Jesse T. E. **Quinn**

Computational Chemistry and Modelling · Software Engineering · Front-end · Back-end

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"Everything is theoretically impossible, until it is done." - Robert A. Heinlein

Summary

Highly self-motivated PhD with an interdisciplinary background along with strong interpersonal skills. An independent worker bee with advance academic credentials reinforced by multidisciplinary experience in the fields of chemistry, chemical engineering, electrical engineering, electronics, and software engineering. An excellent rapport with numerous professionals in various fields. A natural affinity and grasp of programming languages, infrastructures, technologies, etc. Knowledge of object-oriented programming, development tools, operating environments, and diligently maintains a consistent self-updating pattern. Known as a hard worker, multitasker and team player that strives to consistently exceed expectations.

Education

University - College

University of Waterloo — *Waterloo, Canada*

PhD in Chemical Engineering (Nano) — *2013 – 2017*

Thesis: Nature-inspired polymers: promising materials for OTFT-based sensors

Ryerson University — *Toronto, Canada*

MSc in Molecular Science — *2010 – 2013*

Thesis: Investigation and study of monomers and polymers based on known metal induced couplings of alkynes and diynes

Ryerson University — *Toronto, Canada*

BSc in Chemistry — *2005 – 2010*

Thesis: Towards the synthesis of inverse crown metal containing macrocycles based on zirconocene-coupling of diynes

Seneca College — *Toronto, Canada*

Computer Programming and Analysis (web design & software development) — *2000 – 2004*

Abstract: Rigorous study of web programming languages, server side development, database maintenance, and object oriented methodologies

Training

Applied Data Science with Python Specialization — *University of Michigan (coursera.org)*

Instructor: Christopher Brooks — *presently*

- 5 seperate courses
- Courses Completed: Introduction to Data Science in Python (1/5)

IBM Data Science Professional Certificate Specialization — *IBM (coursera.org)*

Instructors: Joseph Santarcangelo & Rav Ahuja — *presently*

- 9 seperate courses
- Courses Completed: Python for Data Science (1/9)

Python for Data Science and Machine Learning — *udemy.com*

Instructor: Jose Portilla — *2018*

- Time: 21.5 hours
- Course Description: Numpy, Pandas, Matplotlib, Seaborn, Plotly, Machine Learning, Linear Regression, Logistic Regression, K Nearest Neighbours, Decision Trees and Random Forests, Deep Learning, Neural Nets, Big Data, Spark

Advance CSS and Sass — *udemy.com*

Instructor: Jonas Schmedtmann — *presently*

- Time: 28 hours
- Course Description: Flexbox, CSS Grid, Responsive Design, etc.

Complete Python Masterclass *udemy.com*

Instructor: Tim Buchalka *presently*

- Time: 40.5 hours
- Course Description: Program Flow Control, Lists, Tuples, Dictionaries, Sets, Databasing, Modules, Functions, Generators, List Comprehensions, Lambda Expressions, Mapping, Filtering, Input/Output, Object-Oriented Programming, etc.

React: Nanodegree Program *udacity.com*

Instructor: Tyler McGinnis *2018*

- Time: 4 months
- Course Description: React, Redux, React Native, and various other node modules

Modern React with Redux *udemy.com*

Instructor: Stephen Grider *2018*

- Time: 26.5 hours
- Course Description: Foundation course in React, Redux, React Router, Webpack and ES6

Skills

Programming - Scripting	Bash, LaTeX, Perl, Python, Ruby, Javascript, C/C++, JAVA
Web	Apache, CSS, HTML, Markdown, PHP, XML, AJAX, API
Database	MySQL, PostgreSQL
Graphics	Abode Illustrator, Abode Photoshop
Plotting	Datagraph, Excel, MATLAB, Mathematica, Origin Pro, Python
Technical Instrument	AFM, CV, DSC, GPC, I-V source measuring unit, MS, NMR, TGA, UV-Vis spectroscopy, reflectance mode XRD
Computational Software	GAMESS, Gaussian, Spartan
Supervisorial	Supervised co-op students and graduate students, and managed laboratory safety and implementation
Languages	English (*mother tongue*), Portuguese (*intermediate*), Spanish (*elementary*), and Mandarin Chinese (*beginner*)

Honors & Awards

2018	**Awarded,** Park and Veva Reilly	*Waterloo, Canada*
2017	**Awarded,** FAPESP	*São Carlos, Brazil*
2017	**Awarded,** IPR Award	*Waterloo, Canada*
2016 – 2017	**Awarded,** Graduate Research Paper Award	*Waterloo, Canada*
2015 – 2016	**Awarded,** WIN Nano Fellowship	*Waterloo, Canada*
2013 – 2017	**Awarded,** Waterloo Graduate Research Scholarship	*Waterloo, Canada*
2010 – 2013	**Awarded,** Ryerson Graduate Scholarship	*Toronto, Canada*

Research/Work Experience

Dr Osvaldo Novais de Oliveira, University of São Paulo *São Carlos, Brazil*

Post-Doctoral Fellowship *Jun. 2017 – Sept. 2018*

- Synthesis of quantum dots
- Sensing and characterization of biosenors

Dr Boxin Zhao, University of Waterloo *Waterloo, Canada*

Visiting Scholar *2012 – 2013*

- Synthesis of acrylic pressure sensitive adhesives.
- Surface modification of polydimethylsiloxane (PDMS).

Opalux Inc. *Toronto, Canada*

Researcher *Feb. – Jul. 2009*

- Supported the development of P-INK device (Electrically Active Colour-Based Battery Tester).
- Helped with technical problems with other product lines.
- Synthesized nanoparticles on demand.
- Developed and constructed an electronic voltage tuner (potentiometer) for P-INK device.
- Responsible for the design, construction and maintenance of company website.

Ministry of Environment — *Toronto, Canada*

Data Analyst — *Sep. – Dec. 2008*

- Analyzed past data for outliers for the drinking water survey program (DWSP).
- Corrected outliers when possible with actual raw data.
- Compiled past data into the appropriate reports.
- Supported the DWSP questionnaire (*i.e.* contacted and requested information from all participating drinking water works.)

Dr Andrew McWilliams, Ryerson University — *Toronto, Canada*

Researcher — *May – Aug. 2008*

- Supported the development of polymer precursors.
- Synthesized several analog precursors.
- Utilized the computational chemistry program HyperChem in the construction of precursors.

Teaching Experience

Undergraduate Co-operative Education, University of Waterloo — *Waterloo, Canada*

Supervisor — *2014 – 2017*

- Supervised a total of 15 co-operative students for 4 to 8 month periods
- Responsibilities include but not limited to: training, work allocation, project management

General Chemistry, CKCH106, Ryerson University — *Toronto, Canada*

Graduate Teaching Assistant and a Part Time Instructor — *Fall 2011*

- Total Time: 90 hrs

Characterization of Organic Compounds, CHY339, Ryerson University — *Toronto, Canada*

Graduate Teaching Assistant and a Part Time Instructor — *Winter 2011*

- Total Time: 82.5 hrs

General Chemisry 1, CHY102, Ryerson University — *Toronto, Canada*

Graduate Teaching Assistant and a Part Time Instructor — *Fall 2010*

- Total Time: 60 hrs

Inorganic Chemisry, CHY344, Ryerson University — *Toronto, Canada*

Graduate Teaching Assistant and a Part Time Instructor — *Fall 2010*

- Total Time: 82.5 hrs

Visions of Science — *Toronto, Canada*

Club Facilitator and Supervisor — *2006 – 2009*

- Volunteered position - every Saturday 9am - 1pm
- Responsibilities include but not limited to: teaching science and engineering concepts to underprivileged children, work allocation, project management
- Club facilitator for 2 years followed by 1 year as club supervisor

Extension

XVII Brazilian MRS meeting — *Natal, Brazil*

Organizer — *Sep. 2018*

Organic Electronics and Bioelectronics - Frontiers in Basic and Applied Research

Brazilian Journal of Physics — *Brazil*

Reviewer — *2017 – present*

Area of knowledge: Organic Electronics

ACS Applied Materials & Interfaces — *United States*

Reviewer — *2017 – present*

Area of knowledge: Organic Electronics

Visions of Science — *Toronto, Canada*

Club facilitator and Supervisor — *2006 – 2009*

- Volunteering positions - every Saturday between 9 am and 1 pm
- Responsibilities included but not limited to: teaching science and engineering conceptions to children, allocation of work, management of projects
- Club facilitator for 2 years followed by 1 year as club supervisor

Published Works

Highlights

1. A Super Electron Deficient Polymer. *Synfacts* **2016**, 12 (04), 0357-0357.

Papers Containing Acknowledgements

1. Manipulating mammalian cell morphologies using chemical-mechanical polished integrated circuit chips. *Sci. Technol. Adv. Mater.* **2017**, 18 (1), 839-856.

Publications

30. Yan, L.; Gao, X.; Wahid-Pedro, F.; **Quinn, J.**; Meng, Y.; Li, Y. A novel epoxy resin-based cathode binder for low cost, long cycling life, and high-energy lithium-sulfur battery. *J. Mater. Chem. A* **2018**, na (na), na-na.

29. Randell, N.; Radford, C.; Yang, J.; **Quinn, J.**; Hou, D.; Li, Y.; Kelly, T. Effect of Acceptor Unit Length and Planarity on the Optoelectronic Properties of Isoindigo-Thiophene Donor-Acceptor Polymers. *Chem. Mater.* **2018**, na (na), na-na.

28. He, Y.[1]; **Quinn, J.**[1]; Hou, D.[1]; Ngai, J. H. L.; L,i Y. A small bandgap (3*E*,7*E*)-3,7-bis(2-oxoindolin-3-ylidene)benzo[1,2-*b*:4,5-*b'*]difuran-2,6(3*H*,7*H*)-dione (IBDF) based polymer semiconductor for near-infrared organic phototransistors. *J. Mater. Chem. C* **2017**, 5 (46), 12163-12171. [1]equal contribution.

27. Bura, T.; Beaupré, S.; Ibraikulov, O. A.; Légaré, M.-A. **Quinn, J.**; Lévêque, P.; Heiser, T.; Li, Y.; Leclerc, N.; Leclerc, M. New Fluorinated Dithienyldiketopyrrolopyrrole Monomers and Polymers for Organic Electronics. *Macromolecules* **2017**, 50 (18), 7080-7090.

26. Quinn, J. T. E.; Haider, F.; Patel, H.; Khan, D. A.; Wang, Z. Y.; Li, Y. Ultrafast photoresponse organic phototransistors based on pyrimido[4,5-g]quinazoline-4,9-dione polymer. *J. Mater. Chem. C* **2017** 5 (34), 8742-8748.

25. Quinn, J. T. E; Zhu, J.; Li, X.; Wang, J.; Li, Y. Recent progress in the development of n-type organic semiconductors for organic field effect transistors. *J. Mater. Chem. C* **2017**, 5 (34), 8654-8681.

24. He, Y.; **Quinn, J.**; Lee, S.; Wang, G. Y.; Li, X.; Wang, J.; Li, Y. An aromatic amine-containing polymer as an additive to ambipolar polymer semiconductor realizing unipolar n-type charge transport. *Org. Electron.* **2017**, 49 (October 2017), 406-414.

23. Quinn, J.[1]; Guo, C.[1].; Haider, F.; Patel, H.; Khan, D. A.; Li, Y. Regioisomerism of alkyl-substituted bithiophene comonomer in (3*E*,8*E*)-3,8-bis(2-oxoindolin-3-ylidene)naphtho-[1,2-*b*:5,6-*b'*]difuran-2,7(3*H*,8*H*)-dione (INDF) based D-A polymers for organic thin film transistors. *J. Mater. Chem. C* **2017**, 5 (24), 5902-5909.[1]equal contribution.

22. Le Borgne, M.; **Quinn, J.**; Martín, J.; Stingelin, N.; Li, Y.; Wantz, G. New 3,3'-(ethane-1, 2-diylidene)bis(indolin-2-one) (EBI)-based small molecule semiconductors for organic solar cells. *J. Mater. Chem. C* **2017**, 5 (21), 5143-5153.

21. Bura, T.; Beaupre, S.; Legare, M.; **Quinn, J.**; Blaskovits, T.; Rochette, E.; Fontaine, F.; Pron, A.; Li, Y.; Leclerc, M. Direct Heteroarylation Polymerization: Guidelines for Defect-Free Conjugated Polymers. *Chem. Sci.* **2017**, 8 (5), 3913-3925.

20. Blaskovits, J. T.; Bura, T.; Beaupré, S.; Lopez, S. A.; Roy, C.; de Goes Soares, J.; Oh, A.; **Quinn, J.**; Li, Y.; Aspuru-Guzik, A.; et al. A Study of the Degree of Fluorination in Regioregular Poly(3-hexylthiophene). *Macromolecules* **2017**, 50 (1), 162-174.

19. Quinn, J.; Patel, H..; Haider, F.; Khan, D.; Li, Y. Converting a semiconducting polymer from ambipolar into n-type dominant by amine end-capping. *Chemelectrochem* **2016**, 4 (2), 256-260.

18. Quinn, J.; He, Y.; Khan, D.; Rasmussen, J.; Patel, H.; Haider, F.; Kapadia, W; Li, Y. Synthesis, characterization, and air stability study of pyrimido[4,5-*g*]quinazoline-4,9-dione-based polymers for organic thin film transistors. *RSC Adv.* **2016**, 6 (82), 78477-78485.

17. Guo, C.; **Quinn, J.**; Sun, B.; Li, Y. Dramatically Different Charge Transport Properties of Bisthienyl Diketopyrrolopyrrole-Bithiazole Copolymers Synthesized via Two Direct (Hetero)arylation Polymerization Routes. *Poly. Chem.* **2016**, 7 (27), 4515-4524.

16. Guo, L.[1]; **Quinn, J.**[1]; Wang, J.; Guo, C.; Wang, J.; Li, X.; Li, Y. A fluorene-fused triphenodioxazine (FTPDO) based polymer with remarkable thermal stability and significantly enhanced charge transport performance in air. *Dyes Pigm.* **2016**, 132 (September 2016), 329-335. [1]equal contribution.

15. He, Y.; **Quinn, J.**; Deng, Y.; Li, Y. 3,7-Bis((*E*)-1-methyl-2-oxoindolin-3-ylidene)-3,7-dihydrobenzo[1,2-*b*:4,5- *b'*]dithiophene-2,6-(IBDT) based polymer with balanced ambipolar charge transport performance. *Org. Electron.* **2016**, 35 (August 2016), 41-46.

14. Deng, Y.; Sun, B.; **Quinn, J.**; He, Y.; Ellard, J.; Guo, C.; Li, Y. Thiophene-*S*,*S*-dioxidized indophenines as high performance n-type organic semiconductors for thin film transistors. *RSC Adv.* **2016**, 6 (51), 45410-45418.

13. Le Borgne, M.; **Quinn, J.**; Martin, J.; Stingelin, N.; Wantz, G.; Li, Y. Synthesis and properties of a novel narrow band gap oligomeric diketopyrrolopyrrole-based organic semiconductor. *Dyes Pigm.* **2016**, 131 (August 2016), 160-167.

12. Deng, Y.; **Quinn, J.**; Sun, B.; He, Y.; Ellard, J.; Guo, C.; Li, Y. Thiophene-*S*,*S*-dioxidized indophenine (IDTO) based donor-acceptor polymers for n-channel organic thin film transistors. *RSC Adv.* **2016**, 6 (41), 34849-34854.

11. Quinn, J.; Guo, C.; Ko, L.; Sun, B.; He, Y.; Li, Y. Pyrazino[2,3-*g*]quinoxaline-2,7-dione based π-conjugated polymers with affinity towards acids and semiconductor performance in organic thin film transistors. *RSC Adv.* **2016**, 6 (26), 22043-22051.

10. Deng, Y.; Sun, B.; He, Y.; **Quinn, J.**; Guo, C.; Li, Y. Thiophene-*S*,*S*-dioxidized Indophenine: A Quinoid-type Building Block with High Electron Affinity for Constructing n-Type Polymer Semiconductors with Narrow Band Gaps. *Angew. Chem. Int. Ed.* **2016**, 55 (10), 3459-3462.

9. Quinn, J.; Guo, C.; Sun, B.; Chan, A.; He, Y.; Jin, E.; Li, Y. Pyrimido[4,5-*g*]quinazoline-4,9-dione as a new building block for constructing polymer semiconductors with high sensitivity to acids and hole transport performance in organic thin film transistors. *J. Mater. Chem. C* **2015**, 3 (45), 11937-11944.

8. Guo, C.; **Quinn, J.**; Sun, B.; Li, Y. Regioisomeric control of charge transport polarity for indigo-based polymers. *Polym. Chem.* **2015**, 6 (39), 6998-7004.

7. Deng, Y.; Sun, B.; He, Y.; **Quinn, J.**; Guo, C.; Li, Y. (3*E*,8*E*)-3,8-Bis(2-oxoindolin-3-ylidene)naphtho-[1,2-*b*:5,6-*b'*]difuran-2,7(3*H*,8*H*)-dione (INDF) based polymers for organic thin-film transistors with highly balanced ambipolar charge transport characteristics. *Chem. Commun.* **2015**, 51 (70), 13515-13518.

6. He, Y.; Guo, C.; Sun, B.; **Quinn, J.**; Li, Y. Branched alkyl ester side chains rendering large polycyclic (3*E*,7*E*)-3,7-bis(2-oxoindolin-3-ylidene)benzo[1,2-*b*:4,5-*b'*]difuran-2,6(3*H*,7*H*)-dione (IBDF) based donor-acceptor polymers solution-processability for organic thin film transistors. *Polym. Chem.* **2015**, 6 (37), 6689-6697.

5. Shahsavan, H.; **Quinn, J.**; d'Eon, J.; Zhao, B. Surface modification of polydimethylsiloxane elastomer for stable hydrophilicity, optical transparency and film lubrication. *Colloids Surf., A* **2015**, 482, 267-275.

4. Guo, C.; **Quinn, J.**; Sun, B.; Li, Y. An indigo-based polymer bearing thermocleavable side chains for n-type organic thin film transistors. *J. Mater. Chem. C* **2015**, 3 (20), 5226-5232.

3. He, Y.; Guo, C.; Sun, B.; **Quinn, J.**; Li, Y. (3*E*,7*E*)-3,7-Bis(2-oxoindolin-3-ylidene)-5,7-dihydropyrrolo[2,3-*f*]indole-2,6(1*H*,3*H*)-dione based polymers for ambipolar organic thin film transistors. *Chem. Commun.* **2015**, 51 (38), 8093-8096.

2. Quinn, J.; Jin, E.; Li, Y. New synthetic route to pyrimido[4,5-*g*]quinazoline-4,9-diones. *Tetrahedron Lett.* **2015**, 56 (17), 2280-2282.

1. Guo, C.; Sun, B.; **Quinn, J.**; Yan, Z.; Li, Y. Synthesis and properties of indigo based donor-acceptor conjugated polymers. *J. Mater. Chem. C* **2014**, 2 (21), 4289-4296.

Conferences and Seminars

Invited Talk, Universidade de São Paulo, Escola de Engenharia de Lorena — *Lorena, Brazil*

Oral Presentation — *Nov. 2017*

Novel organic semiconductors and their evaluation in organic thin film transistors and phototransistors

SBPMat XVI - MRS Meeting — *Gramado, Brazil*

Oral Presentation — *Sep. 2017*

Novel robust organic semiconductors for organic thin film transistors

SBPMat XVI - MRS Meeting — *Gramado, Brazil*

Oral Presentation — *Sep. 2017*

Unipolarization of ambipolar organic thin film transistors

Invited Talk, Universidade de São Paulo, Instituto de Física de São Carlos *São Carlos, Brazil*

Oral Presentation *Jun. 2017*

Novel semiconductive materials for organic thin film transistors

Institute of Polymer Research (IPR) 2017 *Waterloo, Canada*

Oral Presentation *May 2017*

Nature-inspired polymers: Promising materials for organic thin film transistor-based sensors

Laboratório Nacional de Nanotecnologia (LNNano) *Campinas, Brazil*

Seminar Presentation *Dec. 2016*

Novel semiconductive materials for organic thin film transistors

Nano Ontario Conference *Guelph, Canada*

Poster *Nov. 2016*

Air stability study of novel pyrimido[4,5-*g*]quinazoline-4,9-dione-based polymers for organic thin film transistors

Institute of Polymer Research (IPR) 2016 *Waterloo, Canada*

Presentation and Poster *May 2016*

The synthesis and properties of pyrazino[2,3-*g*]quinoxaline-2,7-dione and pyrimido[4,5-*g*]quinazoline-4,9-dione based conjugated polymers and application in organic thin film transistors

WINGSS/MNS Nanotechnology Poster Session *Waterloo, Canada*

Poster *Mar. 2016*

Synthesis and properties of pyrimido[4,5-*g*]quinazoline-4,9-dione based π-conjugated polymers

Waterloo Undergraduate Nanotechnology Conference *Waterloo, Canada*

Poster *Nov. 2015*

Pyrimido[4,5-*g*]quinazoline-4,9-dione as a novel building block for channel semiconductors in organic thin film transistors

98^{th} Canadian Chemistry Conference and Exhibition *Ottawa, Canada*

Poster *Jun. 2015*

Synthesis and properties of pyrimido[4,5-*g*]quinazoline-4,9-dione based π-conjugated polymers

93^{rd} Canadian Chemistry Conference and Exhibition *Toronto, Canada*

Poster *Jun. 2010*

Towards the synthesis of inverse crown metal containing macrocycles based on zirconocene coupling of diynes