

# STEPHEN NEWMAN

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Centre for Catalysis Research and Innovation  
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*Last updated: 12-May-21*

## EDUCATION

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Ph.D. Chemistry. University of Toronto, 2012. *Research Advisor: Mark Lautens.*  
B.Sc. Chemistry (Honours). Dalhousie University, 2008. *Research Advisor: D. Jean Burnell.*

## EMPLOYMENT HISTORY

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2019–present **Associate Professor**, University of Ottawa  
2014–2019 **Assistant Professor**, University of Ottawa  
2012–2014 **NSERC Postdoctoral Fellow**, Massachusetts Institute of Technology

## PRIZES & HONOURS

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Tier 2 Canada Research Chair in Sustainable Catalysis	2014–2024
uOttawa Early Career Researcher Award	2020
CNC-IUPAC Travel Award	2019
Ontario Early Researcher Award	2018
John Charles Polanyi Prize	2016
Nova Domus CHEMEDPHO Visiting Professorship, KU Leuven	2016
Thieme Chemistry Journal Awardee	2015
NRF Global Young Scientist Summit, MIT PDF representative	2014
UofT Chair's Doctoral Medal	2013
NSERC Postdoctoral Fellowship	2012
CAGS/Proquest Distinguished Dissertation Award Nominee	2012
Boehringer Ingelheim Prize, University of Toronto	2011
NSERC Michael Smith Foreign Study Supplement	2011
Integriertes Graduiertenkolleg Sonderforschungsbereich Travel Fund	2011
NSERC Canadian Graduate Scholarship (CGS-D)	2010
NSERC Canadian Graduate Scholarship (CGS-M)	2008
University Silver Medal, Dalhousie University	2008
University Medal in Chemistry, Dalhousie University	2008
CSC Silver Medal, Dalhousie University	2007
NSERC Undergraduate Student Research Award	2006, 2007
Frederick S. Fountain Scholarship	2004

## SCIENTIFIC PUBLICATIONS

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39. Cook, A.; MacLean, H.; St-Onge, P.; Newman, S. G. Nickel-Catalyzed Reductive Deoxygenation of Diverse C-O Bond-Bearing Functional Groups. *Submitted*.
38. Zheng, Y.-L.; Xie, P.-P.; Daneshfar, O.; Houk, K. N.; Hong, X.; Newman, S. G. Direct Ketone Synthesis by a Nickel-Catalyzed Suzuki-Miyaura Coupling of Methyl Esters. *Angew. Chem. Int. Ed.* **2021**, *in press*. DOI: 10.1002/anie.202103327
37. Skrotzki, E.; Vanadavasi, J. K.; Newman, S. G. Ozone-Mediated Amine Oxidation and Beyond: A Solvent Free, Flow-Chemistry Approach. *J. Org. Chem.* **2021**, *accepted*.  
*Invited contribution on Enabling Techniques for Organic Synthesis*
36. Zheng, Y.-L.; Newman, S. G. Cross-Coupling Reactions with Esters, Aldehydes, and Alcohols. *Chem. Commun.* **2021**, 57, 2591. DOI: 10.1039/D0CC08389E
35. Cook, A.; Clément, R.; Newman, S. G. Reaction Screening in Multiwell Plates: High-Throughput Optimization of a Buchwald-Hartwig Amination. *Nat. Prot.* **2021**, 16, 1152. DOI: 10.1038/s41596-020-00452-7
34. Cook, A.; Prakash, S.; Zheng, Y.-L.; Newman, S. G. Exhaustive Reduction of Esters Enabled by Nickel Catalysis. *J. Am. Chem. Soc.* **2020**, 142, 8109. DOI: 10.1021/jacs.0c02405  
*Highlighted on Organic Chemistry Portal (organic-chemistry.org/Highlights/2020/12October.shtml)*  
*Highlighted in ChemistryViews (chemistryviews.org/details/news/11239192/Exhaustive\_Reduction\_of\_Aryl\_Esters.html)*
33. Sullivan, R. J.; Newman, S. G. Reaction Cycling for Kinetic Analysis in Flow. *J. Org. Chem.* **2020**, 85, 5464. DOI: 10.1021/acs.joc.0c00216  
*Highlighted in Org. Process Res. Dev. (DOI: 10.1021/acs.oprd.0c00344)*
32. Kashani, S. K.; Jessiman, J. E.; Newman, S. G. Exploring Homogeneous Conditions for Mild Buchwald-Hartwig Amination in Batch and Flow. *Org. Process Res. Dev.* **2020**, 24, 1984. DOI: 10.1021/acs.oprd.0c00018
31. Zheng, Y.-L.; Newman, S. G. Ni-Catalyzed Domino Heck-Type Reactions using Methyl Esters as Cross-Coupling Electrophiles. *Angew. Chem. Int. Ed.* **2019**, 58, 18159. DOI: 10.1002/anie.201911372
30. Sullivan, R. J.; Freure, G. P. R.; Newman, S. G. Overcoming Scope Limitations in Cross-Coupling of Diazo Nucleophiles by Manipulating Catalyst Speciation and Using Flow Diazo Generation. *ACS Catal.* **2019**, 9, 5623. DOI: 10.1021/acscatal.9b01180  
*Highlighted in SynFacts (DOI: 10.1055/s-0039-1690557)*
29. Verheyen, T.; Turnhout, L. v.; Vandavasi, J. K.; De Borggraeve, W. M.; Newman, S. G. Ketone Synthesis by a Nickel-Catalyzed Dehydrogenative Cross-Coupling of Primary Alcohols. *J. Am. Chem. Soc.* **2019**, 141, 6869. DOI: 10.1021/jacs.9b03280
28. Zheng, Y.-L.; Newman, S. G. Methyl Esters as Cross-Coupling Electrophiles: Direct Synthesis of Amide Bonds. *ACS Catal.* **2019**, 9, 4426. DOI: 10.1021/acscatal.9b00884

27. Isbrandt, E. S.; Sullivan, R. J.; Newman, S. G. High Throughput Strategies for the Discovery and Optimization of Catalytic Reactions. *Angew. Chem. Int. Ed.* **2019**, *58*, 7180. DOI: 10.1002/anie.201812534
26. Ben Halima, T.; Masson-Makdissi, J.; Newman, S. G. Nickel-Catalyzed Amide Bond Formation from Methyl Esters. *Angew. Chem. Int. Ed.* **2018**, *57*, 12925. DOI: 10.1002/anie.201808560
25. Masson-Makdissi, J.; Vandavasi, J. K.; Newman, S. G. Switchable Selectivity in the Pd-Catalyzed Alkylative Cross-Coupling of Esters. *Org. Lett.* **2018**, *20*, 4094. DOI: 10.1021/acs.orglett.8b01646  
*Highlighted on Organic Chemistry Portal (organic-chemistry.org/abstracts/lit6/413.shtm)*
24. Sullivan, R. J.; Newman, S. G. Flow assisted synthesis of heterocycles at high temperatures. *Topics in Heterocyclic Chemistry: Flow Chemistry for the Synthesis of Heterocycles.* **2018**. Springer. Eds. E. Van der Eycken, U. Sharma. DOI: 10.1007/7081\_2018\_18
23. Vandavasi, J. K.; Newman, S. G. A High Throughput Approach to Discovery: Heck-Type Reactivity with Aldehydes. *Synlett.* **2018**, *29*, 2081. DOI: 10.1055/s-0037-1610161  
*Invited Synfacts article*  
*Highlighted in Org. Process Res. Dev. (DOI: 10.1021/acs.oprd.8b00352)*
22. Kashani, S. K.; Sullivan, R. S.; Andersen, M.; Newman, S. G. Overcoming Solid Handling Issues in Continuous Flow Substitution Reactions through Ionic Liquid Formation. *Green Chem.* **2018**, *20*, 1748. DOI: 10.1039/C8GC00618K
21. Sullivan, R. J.; Newman, S. G. Chiral Auxiliary Recycling in Continuous Flow: Automated Recovery and Reuse of Oppolzer's Sultam. *Chem. Sci.* **2018**, *9*, 2130. DOI: 10.1039/C7SC05192A  
*Highlighted in Org. Process Res. Dev. (DOI: 10.1021/acs.oprd.8b00061)*
20. Vandavasi, J. K.; Hua, X.; Ben Halima, H.; Newman, S. G. A Nickel-Catalyzed Carbonyl-Heck Reaction. *Angew. Chem. Int. Ed.* **2017**, *56*, 15441. DOI: 10.1002/anie.201710241
19. Isbrandt, E. S.; Vandavasi, J. K.; Zhang, W.; Jamshidi, M. P.; Newman, S. G. Catalytic Deuteration of Aldehydes with D<sub>2</sub>O. *Synlett* **2017**, *28*, 2851. DOI: 10.1055/s-0036-1588540  
*Undergraduate student as lead author.*  
*Invited contribution in dedication to Prof. Victor Snieckus on the occasion of his 80<sup>th</sup> birthday*
18. Ben Halima, T.; Vandavasi, J. K.; Shkoor, M.; Newman, S. G. A Cross-Coupling Approach to Amide Bond Formation from Esters. *ACS Catal.* **2017**, *7*, 2176. DOI: 10.1021/acscatal.7b00245
17. Ben Halima, T.; Zhang, W.; Yalaoui, I.; Hong, X.; Fang, Y.-F.; Houk, K. N.; Newman, S. G. Palladium-Catalyzed Suzuki-Miyaura Coupling of Aryl Esters. *J. Am. Chem. Soc.* **2017**, *139*, 1311. DOI: 10.1021/jacs.6b12329  
*Highlighted in Organic Chemistry Frontiers (DOI: 10.1039/C7QO00068E)*  
*Highlighted in SynFacts (DOI: 10.1055/s-0036-1590050)*  
*Web of Science "Highly Cited Paper" (top 1% of chemistry)*
16. Hua, X.; Masson-Makdissi, J.; Sullivan, R. J.; Newman, S. G. Inherent Vs Apparent Chemoselectivity in the Kumada-Corriu Cross-Coupling Reaction. *Org. Lett.* **2016**, *18*, 5312. DOI:

10.1021/acs.orglett.6b0263116

*Highlighted in SynFacts (DOI: 10.1055/s-0036-1589681)*

*Highlighted on Organic Chemistry Portal (organic-chemistry.org/abstracts/lit5/632.shtm)*

15. Newman, S. G.; Lee, K.; Cai, J.; Green, W. G.; Jensen, K. F. Continuous Thermal Oxidation of Alkenes with Nitrous Oxide in a Packed Bed Reactor. *Ind. Eng. Chem. Res.* **2015**, *54*, 4166. DOI: 10.1021/ie504129e

14. Jensen, K. F.; Reizman, B. J.; Newman, S. G. Tools for Chemical Synthesis in Microsystems. *Lab Chip* **2014**, *14*, 3206. DOI: 10.1039/c4lc00330f

13. Newman, S. G.; Gu, L.; Lesniak, C.; Victor, G.; Meschke, F.; Abahmane, L.; Jensen, K. F. Rapid Wolff–Kishner Reductions in a Silicon Carbide Microreactor. *Green Chem.* **2014**, *16*, 176. DOI: 10.1039/c3gc41942h

12. Le, C. M.; Petrone, D. A.; Newman, S. G.; Lautens, M. Pd(0)-Catalyzed Carboiodination: Early Developments and Recent Advancements. **2014**, 274. *RSC Catalysis Series 21. New Trends in Cross-Coupling: Theory and Applications*. Ed: Colacot, T. J.

11. Newman, S. G.; Jensen, K. F. The Role of Flow in Green Chemistry and Engineering. *Green Chem.* **2013**, *15*, 1456. DOI: 10.1039/c3gc40374b  
*Web of Science "Highly Cited Paper" (top 1% in chemistry)*

10. Keilitz, J.; Newman, S. G.; Lautens, M. Enantioselective Rh-Catalyzed Domino Transformations of Alkynylcyclohexadienones with Organoboron Reagents. *Org. Lett.* **2013**, *15*, 1148. DOI: 10.1021/ol400363f

9. Lan, Y.; Liu, P.; Newman, S. G.; Lautens, M.; Houk, K. N. Theoretical Study of Pd(0)-Catalyzed Carbohalogenation of Alkenes: Mechanism and Origins of Reactivities and Selectivities in Alkyl Halide Reductive Elimination from Pd(II) Species. *Chem. Sci.* **2012**, *3*, 1987. DOI: 10.1039/c2sc20103h

8. Newman, S. G.; Howell, J. M.; Nicolaus, N.; Lautens, M. Palladium-Catalyzed Carbohalogenation: Bromide to Iodide Exchange and Domino Processes. *J. Am. Chem. Soc.* **2011**, *133*, 14916. DOI: 10.1021/ja206099t

7. Newman, S. G.; Lautens, M. Palladium-Catalyzed Carboiodination of Alkenes: Carbon-Carbon Bond Formation with Retention of Reactive Functionality. *J. Am. Chem. Soc.* **2011**, *133*, 1778. DOI: 10.1021/ja110377q

6. Newman, S. G.; Bryan, C. S.; Perez, D.; Lautens, M. The Use of Bromotrichloromethane in Chlorination Reactions. *Synthesis* **2011**, 342. DOI: 10.1055/s-0030-1258368

5. Zhong, Y.-L., Bulger, P. G., Newman, S. G., Lautens, M. A Practical and Scalable Synthesis of N-Halo Compounds. *Org. Syn.* **2010**, *87*, 8.

4. Newman, S. G.; Lautens, M. The Role of Reversible Oxidative Addition in Selective Palladium(0)-Catalyzed Intramolecular Cross-Couplings of Polyhalogenated Substrates: Synthesis of Brominated Indoles. *J. Am. Chem. Soc.* **2010**, *132*, 11416. DOI: 10.1021/ja1052335

3. Newman, S. G.; Aureggi, V.; Bryan, C. S.; Lautens, M. Intramolecular Cross-Coupling of gem-Dibromoolefins: a Mild Approach to 2-Bromo Benzofused Heterocycles. *Chem. Commun.* **2009**, 5236. DOI: 10.1039/b912093a

2. Lee, D.; Newman, S. G.; Taylor, M.S. Boron-Catalyzed Direct Aldol Reactions of Pyruvic Acids. *Org. Lett.* **2009**, *11*, 5486. DOI: 10.1021/ol902322r

1. Newman, S. G.; Taylor, A.; Boyd, R. J. Factors Controlling Extremely Strong AAA-DDD Triply Hydrogen-Bonded Complexes. *Chem. Phys. Lett.* **2008**, *450*, 210. DOI: 10.1016/j.cplett.2007.11.018

### Intellectual Property

1. Newman, S. G.; Ben Halima, T.; Masson-Makdissi, J. Synthesis of Amides from Esters. **2018**. S/N 62/624,286.

### INVITED SEMINARS

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69. ACS 25<sup>th</sup> Green Chemistry & Engineering Conference. Virtual meeting. June 2021.

68. ACS National Meeting, The Power of High Throughput Experimentation. Virtual meeting. Mar 2021.

67. Canadian Chemical Engineering Conference (CCEC) 2020, Catalysis symposium. Virtual meeting, Oct 2020.

66. 5<sup>th</sup> International OM&Cat. Hong Kong, June 2020. *Cancelled due to COVID19*

65. University of California, Riverside. Riverside, USA, June 2020. *Cancelled due to COVID19*

64. ACS National Meeting, HTE. Philadelphia, USA, Mar 2020. *Cancelled due to COVID19*

63. University of Montreal. Montreal, Canada, Mar 2020.

62. 19th Norwegian Catalysis Symposium. Bergen, Norway, Nov 2019.

61. Queen's University. Kingston, Canada, Nov 2019.

60. 20th IUPAC International Symposium on Organometallic Chemistry Directed Towards Organic Synthesis (OMCOS). Heidelberg, Germany, July 2019.

59. Canadian Chemistry Conference and Exhibition, Emerging Tools and Methodologies in Inorganic Chemistry. Quebec City, Canada, June 2019.

58. Canadian Chemistry Conference and Exhibition, Symposium in Honour of Mark Lautens' 60th Birthday. Quebec City, Canada, June 2019.

57. University of Windsor. Windsor, Canada, May 2019.

56. Green Chemistry Initiative Annual Symposium. Toronto, Canada, May 2019.

55. Ruhr-Universität Bochum. Bochum, Germany, Dec 2018.

54. Max-Planck-Institut für Kohlenforschung. Mülheim, Germany, Dec 2018.

53. Heidelberg University. Heidelberg, Germany, Dec 2018.

52. BASF SE. Ludwigshafen, Germany, Dec 2018.

51. SelectBio Flow Chemistry Congress. Miami, USA, Nov 2018.

50. Saint Mary's University. Halifax, Canada, Sept 2018.

49. Acadia University. Wolfville, Canada, Sept 2018.

48. Dalhousie University. Halifax, Canada, Sept 2018.

47. St. Francis Xavier University. Antigonish, Canada, Sept 2018.

46. Mount Allison University. Sackville, Canada, Sept 2018.

45. ACS National Meeting. Young Investigator's Symposium. Boston, USA, August 2018.

44. ACS National Meeting. Flow Chemistry Symposium. Boston, USA, August 2018. *Contributed*

43. Gordon Research Conference: Organic Reactions & Processes. Easton, USA, July 2018. *Contributed*

43. Innovation Day Lecture, Apotex Pharmachem. Brandtford, Canada, June 2018

42. CSC Conference and Exhibition. Edmonton, Canada, May 2018.

41. 14th Organic & Bio-organic Young Investigator Workshop. Edmonton, Canada, May 2018.

40. York University. Toronto, Canada, May 2018.

39. Shanghai Institute of Organic Chemistry (SIOC), Shanghai, China. November 2017.
38. Nanjing University. Nanjing, China, November 2017.
37. University of Science and Technology of China. Hefei, China, November 2017.
36. Wuhan University. Wuhan, China, November 2017.
35. Huazhong University of Science & Technology. Wuhan, China, November 2017.
34. Central China Normal University. Wuhan, China, November 2017.
33. Continuous Flow Science Annual Symposium, Montreal, Canada, Sept 2017.
32. Eli Lilly Summer Seminar Series. Indianapolis, USA, Aug 2017.
31. Gordon Research Conference: Organic Reactions & Processes. Easton, USA, July 2017. *Contributed*
30. Aix Marseille University. Marseille, France, July 2017.
29. Université Grenoble Alpes. Grenoble, France, July 2017.
28. École Polytechnique Fédérale de Lausanne (EPFL). Lausanne, Switzerland, July 2017.
27. Novartis International AG. Basel, Switzerland, July 2017.
26. Universität Basel. Basel, Switzerland, June 2017.
25. Université Claude Bernard Lyon 1. Lyon, France, June 2017.
24. École Normale Supérieure de Lyon. Lyon, France, June 2017.
23. Lean for Government Professional Development Day: Continuous Flow Science in the Chemical Industry. Ottawa, Canada, June 2017.
22. CSC Conference and Exhibition. Toronto, Canada, May 2017.
21. Delmar Chemicals. Montreal, Canada, Jan 2017.
20. Paraza Pharma. Montreal, Canada, Jan 2017.
19. Vertex Pharmaceuticals. Laval, Canada, Jan 2017.
18. Apotex Pharmachem Inc. Brandtford, Canada, Dec 2016.
17. Alphora Research, Inc. Mississauga, Canada, Nov 2016.
16. Xerox Research Centre of Canada. Mississauga, Canada, Nov 2016.
15. Belgian Organic Synthesis Symposium. Antwerp, Belgium, July 2016. *Contributed*
14. SYNDELGE Scientific Workshop. Ghent University, Belgium, July 2016.
13. University of Glasgow, Scotland, July 2016.
12. University of Leuven, Belgium, June 2016.
11. OCCI day, Carleton University. Ottawa, Canada, June 2016.
10. CSC Conference and Exhibition. Halifax, Canada, June 2016.
9. uOttawa New Professors Lecture Program. Ottawa, Canada, December 2015.
8. CSC Conference and Exhibition. Ottawa, Canada, June 2015.
7. Microfluidic Professional Course: Chemical Synthesis in Flow. Toronto, Canada, May 2015.
6. Gordon Research Conference: Org. Reactions & Processes. Smithfield, USA, July 2013. *Contributed*
5. ACS National Conference and Exhibition. Philadelphia, USA, August 2012. *Contributed*
4. CSC Conference and Exhibition. Montreal, Canada, June 2011. *Contributed*
3. Pacifichem. Honolulu, USA, Dec 2010. *Contributed*
2. CSC Conference and Exhibition. Toronto, Canada, May 2010. *Contributed*
1. International Congress on Heterocyclic Chemistry. St. John's, Canada, Aug 2009. *Contributed*

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## OTHER ACTIVITIES

### Professional service

- **Research Foundation – Flanders (FWO) Review College, 2021-2023**  
*Panel member*



- **Ontario Early Researcher Award**, 2019-2021

*Selection committee*

- **30th Quebec/Ontario Mini-Symposium for Synthetic and Bioorganic Chemistry**, 2019

*Organizer & co-chair*

- **100<sup>th</sup> Canadian Chemistry Conference and Exhibition**, 2017

*Symposium organizer – Transition metal catalysis for organic synthesis*

- **24<sup>th</sup> Canadian Symposium on Catalysis**, 2016

*Organizing committee*

- **98<sup>th</sup> Canadian Chemistry Conference and Exhibition**, 2015

*Organizing committee & student volunteer co-ordinator*

- **22<sup>nd</sup> IUPAC International Conference on Physical Organic Chemistry**, 2014

*Organizing committee & session chair*

- **Scientific Writer – Thieme Publisher**, 2009-2012

*Over 100 articles contributed to journal Synfacts*

- **Journal (e.g. J. Am. Chem. Soc.; Angew.; Chem. Sci.; Nature.; Science) & grant (NSERC DG, CRD; FWO Belgium; Ontario ERA) reviewer**

*~30 reviews/year*

#### Institutional service

- **Faculty of Science Research Committee**. 2019–present
- **Departmental Scholarship Adjudication Committee**. 2016–present
- **Departmental Recruitment Committee**. 2016–present
- **uOttawa Catalysis Centre (CCRI) – Outreach coordinator**. 2016–present
- **Departmental Library Representative**. 2016–present
- **Departmental Safety Committee**. 2014–present
- **University Emergency Response Plan (ERP) Committee**. 2016–2019

#### Teaching

- **CHM1321: Organic chemistry I**. 2021
- **CHM8304A: Transition metal catalyzed reactions**. 2020
- **CHM1321: Organic chemistry I**. 2020
- **CHM8304D: Modern tools and techniques in organic synthesis**. 2019
- **CHM8257: Organic chemistry graduate seminar series**. 2019–2020
- **CHM4328: Transition metal catalyzed reactions in organic synthesis**. 2019
- **BPS4900A: Medicinal chemistry seminar course**. 2018–2019
- **CHM4328: Transition metal catalyzed reactions in organic synthesis**. 2018
- **BPS4900A: Medicinal chemistry seminar course**. 2017–2018
- **BPS4900A: Medicinal chemistry seminar course**. 2016–2017
- **CHM8304D: Sustainable chemical synthesis through catalysis**. 2016
- **LOMAC Summer School, KU Leuven: Modern C-H functionalization**. 2016
- **CHM4328: Transition metal catalyzed reactions in organic synthesis**. 2016
- **CHM4328: Transition metal catalyzed reactions in organic synthesis**. 2015

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**MEDIA/INTERVIEWS**

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7. "The smaller the better." *On the use of flow chemistry to streamline chemical manufacturing.* uOttawa Research Perspectives magazine, Dec 10 2020.
6. "Element of Surprise: Nickel." *On the relevance of nickel to everyday life.* CBC News, Aug 11 2020.
5. "Automation for the people: Training a new generation of chemists in data-driven synthesis." *On the importance of data-driven synthesis.* C&EN News, Oct 27 2019.
4. "Glass beads help robots deliver minuscule amounts of reagents." *On the miniaturizing of chemical reactions.* C&EN News, Mar 27 2019.
3. "Acoustic robot races through chemical reactions." *On the importance of new technology for high throughput reaction screening.* C&EN News, Mar 11 2019.
2. "Element of Surprise: Palladium." *On the relevance of palladium to everyday life.* CBC News, Feb 4 2019.
1. "Eye on the Prize." *On the award-winning research that lead to the 2016 John Charles Polanyi Prize.* Ottawa Citizen, Dec 24 2016.