



CURTIS P. BERLINGUETTE

Professor of Chemistry and Chemical and Biological Engineering, The University of British Columbia
Principal Investigator, Stewart Blusson Quantum Matter Institute (SBQMI)
Program Co-Director, Canadian Institute for Advanced Research (CIFAR)

CONTACT INFORMATION

CHEM A333 | 2036 Main Mall
The University of British Columbia
Vancouver BC, V6T 1Z1, CANADA
cberling@chem.ubc.ca
(604) 827-5969

METRICS, February 2022 (over last 5 years)

Total publications: 154 (64)
No. of citations: 11703 (7185)
h-index: 55 (43)

POST-SECONDARY EDUCATION

University or Institution	Program	Dates
Harvard University	Postdoctoral Associate	2004 – 2006
Texas A&M University	Ph.D.	2000 – 2004
University of Alberta	B.Sc.	1996 – 2000

EMPLOYMENT RECORD

University of British Columbia	Professor of Chemistry and Chemical and Biological Engineering	2017-present
Stewart Blusson Quantum Matter Institute (SBQMI)	Professor / Principal Investigator	2015-present
Canadian Institute for Advanced Research (CIFAR)	Co-Director (Bioinspired Solar Energy) Fellow	2020-present 2014-present
Miru Smart Technologies Corp. (formerly Click Materials)	CEO & Co-Founder	2016-present
University of British Columbia	Associate Professor of Chemistry and Chemical and Biological Engineering	2013-2017
École Polytechnique Fédérale de Lausanne, Switzerland	Visiting Scientist	2013
University of Calgary	Associate Professor	2011-2013
Centre for Advanced Solar Materials	Director	2011-2013
Institute for Sustainable Energy, Environment & Economy	Fellow	2006-2013
University of Calgary	Assistant Professor	2006-2011

Curriculum Vitae
Curtis P. Berlinguette

SERVICE TO THE COMMUNITY

Editor, Journal of Materials Chemistry A (RSC Publication) | 2020-2021
Schmidt Science Fellows Academic Reviewer | 2020-2022
Rutherford Memorial Medal (Chemistry) Selection Committee, The Royal Society of Canada | 2019
Editorial Board, EnergyChem (Elsevier) | 2018-2021
Editorial Advisory Board, Journal of Materials Chemistry A (RSC Publication) | 2017-2019
Participant, Mission Innovation Workshop on Carbon Capture and Utilization (Houston, TX, USA) | Sep 2017
Participant, Mission Innovation Workshop on Accelerated Materials Discovery (Mexico City, MX) | Sep 2017
IPS-22 International Organization Committee | 2016-2022
Canadian Institute for Advanced Research | 2015-present
Editorial Advisory Board, Chemistry of Materials (ACS Publications) | 2014-2020
Editorial Advisory Board, Inorganic Chemistry (ACS Publications) | 2012-2015

AWARDS AND DISTINCTIONS

Fellow of the Royal Society of Canada | 2021
Distinguished University Scholar Award | 2021
CSC Award for Research Excellence in Materials Chemistry | 2020
CIFAR Co-Director (Bioinspired Solar Fuels) | 2020-2025
Fellow of the Royal Society of Chemistry (UK) | 2018
NSERC E.W.R. Steacie Memorial Fellowship | 2016
RSC Alex Rutherford Medal for Chemistry | 2016
Strem Chemicals Award for Pure and Inorganic Chemistry | 2016
CIFAR Fellow | 2014-present
International Conference for Coordination Chemistry “Rising Star” | 2014
Tier II Canada Research Chair in Solar Energy Conversion | 2014-2019
Top 40 Under 40, Avenue Magazine (Calgary) | 2012
Alfred P. Sloan Fellowship | 2011
Canadian National Committee for the IUPAC Travel Award | 2011
Tier II Canada Research Chair in Energy Conversion | 2008-2013
Alberta Ingenuity New Faculty Award | 2007
NATO-ASI Award, NATO | 2003
European Science Bursary, European Science Foundation | 2003
Outstanding Oral Presentation, Texas A&M IUCCP Symposium | 2003
Martell Travel Award, Texas A&M University | 2002
Dean’s Graduate Scholarship, College of Sciences, Texas A&M University | 2000

RESEARCH AND TEACHING INTERESTS

Reactive CO₂ capture

Our program has pioneered electrochemical reactors that convert reactive CO₂ capture solutions, generated from common air capture technologies, into fuels, chemicals, and building materials. We design electrocatalysts and membranes to build unique reactor configurations that will contribute to a carbon-neutral future.

Electrification of the chemicals industry

Electrification of the chemicals manufacturing sector is needed to reduce CO₂ emissions. Our team has invented a membrane reactor “Thor” that drives hydrogenation reactions using only water and electricity, and not at the high

Curriculum Vitae

Curtis P. Berlinguette

temperatures and pressures used by the industry today. Membrane reactors provide an opportunity to electrify and decarbonize the production of specialty chemicals, (bio)fuels, pharmaceuticals, and plastics.

Flexible automation and self-driving labs

We build self-driving laboratories that combine flexible automation and artificial intelligence. Self-driving laboratories discover new materials faster than a human can. This approach will help us advance clean energy technologies from laboratory to market faster than ever before. Our flagship system, “Ada”, autonomously optimizes thin films and coatings for solar cells, electrolyzers, and other technologies.

Advanced nuclear fusion

We build electrochemical reactors to study nuclear fusion reactions at lower temperatures than conventional fusion reactors. Our mission is to combine electrochemistry, materials science and nuclear physics to reduce the energy needed for fusion reactions. We hope to discover a low-cost clean energy source that can scale within the span of a human lifetime.

FEATURED PUBLICATIONS

Zhang, Z.; Lees, E. W.; Habibzadeh, F.; Salvatore, D. A.; Ren, S.; Simpson, G.; Wheeler, D. G.; Liu, A.; Berlinguette, C. P.* “Porous metal electrodes enable efficient electrolysis of carbon capture solutions.” *Energy Environ. Sci.* **2022**. DOI: [10.1039/D1EE02608A](https://doi.org/10.1039/D1EE02608A)

Delima, R. S.; Stankovic, M. D.; MacLeod, B. P.; Fink, A. G.; Rooney, M. B.; Huang, A.; Jansonius, R. P.; Dvorak, D. J.; Berlinguette, C. P.* “Selective Hydrogenation of Furfural Using a Membrane Reactor.” *Energy Environ. Sci.* **2022**, 15, 215-224.

DOI: [10.1039/D1EE02818A](https://doi.org/10.1039/D1EE02818A)

MacLeod, B. P.; Parlane, F. G. L.; Brown, A. K.; Hein, J. E.; Berlinguette, C. P. “Flexible Automation Accelerates Materials Discovery.” *Nat. Mater.* **2021**.

DOI: [10.1038/s41563-021-01156-3](https://doi.org/10.1038/s41563-021-01156-3)

Lees, E. W.; Mowbray, B. A. W.; Parlane, F. G. L.; Berlinguette, C. P.* “Gas Diffusion Electrodes and Membranes for CO₂ Reduction Electrolyzers.” *Nat. Rev. Mater.* **2021**, 7, 55-64.

DOI: [10.1038/s41578-021-00356-2](https://doi.org/10.1038/s41578-021-00356-2)

Kellett, C. W.; Kennepohl, P.; Berlinguette, C. P.* “π Covalency in the Halogen Bond.” *Nat. Commun.* **2020**, 11, 3310.

DOI: [10.1038/s41467-020-17122-7](https://doi.org/10.1038/s41467-020-17122-7)

Taherimakhsousi, N.; MacLeod, B. P.; Parlane, F. G. L.; Morrissey, T. D.; Booker, E. P.; Dettelbach, K. E.; Berlinguette, C. P.* “Quantifying Defects in Thin Films Using Machine Vision.” *NPJ Comput. Mater.* **2020**, 6 (111).

DOI: [10.1038/s41524-020-00380-w](https://doi.org/10.1038/s41524-020-00380-w)

Kurimoto, A.; Sherbo, R. S.; Cao, Y.; Loo, N. W. X.; Berlinguette, C. P.* “Electrolytic Deuteration of Unsaturated Bonds Without Using D₂.” *Nat. Catal.* **2020**, 3, 719-726.

DOI: [10.1038/s41929-020-0488-z](https://doi.org/10.1038/s41929-020-0488-z)

Salvatore, D. A.; Berlinguette, C. P.* “Voltage Matters When Reducing CO₂ in an Electrochemical Flow Cell.” *ACS Energy Lett.* **2020**, 5 (1), 215-220.

DOI: [10.1021/acsenergylett.9b02356](https://doi.org/10.1021/acsenergylett.9b02356)

Curriculum Vitae

Curtis P. Berlinguette

MacLeod, B. P.; Parlante, F. G. L.; Morrissey, T. D.; Häse, F.; Roch, L.; Dettelbach, K. E.; Moreira, R.; Yunker, L. P. E.; Rooney, M. B.; Deeth, J. R.; Lai, V.; Ng, G. J.; Situ, H.; Zhang, R. H.; Elliott, M. S.; Haley, T. H.; Dvorak, D. J.; Aspuru-Guzik, A.*; Hein, J. E.*; Berlinguette, C. P.* "Self-Driving Laboratory for Accelerated Discovery of Thin-Film Materials." *Science Advances* **2020**, 6 (20), eaaz8867.
[DOI: 10.1126/sciadv.aaz8867](https://doi.org/10.1126/sciadv.aaz8867)

Kurimoto, A.; Sherbo, R. S.; Cao, Y.; Loo, N. W. X.; Berlinguette, C. P.* "Electrolytic Deuteration of Unsaturated Bonds Without Using D₂." *Nat. Catal.* **2020**, 3, 719-726.
[DOI: 10.1038/s41929-020-0488-z](https://doi.org/10.1038/s41929-020-0488-z)

Li, T.; Lees, E. W.; Goldman, M.; Salvatore, D. A.; Weekes, D. M.; Berlinguette, C. P.* "Electrolytic Conversion of Bicarbonate into CO in a Flow Cell." *Joule* **2019**, 3 (6), 1487-1497.
[DOI: 10.1016/j.joule.2019.05.021](https://doi.org/10.1016/j.joule.2019.05.021)

Ren, S.; Joulié, D.; Salvatore, D. A.; Torbensen, K.; Wang, M.; Robert, M., Berlinguette, C. P.* "Molecular Electrocatalysts can Mediate Fast, Selective CO₂ Reduction in a Flow Cell." *Science* **2019**, 365 (6451), 367-369.
[DOI: 10.1126/science.aax4608](https://doi.org/10.1126/science.aax4608)

Chiang, Y.-M.; Munday, J. N.; Schenkel, T.; Fork, D. K.; Koningstein, R.; Trevithick, M. D.; Berlinguette, C. P.* "Revisiting the Cold Case of Cold Fusion." *Nature* **2019**, 570, 45-51.
[DOI: 10.1038/s41586-019-1256-6](https://doi.org/10.1038/s41586-019-1256-6)

Johnson, N. J. J.; Lam, B.; MacLeod, B. P.; Sherbo, R. S.; Moreno-Gonzales, M.; Fork, D. K.; Berlinguette, C. P.* "Facets and Vertices Regulate Hydrogen Uptake and Release in Palladium Nanocrystals." *Nat. Mater.* **2019**, 18, 454-458.
[DOI: 10.1038/s41563-019-0308-5](https://doi.org/10.1038/s41563-019-0308-5)

Berlinguette, C. P.*; Chiang, Y.-M.; Munday, J. N.; Schenkel, T.; Fork, D. K.; Koningstein, R.; Trevithick, M. D. "Revisiting the Cold Case of Cold Fusion." *Nature* **2019**, 570, 45-51.
[DOI: 10.1038/s41586-019-1256-6](https://doi.org/10.1038/s41586-019-1256-6)

Sherbo, R. S.; Delima, R. S.; Chikowski, V. A.; MacLeod, B. P.; Berlinguette, C. P.* "Complete Electron Economy by Pairing Electrolysis with Hydrogenation" *Nat. Catal.* **2018**, 1, 501-507
[DOI: 10.1038/s41929-018-0083-8](https://doi.org/10.1038/s41929-018-0083-8)

Weekes, D. M.; Salvatore, D. A.; Reyes, A.; Huang, A.; Berlinguette, C. P.* "Electrolytic CO₂ Reduction in a Flow Cell." *Acc. Chem. Res.* **2018**, 51, 910-918.
[DOI: 10.1021/acs.accounts.8b00010](https://doi.org/10.1021/acs.accounts.8b00010)

PAST AREAS

Kellett, C. W.; Kennepohl, P.; Berlinguette, C. P.* "π Covalency in the Halogen Bond." *Nat. Commun.* **2020**, 11, 3310.
[DOI: 10.1038/s41467-020-17122-7](https://doi.org/10.1038/s41467-020-17122-7)

Cao, Y.; Li, Y.; Morrissey, T.; Lam, B.; Patrick, B. O.; Dvorak, D. J.; Xia, Z.; Kelly, T. L.*; Berlinguette, C. P.* "Dopant-free Molecular Hole Transport Material that Mediates a 20% Power Conversion Efficiency in a Perovskite Solar Cell." *Energy Environ. Sci.* **2019**, 12 (12), 3502-3507.
[DOI: 10.1039/C9EE02983D](https://doi.org/10.1039/C9EE02983D)

Cheng, W.; He, J.; Dettelbach, K. E.; Johnson, N.; Sherbo, R. S.; Berlinguette, C. P.* "Photodeposited Amorphous Oxide Films for Electrochromic Windows." *Chem* **2018**, 4, 821-832.
[DOI: 10.1016/j.chempr.2017.12.030](https://doi.org/10.1016/j.chempr.2017.12.030)

Curriculum Vitae

Curtis P. Berlinguette

Kellett, C. W.; Swords, W. B.; Turlington, M. D.; Meyer, G. J.*; Berlinguette, C. P.* "Resolving Orbital Pathways for Intermolecular Electron Transfer." *Nat. Commun.* **2018**, 9, 4916.

[DOI: 10.1038/s41467-018-07263-1](https://doi.org/10.1038/s41467-018-07263-1)

Chikowski, V.; Cao, Y.; Tan, H.; Tabor, D. P.; Sargent, E. H.; Aspuru-Guzik, A.; Berlinguette, C. P.* "Precise Control of Thermal and Redox Properties of Organic Hole-Transport Materials." *Angew. Chem. Int. Ed.* **2018**, 57 (47), 15529-15533.

[DOI: 10.1002/anie.201810809](https://doi.org/10.1002/anie.201810809)

Parlane, F.; Mustoe, C.; Kellett, C.; Simon, S. J. C.; Swords, W.; Meyer, G. J.; Kennepohl, P.; Berlinguette, C. P.* "Spectroscopic Detection of Halogen Bonding Resolves Dye Regeneration in the Dye-Sensitized Solar Cell." *Nat. Commun.* **2017**, 8, 1761.

[DOI: 10.1038/s41467-017-01726-7](https://doi.org/10.1038/s41467-017-01726-7)

Chikowski, V.; Lam, B.; Du, C.; Berlinguette, C. P.* "Comparative analysis of triarylamine and phenothiazine sensitizer donor units in dye-sensitized solar cells." *Chem. Commun.* **2017**, 53 (15), 2367-2370.

[DOI: 10.1039/c6cc09178d](https://doi.org/10.1039/c6cc09178d)

Hu, K.; Blair, A. D.; Piechota, E. J.; Schauer, P. A.; Sampaio, R.; Parlane, F. G. L.; Meyer, G. J.*; Berlinguette, C. P.* "Kinetic Pathway for Interfacial Electron Transfer from a Semiconductor to a Molecule." *Nat. Chem.* **2016**, 8, 853-859.

[DOI: 10.1038/nchem.2549](https://doi.org/10.1038/nchem.2549)

Salvatore, D. A.; Dettelbach, K. E.; Hudkins, J. R.; Berlinguette, C. P.* "Near-Infrared–Driven Decomposition of Metal Precursors Yields Amorphous Electrocatalytic Films." *Sci. Adv.* **2015**, 1 (2), e1400215.

[DOI: 10.1126/sciadv.1400215](https://doi.org/10.1126/sciadv.1400215)

Smith, R. D. L.; Prevot, M. S.; Fagan, R.; Zhang, Z.; Sedach, P. A.; Siu, M. K. J.; Berlinguette, C. P.* "Photochemical Route for Accessing Amorphous Metal-Oxide Materials for Heterogeneous Water Oxidation Catalysis." *Science* **2013**, 340 (6128), 60-63. (Featured in >500 international media outlets)

[DOI: 10.1126/science.1233638](https://doi.org/10.1126/science.1233638)

Wasylenko, D. W.; Ganesamoorthy, C.; Borau-Garcia, J.; Berlinguette, C. P.* "Electrochemical Evidence for Catalytic Water Oxidation Mediated by a High-Valent Cobalt Complex." *Chem. Commun.* **2011**, 47 (14), 4249-4251.

[DOI: 10.1039/C0CC05522K](https://doi.org/10.1039/C0CC05522K)

Wasylenko, D. W.; Koivisto, B. D.; Ganesamoorthy, C.; Henderson, M.; Berlinguette, C. P.* "Insight into Water Oxidation by Mononuclear Polypyridyl Ru Catalysts." *Inorg. Chem.* **2010**, 49 (5), 2202-2209.

[DOI: 10.1021/ic902024s](https://doi.org/10.1021/ic902024s)

Wasylenko, D. W.; Ganesamoorthy, C.; Henderson, M.; Koivisto, B. D.; Berlinguette, C. P.* "Electronic Modification of the $[Ru^{II}(tpy)(bpy)OH_2]^{2+}$ Scaffold: Effects on Catalytic Water Oxidation." *J. Am. Chem. Soc.* **2010**, 132 (45), 16094-16106.

[DOI: 10.1021/ja106108y](https://doi.org/10.1021/ja106108y)

Bomben, P. G.; Robson, K. C. D.; Sedach, P.; Berlinguette, C. P.* "On the Viability of Cyclometalated Ru(II) Complexes for Light-Harvesting Applications." *Inorg. Chem.* **2009**, 48 (20), 9631-9643.

[DOI: 10.1021/ic900653q](https://doi.org/10.1021/ic900653q)