduate	100 %
Winter 2021	NANO 702	Nanotechnology Tools: Spectromicroscopy	Graduate	100 %

Winter 2021	CHEM 750	Topics in Physical Chemistry: Electronic Structure and Properties of Materials	Graduate	100 %
Fall 2021	CHEM 209	Introductory Spectroscopy and Structure	Undergraduate	100 %
Winter 2022	NANO 602	Structure and Spectroscopy of Nanoscale Materials	Graduate	100 %
Fall 2022	CHEM 209	Introductory Spectroscopy and Structure	Undergraduate	100 %
Winter 2023	NANO 602	Structure and Spectroscopy of Nanoscale Materials	Graduate	100 %
Winter 2023	CHEM 750	Topics in Physical Chemistry: Electronic Structure and Properties of Materials	Graduate	100 %
Fall 2023	CHEM 209	Introductory Spectroscopy and Structure	Undergraduate	100 %
Winter 2024	NANO 602	Structure and Spectroscopy of Nanoscale Materials	Graduate	100 %

### **Involvement in Curriculum Development**

I have developed six new courses in the Department of Chemistry and Nanotechnology Engineering program and taught them for the first time: Electronic Structure and Properties of Bulk and Nanoscale Materials (CHEM 452), Surfaces and Interfaces (NE 352), Fundamentals of Nanotechnology: Nanoscale Surfaces and Interfaces (NANO 701) and Spectromicroscopy (NANO 702), Structure and Spectroscopy of Nanoscale Materials (NANO 602), Electronic Structure and Properties of Materials (CHEM 750). As a part of the interdisciplinary undergraduate Nanotechnology Engineering program I proposed the initial laboratory exercises for third year undergraduate students, and advised Teaching Assistant/Laboratory Coordinator during the lab development and the preparation of the handout material.



## **IV. SERVICE**

### **Committees**

#### ***University/Faculty***

2022-date Collaborative Graduate Nanotechnology Program Steering Committee, representative for the Department of Chemistry

2007-2012 Class Professor the Nanotechnology Engineering undergraduate program, Coordinator/Liaison for class NE 2012.

2012-2013 Search and Hiring Committee for Distinguished Endowed Professor of Physics, invited by the Chair of the Department of Physics as an external University representative

#### ***Department***

2019-date M.Sc. Thesis Defence Chairs Representative in the Faculty of Science

2016-2019 Health and Safety Committee

2016-2017 Search and Hiring Committee for Nanotechnology position, committee member

2012-2014 Search and Hiring Committee for Chemistry-Institute for Quantum Computing position, committee member

2011-2013 Department of Chemistry Executive Committee, committee member

2007-2010 Search and Hiring Committee for Nanotechnology position, committee member

#### ***Other***

2023 Canadian Society for Chemistry Awards Committee member

2019 Quebec Association of Universities, onsite evaluation of the new Graduate Program in Nanoscience at Concordia University

2017 NSERC Site Visit Committee, Major CRD Grant Evaluation, University of Toronto

2011-2012 Proposal Study Panel (PSP) at the Molecular Foundry (Lawrence Berkeley National Laboratory, University of California, Berkeley), panel member

### ***Related Community Service***

IUPAC-CCCE 2021 Conference (Frontiers in the Chemistry of Nanoscience Symposium), Montreal, QC (August 13-21, 2021); co-organizer with Byron Gates (SFU)

International Organizing Committee for European Advanced Materials Congress, Stockholm, Sweden (March 21-23, 2020)

Organizing Committee Member for 3<sup>rd</sup> International Conference on Nanotechnology Modeling and Simulation (ICNMS'18), Budapest, Hungary (April 10-12, 2018)

Organizing Committee for the Nano Mat 2018 - 31st European Congress on Nanotechnology & Materials Engineering, Budapest, Hungary (October 25-26, 2018)

Scientific Committee for the 2<sup>nd</sup> International Conference on Nanotechnology modeling and Simulation (ICNMS'17), Barcelona, Spain (April 4-6, 2017)

Organizing Committee for 10<sup>th</sup> International Conference on Emerging Materials and Nanotechnology, Emerging Materials Conference Series, Vancouver, BC (July 27-29, 2017)

Organizing Committee for the International Conference on Nanotechnology Research 2016 (Gavin Conference Series), San Antonio, TX (November 28-30, 2016)

International Organizing Committee for the Energy, Materials & Nanotechnology Meeting (EMN 2015), Bangkok, Thailand (November 10-13, 2015)

Award Selection Committee at the YoungChem 2015, Krakow, Poland (October 7-11, 2015)

Session Chair at the 4<sup>th</sup> Annual World Congress of Nanoscience & Technology (NanoS&T 2014), Qingdao, China (October 29-31, 2014)

Session Chair at the Collaborative Conference on 3D & Materials Research, Incheon/Seoul, South Korea (June 23-27, 2014)

Judge for the Poster Award at the Canadian Society for Chemistry, Vancouver (June 1-5, 2014)

Program Committee for the 39<sup>th</sup> International Symposium on Compound Semiconductors (ISCS 2012), University of California Santa Barbara (August 27-30, 2012)

Invited Discussion Leader at the Gordon Research Conference on Defects in Semiconductors, Biddeford, ME (August 12-17, 2012)

Chair of the Symposium “*Nanostructures: Nanowires, Nanotubes, Inorganic Semiconductors, Catalysis*” at the WIN-Soochow Nanotechnology Workshop (July 19-27, 2011)

Chair of the Session *IN 8 (General Inorganic Chemistry)* of the Inorganic Chemistry Symposium at the Canadian Society for Chemistry Meeting in Montreal (June 5-9, 2011)

Chair of the Symposium “*Energy Materials and Metamaterials*” at the WIN-Bordeaux/Aquitaine Workshop (May 16-18, 2011)

Judge for the Best Poster Award at the Nano and Giga Challenges in Electronics, Photonics and Renewable Energy 2009/14<sup>th</sup> Canadian Semiconductor Technology Conference in Hamilton (August 10-14, 2009)

Co-organizer of the Symposium *JJ (Nanowires: Novel Assembly Concepts and Device Integration)* at the Materials Research Society Meeting in Boston (Fall 2007)

## **Outreach**

### ***Public Service***

Recommend and advise major national and international award candidates on behalf of Governor General of Canada Global Excellence Initiative

Invited expert panelist for LightSavers Canada Initiative by the Canadian Urban Institute.

Mentoring and preparing a group of grade 12 high school students attending the Port Credit SciTech program for the 2014 National Science Fair competition.

Mentor for the Engineering Science Quest (ESQ) camp (August 2011); ESQ is a not-for-profit engineering and science education program with a mission to increase the interest in science, engineering and technology amongst Canadian youth.

Participated and presented at the recruiting session at Port Credit High School in Mississauga, ON, organized and administered by the Dean of Science (April 24, 2008).

### ***Media Coverage***

Over 50 appearances

Radio interviews:

CBC Radio “*The Morning Edition with Craig Norris*”

610 CKTB (Bell Media) “*One on one with Kevin Jack*”

Super Awesome Science Show podcast with Jason Tetro

TV network interviews and reports:

Weather Network Channel (Science and Technology Program with Nicole Karkic)

CHEX TV 12 Durham (Technology News)

Renanosoma Channel, Rio de Janeiro, Brazil (Nanotechnology Inside Out Series with Paulo Martins)

Print and online media outlets:

CBC News “*Waterloo chemist develops 'holy grail' LED lightbulb*”

Huffington Post “*Canadian's 'Holy Grail' Invention Could Revolutionize Lighting*”

Also featured in: Vancouver Star, yahoo Canada, msn Canada, Canada Online News, World’s Daily News, World News, News British Columbia, News Maritimes, paNOW, NationsRoot, Airing News

Science and technology news:

University of Waterloo Stories: “How Many Scientists Does it Take to Change the Lightbulb”

University of Waterloo News: “Waterloo Chemists Create Faster and More Efficient Way to Process Information”

DesignEngineering “*Waterloo-developed nanotech to make LED light bulbs affordable*”

Also featured in: LEDinside, e! Science News, Tech News Daily, Phys.org, EurekAlert! (AAAS), Science Daily, New Electronics, Nanowerk, ECN, Controlled Environments, Digital Journal, and others

Commercial news:

Lights Fantastic Pro, LED High Bay Light Wholesale, Warta Gadgets, etc.