

## Education

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**Ph.D. Chemistry** Calgary, AB  
*University of Calgary* Sept. 2012 – Jun. 2017

- GPA: 4.0 (out of 4). Supervisor: Prof. Thomas Baumgartner
- Thesis Topic: Development of Phosphoryl-Bridged Viologens Toward Functional Materials

**B.Sc. Honours Chemistry w/Thesis** Calgary, AB  
*University of Calgary* Sept. 2008 – Apr. 2012

- Graduated with Deans List; In-Major GPA: 3.65 (out of 4).
- Performed independent research, culminating in 1 publication and 4 conference presentations.

## Professional Experience

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**Research Scientist** Vancouver, BC  
*SWITCH Materials Inc.* Jun. 2019 – Present

- Developing technology for switchable sunroofs with several different teams within the company.
- Work includes but not limited to; synthesis, characterization, data interpretation and presentation, and report writing.

**Postdoctoral Associate** Cambridge, MA  
*Massachusetts Institute of Technology* Jun. 2018 – May 2019

- Supervisor: Prof. Timothy Swager
- Working on the development of carbon nanotube sensors for water contaminants.

**SYNFACTS Contributor** Cambridge, MA  
*Under Editor Prof. Timothy Swager* Jul. 2018 – Dec. 2018

- Screen, select, and evaluate current trends in organic materials synthesis chemistry articles with contributor team.
- Prepare summarized and formatted articles for monthly SYNFACTS.

**Postdoctoral Fellow and Lab Manager** Toronto, ON  
*York University* Jul. 2017 – Mar. 2018

- Oversaw the relocation of a research laboratory from the University of Calgary to York University.
- Managed lab set-up, including instrumentation purchases, lab supply purchasing, product receiving, employing lab safety and introducing an inventory system of chemicals.
- Worked closely and created an effective network with several sales representatives from lab supply companies.
- Advised Facilities Manager in early stages of developing a university wide chemical inventory system.

**Graduate Research Assistant** Toronto, ON  
*University of Calgary* Sept. 2012 – Jun. 2017

- Proficiently worked with my colleagues to develop and lead a number of research projects.
- Pioneered the development of a new class of molecules which is now the research focus of the laboratory.
- Advised incoming students and postdoctoral fellows who were new to the research group.
- Mentored 9 undergraduate and international exchange students in the research group, yielding a joint publication and several students pursuing graduate studies.
- Delivered 11 presentations at national and international conferences and universities on my research.
- Taught and ensured the safety of over 80 students in second- and third-year undergraduate courses as a laboratory teaching assistant.
- Nominated by instructors to be lead TA, working closely with lab coordinators over content and delivery of material and mentoring new graduate students into the teaching assistant role.

**Sessional Instructor** Calgary, AB  
*University of Calgary* Sept. 2014 – Dec. 2014

- Prepared course outline and materials, in addition to instructing a senior level undergraduate course.
- Designed and administered exams for fair evaluation of student knowledge.

## Honours and Awards

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- Winner of the IUPAC 2019 Poster Award
- 2018 IUPAC-Solvay International Award for Young Chemists prize, 2019
- Invited speaker at the Emerging Materials Researchers Symposium, 100<sup>th</sup> CSC, Toronto, ON, 2017
- 1st Place Outstanding Presentation Award (oral) Molecular Materials for Photovoltaic and Optoelectronic Applications (MT4) Symposium at 98th CSC, 2015
- Natural Sciences and Engineering Research Council (NSERC) PGSD3 Scholarship, 2014 – 2017
- Alberta Innovates-Technology Futures (AITF) Graduate (PhD) Scholarship, 2014 – 2016
- Queen Elizabeth II Graduate (Master's) Scholarship, 2013 – 2014
- Alberta Graduate Student Scholarships, 2013
- Program for Undergraduate Research Experience (PURE) Award, 2011, 2012

## Certificates

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### Graphic Design Certificate of Achievement *Southern Alberta Institute of Technology*

Calgary, AB  
Apr. 2016

- GPA: 4.0 (out of 4).
- In classroom program consisting of 8 courses encompassing Adobe software and principles of graphic design.

### Organic Solar Cells - Theory and Practice *Technical University of Denmark*

Online-Based  
Jul. 2014

- Graduated achieved: 100% (with distinction); License number: 7AYLASS5GH
- Six-week program in organic solar cells offered through Coursera

## Publications

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12. C. R. Bridges, M. Stolar, T. Baumgartner, "Phosphaviologen-Based Pyrene-Carbon Nanotube Composites for Stable Battery Electrodes", *Batteries & Supercaps*, **2020**, DOI:10.1002/batt.201900164.
11. M. Berville, J. Richard, M. Stolar, S. Choua, N. Le Breton, C. Gourlaouen, C. Boudon, L. Ruhlmann, T. Baumgartner, J. A. Wytko, J. Weiss, "An air-stable viologen radical cation", *Org. Lett.* **2018**, *20*, 8004.
10. M. Stolar, T. Baumgartner, "Functional Conjugated Pyridines via Main-Group Element Tuning", *Chem. Commun.* **2018**, *54*, 3311.
9. M. Stolar, B. Heyne, T. Baumgartner, "Water-Soluble Phosphaviologens for Effective Photoinduced Charge Separation", *Organometallics*. **2017**, *36*, 2685.
8. M. Stolar, C. Reus, T. Baumgartner, "Xylene-Bridged Phosphaviologen Oligomers and Polymers as High-Performance Electrode-Modifiers for Li-Ion Batteries", *Advanced Energy Materials*. **2016**, *6*, 1600944.
7. C. Reus, M. Stolar, J. Vanderkley, J. Nebauer, T. Baumgartner, "A Convenient N-Arylation Route for Electron-Deficient Pyridines: The Case of pi-Extended Electrochromic Phosphaviologens", *Journal of the American Chemical Society*. **2015**, *137*, 11710.
6. M. Stolar, J. Borau-Garcia, M. Toonen, T. Baumgartner, "Synthesis and Tunability of Highly Electron-Accepting, N-Benzylated 'Phosphaviologens'", *Journal of the American Chemical Society*. **2015**, *137*, 3366. Highlighted in SYNFACTS 05/2015.
5. M. Stolar, T. Baumgartner, "Polycyclic Arenes and Heteroarenes: Synthesis, Properties, and Applications: P-Containing Polycyclic Heteroarenes", invited book chapter, Wiley-VCH, **2015**.
4. M. Stolar, T. Baumgartner, "Phosphorus-Containing Materials for Organic Electronics", *Chemistry – An Asian Journal*. **2014**, *9*, 1212. Most cited list.
3. C. J. Chua, Y. Ren, M. Stolar, S. Xing, T. Linder, T. Baumgartner, "P-Terthienyl Functionalized Dithienof[3,2-b:2',3'-d]phospholes", *European Journal of Inorganic Chemistry*. **2014**, 1767.
2. M. Stolar, T. Baumgartner, "Organic n-Type Materials for Charge Transport and Charge Storage Applications", *Physical Chemistry Chemical Physics*. **2013**, *15*, 9007.

1. M. Stolar, T. Baumgartner, "Synthesis and Unexpected Halochromism of Carbazole-Functionalized Dithienophospholes", *New Journal of Chemistry*. **2012**, *36*, 1153.

Article was very well received resulting in an invitation to provide an inside cover for the May 2012 issue. Online publication made the 'most accessed' list in 03/2012.

## Presentations

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14. M. Stolar\* and T. Baumgartner. (07/2019) Phosphoryl-Bridged Viologens as Functional Materials. 47th IUPAC Chemistry Congress, Paris, France (international, poster presentation, poster award winner)
13. M. Stolar\* and T. Baumgartner. (11/2017) Phosphoryl-Bridged Viologens as Functional Materials for Electrochromic Devices. 45th Ontario-Quebec Physical Organic Minisymposium, Waterloo, Ontario, Canada (regional, oral presentation, 20 min)
12. M. Stolar\* and T. Baumgartner. (11/2017) Phosphoryl-Bridged Viologens as Functional Materials. 50th Inorganic Discussion Weekend, Toronto, Ontario, Canada (regional, poster presentation, received honourable mention in poster competition)
11. M. Stolar\*, B. Heyne, T. Baumgartner. (05/2017) Photocatalytic Phosphaviologen-Titania Dyad. 100th Canadian Chemistry Conference and Exhibition, Toronto, Ontario, Canada (invited talk in Emerging Materials Researchers symposia, international, oral presentation, 20 min)
10. M. Stolar\*, C. Reus, and T. Baumgartner. (06/2016) Solution-Processable Electrode Materials for Organic Batteries. 99th Canadian Chemistry Conference and Exhibition, Halifax, Nova Scotia, Canada (international, oral presentation, 20 min)
9. M. Stolar\*, C. Reus, T. Baumgartner. (06/2015) Phosphaviologens: Powerful Electron-Acceptors with Tunable Optical and Electronic Properties. 98th Canadian Chemistry Conference and Exhibition, Ottawa, Ontario, Canada (international, oral presentation, 20 min)
8. M. Stolar\*, J. Borau-Garcia, and T. Baumgartner. (06/2014) Benzylated Phosphaviologens: Powerful Electron-Acceptors with Tunable Redox Window. 97th Canadian Chemistry Conference and Exhibition, Vancouver, British Columbia, Canada (international, oral presentation, 20 min)
7. M. Stolar\* and T. Baumgartner. (05/2013) Quaternization of Phosphaviologen Towards Materials for Charge Storage. 96th Canadian Chemistry Conference and Exhibition, Quebec City, Quebec, Canada (international, oral presentation, 20 min)
6. C. Sequeira\*, M. Stolar, and T. Baumgartner. (08/2012) Phosphole Derivatives as Potential Ambipolar Molecules in Redox-Flow Batteries. Inorganic Chemistry Exchange Conference, University of Victoria, Canada (national, oral presentation, 20 min, mentorship)
5. C. Sequeira\*, M. Stolar, and T. Baumgartner. (08/2012) Phosphole Derivatives as Potential Ambipolar Molecules in Redox-Flow Batteries. Chemistry Department Undergraduate Research Symposium, University of Calgary, Canada (departmental, oral presentation, 20 min, mentorship)
4. M. Stolar\* and T. Baumgartner. (05/2012) Acid Responsive Dithienophosphole-Based Chromophores. 95th Canadian Chemistry Conference and Exhibition, Calgary, Alberta, Canada (international, poster presentation)
3. M. Stolar\* and T. Baumgartner. (11/2011) Acid Responsive Dithienophosphole-Based Chromophores. 6th Annual Student's Union Undergraduate Research Symposium, University of Calgary, Canada (institutional, poster presentation)
2. M. Stolar\* and T. Baumgartner. (11/2011) Acid Responsive Dithienophosphole-Based Chromophores. 5th Banff Symposium on Organic Chemistry, Banff, Alberta, Canada (national, oral presentation, 20 min)
1. M. Stolar\* and T. Baumgartner. (08/2011) Organophosphorus Copolymers for Organic Photovoltaics. Chemistry Department Undergraduate Research Symposium, University of Calgary, Canada (departmental, oral presentation, 20 min)

## Academic and Volunteer Involvement

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### Engagement Officer

*Art the Science (Canadian Science-Art nonprofit organization)* Dec. 2019 - Present

- Working on creating new connections between the science and art communities to enhance scientific knowledge communication to the public.
- Helping source and design a future merchandise store for SciArt ambassadors and community members.

### Girls in STEAM (Mentoring Café)

*Science World, Vancouver, BC* Nov. 2019

- Round-table discussion with local girls about the life of a female scientist through personal connections.

### Science Outreach

*MIT Chemistry Outreach Program, Greater Boston Area, MA* Nov. 2018

- Demonstrated several experiments used to explain basic scientific concepts to high school students.

*Robert H. Lagerquist School, Brampton, ON* Dec. 2017

- Presented and demonstrated new generation energy harvesting (organic solar cells) to junior high students during school science conference.

*Banbury Crossroads School, Calgary, AB* Feb. 2017

- Presented and demonstrated new generation batteries (Li-ion/Organic Hybrid) to junior high students and staff.

### Graduate Student Representative

Calgary, AB

*University of Calgary, Department of Chemistry* Sept. 2014 – May 2015

- Attended monthly departmental meetings on behalf of the chemistry graduate student body

### President/Resource Administrator

Calgary, AB

*University of Calgary, Chemistry Graduate Student Association* Apr. 2013 – May 2015

- Restructured the association format to increase participation and presence within the department of chemistry.
- Set the agenda for monthly meetings with the 6-person executive committee.
- Took initiative to organize numerous events including the inaugural Welcome Event for new graduate students, faculty, and staff that drew participation from the entire department.
- Secured external funding from academic and private sources for major event fundraising.
- Established a set of guidelines for operation and good business practices for future association administrations

### Graduate Student Buddy

Calgary, AB

*University of Calgary, Chemistry Graduate Visitation Weekend* Feb. 2013, 2014, 2015

- Successfully recruited 3 new graduate students to my research group and personally contributed to an additional 5 to the department through my endorsement.

### Department of Chemistry Representative

Calgary, AB

*University of Calgary, Open House* Nov. 2011, 2012, 2013