Christian Kuss

Curriculum Vitae

CONTACT INFORMATION

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EDUCATION AND EMPLOYMENT

Undergraduate: Three years in Diplom (Chemistry) program (grade 1.6 on an inverted scale of 5.0 to 1.0; 1.0 being best) at ***University of Technology Dresden***, Dresden, Germany 10/2004 – 09/2007

Ph.D. (Chemistry), ***University of Quebec in Montreal***, Montreal, Canada, Dissertation title "Diffusion in Battery Materials" (thesis evaluation: excellent, certificate of excellence for course work), 09/2009 – 08/2014

Postdoctoral Fellow, Department of Chemistry (Janine Mauzeroll Group), ***McGill University***, Montreal, Canada, 08/2014 – 11/2015

NSERC Postdoctoral Fellow and Senior Postdoctoral Research Associate, Department of Materials (Peter G. Bruce Group), ***University of Oxford***, Oxford, UK, 01/2016 – 06/2018

Assistant Professor, Department of Chemistry, ***University of Manitoba***, Winnipeg, Canada, 07/2018 – 03/2024

Assistant Professor, Department of Chemistry, ***University of Manitoba***, Winnipeg, Canada, since 03/2024

AWARDS AND HONOURS

Award name	**Granting Organization**	**Value**
University of Manitoba Faculty of Science Innovation in Teaching Award **2021**	University of Manitoba / Faculty of Science	CAD 1,000
UM / UMFA Merit Award for Teaching **2021**	University of Manitoba / University of Manitoba Faculty Association	CAD 3,000
Named finalist, Young Energy Storage Scientist Award **2015**	RS2E Research Network on Electrochemical Energy Storage	-

NSERC Postdoctoral Fellowship **(2014)**	National Science and Engineering Research Council Canada	CAD 90,000
Bourse du Syndicat des Professeurs et Professeures de l'UQAM **2013**	Syndicat des Professeurs et Professeures de l'UQAM	CAD 6,000
Bourse d'excellence de la Faculté des Sciences de l'UQAM **2011, 2012, 2013**	Faculté des Sciences de l'UQAM	CAD 5,000 each
Best Poster Price at the 63rd Annual Meeting of the International Society for Electrochemistry in Prague **2012**	The International Society for Electrochemistry	-
Bourse d'exemption des droits de scolarité supplémentaires pour étudiants étrangers **2009, 2010, 2011**	Université du Québec à Montréal	~ CAD 10,000 each

PUBLICATIONS

Supervised students are underlined, asterisk (*) denotes corresponding author.

Peer reviewed articles

1. Azariah G., Mai A.N.T., **Kuss C.*:** The Impact of Polypyrrole:Carboxymethyl Cellulose Composite Nanostructure on Conductivity and Capacitance. ***Canadian Journal of Chemistry***, accepted.
2. Lobato de Faria M.L., Mai, A.N.T., Shami A., **Kuss C.***: Ionic conductivity and lithium transference number in $LiClO_4$-doped Carboxymethyl Cellulose. ***Electrochemical Science Advances,*** in revision.
3. Odetallah M., **Kuss C.***: A review of chemically induced intercalation and de-intercalation in battery materials. ***Energy Technology,*** **2023**, 11, 2201060. DOI: 10.1002/ente.202201060
4. Nguyen V.A., Odetallah M., Bakir G., Gough K., **Kuss C.***: Piezoresistive behavior of Polypyrrole:Carboxymethyl Cellulose composites. ***ACS Omega*****, 2022**, 7, 41937-41942. DOI: 10.1021/acsomega.2c03461
5. Dong S., Yang S., Chen Y., **Kuss C.**, Cui G., Johnson L.R., Gao X., Bruce P.G.*: Singlet oxygen and dioxygen bond cleavage in the aprotic lithium-oxygen battery. ***Joule***, **2022**, 6, 185. DOI: 10.1016/j.joule.2021.12.012
6. Halpegama J.U., Bandara P.M.C.J., Jayarathne L., Yeh C.Y., Chen J.Y., **Kuss C.,** Dahanayake U., Herath A.C., Weragoda S.K., Chen X., Weerasooriya R.: Facile fabrication of nano zerovalent iron – reduced graphene oxide composites for nitrate

reduction in water. ***Environmental Advances*****, 2021**, 3, 100024. DOI: 10.1016/j.envadv.2020.100024

7. Boivin E., Guerrini N., House R.A., Lozano J.G., Jin L., Rees G.J., Somerville J.W., **Kuss C**., Roberts M.R., Bruce P.G.*: The Role of Ni and Co in suppressing O-loss in Li-rich layered cathodes. ***Advanced Functional Materials***, **2021,** 31, 2003660. DOI: 10.1002/adfm.202003660
8. Nguyen V.A., Wang J., **Kuss C.***: Conducting Polymer Composites as Water-Dispersible Electrode Matrices for Li-Ion Batteries: Synthesis and Characterization. ***Journal of Power Sources Advances,*** **2020**, 6, 10033. DOI: 10.1016/j.powera.2020.100033
9. Nguyen V.A., **Kuss C.***: Conducting Polymer Based Binders for Lithium-Ion Batteries and Beyond. ***Journal of the Electrochemical Society***, **2020,** 167, 065501. DOI: 10.1149/1945-7111/ab856b ***(JES most read articles of 2020)***
10. Zekoll S., Marriner-Edwards C., Hekselman A.K.O., Kasemchainan J., **Kuss C.**, Armstrong D., Cai D., Robert W., Richter F., Thijssen J., Bruce P.G.*: Hybrid Electrolytes with 3D Bicontinuous Ordered Ceramic and Polymer Microchannels for All-Solid-State Batteries. ***Energy & Environmental Science,*** **2018**, 11, 185-201. DOI: 10.1039/C7EE02723K
11. Wang D., Gao X., Chen Y., Jin L., **Kuss C.**, Bruce P.G.*: Stripping and plating Calcium in organic electrolytes. ***Nature Materials***, **2018**, 17, 16-20. DOI: 10.1038/nmat5036
12. **Kuss C.**, Trinh N.D., Andjelic S., Saulnier M., Dufresne E.M., Liang G., Schougaard S.B.: Structural transformation of $LiFePO_4$ during ultrafast delithiation. ***Journal of Physical Chemistry Letters***, **2017**, 8, 6160-6164. DOI: 10.1021/acs.jpclett.7b02569
13. Danis L., Gateman S.M., **Kuss C**., Schougaard S.B., Mauzeroll J.*: Nanoscale Measurements of Lithium Ion Battery Materials Using Scanning Probe Techniques. ***ChemElectroChem***, **2016**, 4, 6-19. DOI: 10.1002/celc.201600571 ***(Back Cover)***
14. Brisebois P.B., **Kuss C**., Schougaard S.B., Izquierdo R., Siaj M.*: New Insights into the Diels-Alder Reaction of Graphene Oxide. ***Chemistry – A European Journal***, **2016,** 22, 5849-5852. DOI: 10.1002/chem.201504984
15. **Kuss C**., Payne N.A., Mauzeroll J.*: Probing Passivating Porous Films by Scanning Electrochemical Microscopy. ***Journal of the Electrochemical Society***, **2016**, 163, H3066-H3071. DOI: 10.1149/2.0131604jes
16. Dauphin-Ducharme P., **Kuss C**., Rossouw D., Payne N.A., Danis L., Botton G.A., Mauzeroll J.*: Corrosion Product Formation Monitored Using the Feedback Mode of Scanning Electrochemical Microscopy with Carbon Microelectrodes. ***Journal of the Electrochemical Society***, **2015**, 162, C677-C683. DOI: 10.1149/2.0701512jes
17. **Kuss C**., Carmant-Dérival M., Trinh N.D., Liang G., Schougaard S.B.*: Kinetics of Heterosite Iron Phosphate Lithiation by Chemical Reduction. ***Journal of Physical Chemistry C***, **2014**, 118, 19524-19528. DOI: 10.1021/jp502346f
18. Lepage D., Sobh F., **Kuss C**., Liang G., Schougaard S.B.*: Delithiation Kinetics Study of Carbon Coated and Carbon Free $LiFePO_4$. ***Journal of Power Sources***, **2014**, 256, 61. DOI: 10.1016/j.jpowsour.2013.12.054

19. **Kuss C**., Lepage D., Liang G., Schougaard S.B.*: Ultrafast charging of $LiFePO_4$ with gaseous oxidants under ambient conditions. ***Chemical Science***, **2013**, 4, 4223. DOI: 10.1039/C3SC51195B
20. Kuss S., **Kuss C**., Trinh D., Schougaard S.B., Mauzeroll J.*: Forced Convection during Scanning Electrochemical Microscopy Imaging over living cells: Effect of Topographies and Kinetics on the Microelectrode Current. ***Electrochimica Acta***, **2013**, 110, 42. DOI: 0.1016/j.electacta.2013.03.149
21. **Kuss C**., Liang G., Schougaard S.B.*: Atomistic modelling of the site exchange defect in lithium iron phosphate and iron phosphate. ***Journal of Materials Chemistry***, **2012**, 22, 24889. DOI: 10.1039/C2JM35538H

Book chapters

22. Mai A.N.T., Odetallah M., **Kuss C.:** Binders and Electronic Additives. In ***Encyclopedia of Electrochemical Power Sources,*** 2nd ed., Jürgen Garche (Editor), Elsevier, 2024.
23. Lepage D., **Kuss C**., Schougaard S.B.: Conducting polymers in lithium batteries. In ***Conducting Polymers: Synthesis, Properties and Applications***. Luiz Carlos Pimentel Almeida (Editor), Nova Publisher, New York, 2013.

Thesis

24. Diffusion in Battery Materials, Ph.D. thesis, Université du Québec à Montréal. http://www.archipel.uqam.ca/7094

INTELLECTUAL PROPERTY AND TECHNOLOGY TRANSFER

Patents / Patent applications

1. Nguyen V.A., **Kuss. C.**: Conducting Polymer-Based Electrode Matrices for Lithium-Ion Batteries, 2021, PCT Application PCT/CA2022/01216.
2. Nguyen V.A., **Kuss. C.:** Quantum Tunneling Organic Composites, 2021, PCT Application PCT/CA2022/050211.
3. Mauzeroll J., Alarcon M.D., **Kuss C**., Noyhouzer T. Method and apparatus for detecting and obstructed view, 2018, US 9947207
4. Schougaard S. B., Gauthier M., **Kuss C**., Lepage D., Liang G., Michot, C.: Process to induce polymerization of an organic electronically conductive polymer, 2010, EP 2,438,105 / WO 2,010,139,060 / US 8685566

Industrial research reports

5. Lobato de Faria M., **Kuss C.:** Mitacs final report to Royal Canadian Mint, **March 2023**, 21 pages.
6. Lobato de Faria M., **Kuss C.:** Report on ZnO sensor to Tagus Consulting, **October 2021**, 4 pages
7. Nguyen V.A., Odetallah M., **Kuss C.**: Confidential final report to Royal Canadian Mint, **April 2021**, 10 pages

8. Nguyen V.A., **Kuss C.**: Confidential interim report to Royal Canadian Mint, **January 2021**, 8 pages
9. **Kuss C.**, Payne N.A., Tefashe U.M., Dauphin-Ducharme P., Mauzeroll J.: Modelling Microgalvanic Corrosion, Collaborative Research Report to General Motors of Canada Ltd., **January 2015**, pages 3-12.
10. **Kuss C.**, Trinh N.D., Lepage D., Saulnier M., Sobh F., Schougaard S.B.: Research Progress Summary Report to Clariant Canada, Inc. (now Johnson-Matthey), **January 2012**, 5 pages.
11. **Kuss C.**, Schougaard S.B.: Confidential Research Report to Clariant Canada, Inc. (now Johnson-Matthey), **November 2011**, 4 pages.
12. **Kuss C.**, Schougaard S.B.: Confidential Research Report to Clairant Canada, Inc. (now Johnson-Matthey), **March 2011**, 6 pages.
13. **Kuss C.**, Schougaard S.B.: Confidential Research Report to Phostech Lithium, Inc. (now Johnson-Matthey), **April 2010**, 7 pages.
14. **Kuss C.**, Schougaard S.B.: Confidential Research Report to Phostech Lithium, Inc. (now Johnson-Matthey), **January 2010**, 19 pages.

RESEARCH FUNDING

Grant name	**Granting Organization**	**Role**	**Value**
Lab2Market Validate	Mitacs / Lab2Market	Technology Lead	CAD 15,000
Mitacs Accelerate	Mitacs / Tecmerra	PI	CAD 75,000
Agriculture Sustainability Research Initiative preparatory funding	NSERC / SSHRC	Co-investigator	CAD 35,000
Innovation and Commercialization Grant	Univ. of Manitoba, Faculty of Science	PI	CAD 10,000
NSERC Alliance / Mitacs Accelerate	NSERC / Mitacs / Royal Canadian Mint	PI	CAD 157,000
Contract research	Tecmerra Methane Solutions	PI	CAD 3,360
University Research Grants Program	University of Manitoba	PI	CAD 10,000
CFI JELF **(2022)**	Canadian Foundation for Innovation / Research Manitoba / University of Manitoba	PI	CAD 385,136
Mitacs Accelerate **(2022)**	Mitacs / Crown Corporation	PI	CAD 60,000

Contract research **(2021-2022)**	TAGUS consulting	PI	CAD 4,000
Contract research **(2020-2021)**	Crown Corporation	PI	CAD 7,000
Faculty of Science Collaborative Research Grant **(2019-2020)**	University of Manitoba	Co-investigator	CAD 12,000
Research Manitoba New Investigator Operating Grant **(2019-2021)**	Research Manitoba	PI	CAD 48,200
Discovery Grant **(2019-2024) + 2 year extension COVID-19**	Natural Sciences and Engineering Research Council Canada	PI	CAD 152,500
Start-up funding **(2018)**	University of Manitoba	PI	CAD 150,000
Synchrotron beam time **(2018)**	European Synchrotron Radiation Facility, France	Principle applicant	18 x 8h shifts
Synchrotron beam time **(2017, 2018)**	Diamond Light Source, UK	Principle applicant	18 x 8h shifts
Synchrotron beam time **(2013, 2014, 2018, 2019, 2020)**	Advanced Photon Source, US Department of Energy	Principle / contributing applicant	41 x 8h shifts

CONFERENCES AND PRESENTATIONS

Invited presentations

1. **Invited**: Department of Physics, Dalhousie University, February 13, **2024**, Halifax, Canada:
2. **Invited**: International Symposium on Electrochemistry and Surface Science, August 14-17, **2024**, Guelph, Canada:
3. **Invited:** Central Canada Mineral Exploration Convention, November 6-7 **2023,** Winnipeg, Canada:
   Kuss C.*: Sustainable Battery Metals
4. **Invited:** Canadian Chemical Engineering Conference, October 29-November 1 2023, Calgary, Canada:
   Kuss C., Odetallah M.*: Mixed conducting battery electrode matrices
5. **Invited:** Hydro Quebec Research Institute Battery Research Symposium, October 23-24 **2023**, Varennes, Canada:
   Kuss C.*: Properties of one-component electrode matrices

6. **Invited:** 244th ECS Meeting, October 8-12 **2023**, Gothenburg, Sweden:
   Kuss C.*, Mai ANT, Nguyen VA, Odetallah M, Lobato de Faria M: Improving our Understanding of Conducting Polymer Binders
7. **Invited**: CUTRIC Zero Emission Bus Committee, September 19 **2023**, Winnipeg, Canada:
   Kuss C.*: Chemical Degradation in Batteries
8. **Invited**: Manitoba Materials Conference, May 9 **2023**, Winnipeg, Canada
   Kuss C.*: Next-Generation, Sustainable Batteries.
9. **Invited:** Canadian Chemistry Conference and Exhibition, June 13-17 **2022**, Calgary, Canada
   Kuss C.*, Nguyen V.A., Odetallah M.: Properties of conducting-polymer based single-component electrode matrices for batteries
10. **Invited:** Canadian Chemistry Conference and Exhibition, June 13-17 **2022**, Calgary, Canada
    Kuss C.*, Odetallah M., Schougaard S.B.: Identifying the weak link in battery rate performance: an individual material approach
11. **Invited:** Canadian Symposium on Catalysis, May 16-19 **2022**, Vancouver, Canada
    Kuss C.*, Nguyen V.A., Odetallah M., Lobato de Faria M.: One-component battery electrode matrix
12. **Invited:** University of Calgary Seminar Series, April 1 **2022,** Calgary, Canada
    Kuss C.*, Nguyen V.A., Odetallah M.: Charge transport for charged transportation
13. **Invited**: Canadian Chemical Engineering Conference Oct 24-27 **2021**, Virtual
    Kuss C.*: Unlocking next generation battery technologies with conducting polymer binders
14. **Invited:** University of Regina Chemistry Seminar Series, Mar 5 **2020**, Regina, Canada
    Kuss C.*: Charge transport for charged transportation
15. **Invited:** University of Winnipeg Chemistry Seminar Series, Nov 13 **2019**, Winnipeg, Canada
    Kuss C.*: Charge transport for charged transportation
16. **Invited:** Canadian Light Source Workshop on Energy Materials, Oct 25-26 **2019,** Saskatoon, Canada
    Kuss C.*: Effects of structure and composition in composite battery electrodes
17. **Invited:** 2nd Annual Manitoba Chemistry Symposium, May 3-4 **2019**, Brandon, Canada
    Kuss C.*: On the Importance of Inactive Battery Materials.
18. **Invited:** ECS Canada Section Meeting 2018, November 10th **2018**, Montreal, Canada
    Kuss C.*: Chemically Driven Intercalation: Applications to Li-Ion Battery Materials.
19. **Invited:** 98th Canadian Chemistry Conference and Exhibition, June 13th to 17th **2015**, Ottawa, Canada
    Kuss C.*, Lepage D., Liang G., Schougaard S.B.: Fast Lithium Insertion/Extraction Kinetics and Structural Change in Li-ion Batteries.

Oral conference presentations (presenter marked with *)

1. 34th Canadian Materials Science Conference, June 27-30 **2023**, Winnipeg, Canada
   Mai A.N.T.*, **Kuss C.**: Water-Processable Composite Conductive Binders for Graphite Anode in Lithium-Ion Batteries
2. 34th Canadian Materials Science Conference, June 27-30 **2023**, Winnipeg, Canada
   Odetallah M.*, **Kuss C.**: Investigating the Effect of Electrode Microstructure on Battery Performance Using IL-TEM. (Best Student Presentation Award)
3. 242nd ECS Meeting, October 09-13, **2022**, Atlanta, USA
   Lobato de Faria, M.*, **Kuss C.**: Parameters Affecting Lithium Ion Conductivity of Carboxymethyl Cellulose Binders
4. Regional Symposium on Electrochemistry South East Europe, July 11-15 **2022**, Graz, Austria
   Kuss C.*: Applicability of conducing-polymer matrices in composite battery electrodes
5. Canadian Chemistry Conference and Exhibition, June 13-17 **2022**, Calgary, Canada
   Odetallah M.*, Singh V., Kuss S., **Kuss C.**: The Effect of Electrode Microstructure on Battery Performance
6. STEM Together, May 26, **2022**, University of Calgary, Calgary, Canada, Virtual
   Odetallah, M.*, Singh, V., Kuss, S., Kuss, C.: The effect of Inhomogeneous Microstructure on Lithium ion battery performance.
7. IgNITE West Canada, February 24, **2022**, Virtual
   Odetallah, M.*, Singh, V., Kuss, S., Kuss, C.: Microstructure Effects on Electrodes` Local Conductivity.
8. 24th Chemistry and Biochemistry Graduate Research Conference (CBGRC), Nov 19 **2021**, Virtual
   Odetallah M.*, Singh V., Kuss S., **Kuss C.**: Effect of Electrode Fabrication Parameters on Local Electrochemical Conductivity in Composite Electrodes
9. 240th ECS Meeting, Oct 10-14 **2021**, Virtual
   Kuss C.*, Nguyen V.A., Odetallah M.: Water-Dispersible Conducting Polymers in Batteries
10. ECS Manitoba Student Chapter, Sept 24 **2021**, Virtual
    Lobato de Faria, M.*, **Kuss, C.,** Shami, A.: "Developing Carboxymethyl Cellulose as a Natural Polymer Binder and Solid Electrolyte
11. ECS Manitoba Student Chapter, Sept 24 **2021**, Virtual
    Odetallah M.*, **Kuss C.**: Imaging of Composite Electrodes
12. Canadian Chemistry Conference and Exhibition **2021**, Virtual
    Kuss C.*, Nguyen V.A., Odetallah M.: Water-dispersible electrode binders from conducting polymers
13. 239th ECS Meeting, May 30-June 3 **2021**, Virtual
    Nguyen V.A., **Kuss C.***: Compatibilities of Conducting Polymer-Based Electrode Matrices for Lithium-Ion Batteries.
14. ECS Canada Section Spring Meeting, May 15 **2021**, Virtual
    Odetallah M.*, **Kuss C.**: Measuring the effect of different parameters on the electrochemical conductivity for composite electrodes

15. North Dakota University Chemistry Department Seminar Series, Feb 26 2021, Virtual
    Kuss C.*: Charge Transport for Charged Transportation – The Limits of Battery Charge Rate.
16. ECS Canada Fall Meeting, Dec 12 **2020**, Virtual
    Nguyen V.A.*, **Kuss C**.: Conducting Polymer Composites as Conductive and Water-Processable Electrode Matrices for Lithium Ion Batteries.
17. Pacific Rim Meeting on Electrochemistry and Solid State Science, Oct 4-9 **2020**, Virtual
    Nguyen V.A.*, **Kuss C**.: Conducting Polymer Composites as Multifunctional Electrode Matrices for Lithium-Ion Batteries.
18. Electrochemical Conference on Energy and the Environment, July 21-16 **2019**, Glasgow, UK
    Kuss C.*, Nguyen A.V.: Low Cost Alternatives to Pedot:PSS as Conducting Binders
19. ACS National Meeting and Exposition, March 31-April 4 **2019,** Orlando, USA
    Bruce P.*, Kasemchainan J., Zekoll S., Jolly D.S., Ning Z., Marriner-Edwards C., Richter F., Hartley G., Hekselman A.K., **Kuss C.,** Armstrong D.E.: Alkali metal/solid electrolyte interface.
20. 236th Electrochemical Society Meeting (ECS), October 13-17, **2019**, Atlanta, Georgia, USA
    Nguyen V.A.*, **Kuss C.**: Water-Dispersible Conducting Polymer Composites as Promising Binder for Cathode of Lithium-Ion Batteries
21. 232nd ECS Meeting, October 1-5 **2017**, National Harbor, USA
    Zekoll S.*, Marriner-Edwards C., Hekselman A.K., Kasemchainan J., **Kuss C.**, Armstrong D., Cai D., Wallace R., Richter F.H., Thijssen J.H., Bruce P.G.: A Novel Ceramic-Polymer Hybrid Electrolyte for Lithium Batteries
22. 98th Canadian Chemistry Conference and Exhibition, June 13th to 17th **2015**, Ottawa, Canada
    Dauhpin Ducharme P., Tefashe U.M., Payne N., **Kuss C**., Trinh D., Asmussen R.M., Binns W.J., Jakubi P., Shoesmith D.W., Danaie M., Gianluigi A.B., Mauzeroll J.*, Gammage J., Carter J.: New Tools in Scanning Electrochemical Microscopy for Magensium Alloy Corrosion Characterization.
23. Corrosion 2015, March 15th to 19th **2015**, Dallas, TX, USA
    Kuss C.*, Payne N.A., Dauphin-Ducharme P., Tefashe U.M., Botton G., Mauzeroll J.: Microstructure Effects on Magnesium Alloy Corrosion – Model and Experiments.
24. 15th ISE Topical Meeting, April 27th to 30th **2014**, Niagara Falls, Canada
    Schougaard S.B.*, Carmant-Dérival M., **Kuss C**., Lepage D., Liang G., Trinh N.D.: Delitiation and Relithiation Kinetics of the Olivine Li_xFePO_4 ($0 \leq x \leq 1$) System.
25. 2013 MRS Fall Meeting, December 1st to 6th **2013**, Boston, USA
    Kuss C.*, Lepage D., Liang G., Schougaard S.B.: Ultrafast Chemical Charging of Lithium Iron Phosphate.
26. 223rd ECS Meeting, May 12th – 17th **2013**, Toronto, Canada
    Kuss C.*, Liang G., Schougaard S.B.: Iron Mobility in $LiFePO_4$ and Its Consequences for Site Exchange Defect Related Capacity Loss.

27. 223rd ECS Meeting, May 12th – 17th **2013**, Toronto, Canada
    Lepage D., Trinh N.D., **Kuss C**., Liang G., Gauthier M., Schougaard S.B.*: On the lithium insertion/extraction process $LiFePO_4$.
28. 219th ECS Meeting, May 1st – 6th **2011**, Montréal, Canada
    Kuss C.*, Liang G., Schougaard S.B.: A new Force Field for the $LiFePO_4/FePO_4$ system.

Poster presentations since 2018 (presenter marked with *)

1. Battery Research Symposium, Hydro Quebec, October 23-24, 2023, Varennes, Canada
   Odetallah, M.*, Kuss, C.: The Solid Electrolyte Interface Investigation using Identical Location- Transmission Electron Microscopy.
2. Battery Research Symposium, Hydro Quebec, October 23-24, 2023, Varennes, Canada
   Mai, A.N.T.*, Kuss, C.: Conducting Polymer Binders in Lithium Intercalation Electrode.
3. 34th Canadian Materials Science Conference, June 27-30 2023, Winnipeg, Canada
   Azariah G.*, **Kuss C.**: The Effects of Polypyrrole:Carboxymethyl Cellulose Composite Morphology on Capacitance and Conductivity: An Alternative Battery Binder Material.
4. 242nd ECS Meeting, October 09-13, **2022**, Atlanta, USA
   Odetallah, M.*, Singh, V., Kuss, S., Kuss, C.: Electrode Microstructure Imaging.
5. Canadian Chemistry Conference and Exhibition, June 13-17 **2022**, Calgary, Canada
   Lobato de Faria M.*, **Kuss C.**: The Effects of Various Parameters on the Ionic Conductivity of Carboxymethyl Cellulose, an Environmentally Friendly Binder
6. RSCBatteriesPoster Twitter Poster competition, December 7-8 **2021**
   Odetallah M.,* Singh V., Kuss S., **Kuss C.**: Microstructure Effects on Local Electrochemical Conductivity in Composite Electrodes
7. Canadian Chemical Engineering Conference Oct 24-27 **2021**, Montreal, Canada
   Odetallah M.*, **Kuss C.**: Effect of Electrode Fabrication Parameters on Local Electrochemical Conductivity in Composite Electrodes
8. Faculty of Science Undergraduate Summer Research Poster Competition, August 15 **2019**, Winnipeg, Canada
   Nguyen T.T.*, Nguyen A.V., **Kuss C**.: Safer and Long-Lasting Li-ion Batteries: Novel Solid Electrolyte/Binder System
9. 102nd Canadian Chemistry Conference & Exhibition, June 3-8 **2019**, Quebec, Canada
   Nguyen A.V.*, **Kuss C.**: Conducting Polymer Composites (Polyaniline/Carboxymethylcellulose) as Promising Dual-Functional Binders for Lithium-ion Batteries

TEACHING

Graduate courses

Physical Methods in Inorganic Chemistry	Co-Lecturer	Winter, 2020
Energy: A Chemical Approach	Co-Lecturer	Winter, 2022

Undergraduate courses

Advanced Chemical Techniques (4th year)	Co-Lecturer	Winter, 2023, 2024
Materials Chemistry (4th year)	Co-Lecturer	Fall, 2020
Instrumental Analysis (3rd year)	Lecturer	Fall, 2019 - 2023
Introduction to Physical Chemistry (1st year)	Lecturer (Coordinator: 2020, 2021)	Winter, 2019 – 2021, 2024
Inorganic Chemistry (2nd year)	Teaching Assistant	Fall, 2009 - 2010

SUPERVISORY ACTIVITY:

Graduate students

Van At Nguyen M.Sc. student **(UMGF recipient)**	Supervisor	01/2019 – 06/2021
Mariam Odetallah Ph.D. student	Supervisor	09/2019 – ongoing
Marco Lobato de Faria M.Sc. student	Supervisor	05/2020 – 09/2023
Anh Mai Ngoc Tram M.Sc. student **(UMGF recipient)**	Supervisor	01/2022 – ongoing

Undergraduate students

Reetul Patel Student Research Associate	Supervisor	11/2018 – 12/2019
Arqum Shami Student Research Associate / Co-op Student / Honors student	Supervisor	01/2019 – 05/2020 05/2021 – 05/2022
Mai Xuan Truc Pham Summer student	Supervisor	05/2019 – 10/2019
Thu Trang Nguyen Summer student / Student Research Associate	Supervisor	05/2019 – 08/2021
Marco Lobato de Faria Honor's student	Co-supervisor	09/2019 – 04/2020
Sam Okewumi Student Research Associate	Supervisor	02/2020 – 08/2021

Ben Pennell Student Research Associate	Supervisor	10/2020 – 08/2021
Keighlynn Veilleux USRA Summer student	Supervisor	05/2022 – 08/2022
Saarthak Shrivastava Mitacs Globalink Intern	Supervisor	05/2022 – 07/2022
Amar S Thomas Mitacs Globalink Intern	Supervisor	05/2022 – 07/2022
Rohit Raj Mitacs Globalink Intern	Supervisor	05/2022 – 07/2022
Gamaliel Azariah Summer student, Honor's student	Supervisor	05/2022 – ongoing
Yuvraj Dhanoa MET High School project student	Supervisor	10/2022 – 05/2023
Mohammad Amaan Mitacs Globalink Intern	Supervisor	05/2023 – 08/2023

SERVICE

Service to the scientific community

Technical Committee member, Standards Council of Canada, ISO/TC 333 – Lithium since June 2021

Secretary / Treasurer, Canadian Section of the Electrochemical Society June 2021 – May 2023

Vice-Chair Programs, Canadian Section of the Electrochemical Society since May 2023

Member, NSERC Chemistry Liaison Committee (NCLC) since April 2022

Member, co-founder, Western Canada Battery Consortium, since July 2021

Reviewing for

- ACS Applied Materials and Interfaces (2023)
- Angewandte Chemie (2023)
- Journal of Solid State Electrochemistry (2023)
- Journal of Power Sources (2022-2023)
- Advanced Energy Materials (2022)
- Nanotechnology (2022)
- Cell Reports Physical Science (2022)
- Joule (2021-2022)

- Journal of the Electrochemical Society (2020-2021, 2023)
- Journal of Materials Science (2020)
- Electrochemical Science Advances (2020-2023)
- iScience (2018-2019)
- Electrochemistry Communications (2019-2020)
- Electrochimica Acta (2020-2021, 2023)
- Natural Science and Engineering Research Council (2019-2023)
- Mitacs (2021-2022)
- FRQNT (2022-23)
- Canada Foundation for Innovation (2023)
- Agence National de la Recherche (2022-2023)
- New Frontiers in Research Fund (2020)
- European Council (2018)
- German Research Foundation (2020, 2023)
- Electrochemical Society (2022, 2024)

Conference and meeting organization for

- **Co-organizer,** Division 3 (Electrochemical Energy Storage and Conversion) Symposium, Annual Meeting of the International Society of Electrochemistry, August 2024, Winnipeg
- **Chair and organizer,** ECS Canada Section Meeting 2024, June 7, 2024, Winnipeg
- **Co-organizer,** Sustainable Batteries symposium, Canadian Chemistry Conference and Exhibition, June 2024, Winnipeg
- **Co-chair and co-organizer,** Green and Sustainability Symposium, Canadian Materials Science Conference, June 2023, Winnipeg
- **Co-chair and co-organizer,** ECS Canada Section Meeting 2021, online
- **Co-chair and co-organizer,** "Materials for Electrochemical Energy Storage" Symposium at the Canadian Chemistry Conference and Exhibition 2020, Winnipeg, Canada - *cancelled due to COVID-19 pandemic*
- **Co-chair and co-organizer,** ECS Canada Section Meeting 2020, Winnipeg, Canada - *cancelled due to COVID-19 pandemic*
- **Chair,** researchers meeting, national Supergen Energy Storage Hub meetings, Oxford, May 3rd and October 16th-17th 2017.
- **Organizer,** GM-academic collaboration biannual meetings, Waterloo / Montreal 12/2014 – 11/2015
- **Co-organizer and co-chair,** 5th ECS Montreal Student Symposium, Fifth annual student conference in Montreal with approximately 100 participants. June 2015
- **Co-organizer,** 4th ECS Montreal Student Symposium, Fourth annual student conference in Montreal with approximately 80 participants. June 2014

- **Chair and organizer,** 3rd ECS Montreal Student Symposium, Third annual student conference in Montreal with approximately 80 participants. (see Interface, 22(4), p.97) June 2013
- **Chair and organizer,** 2nd ECS Montreal Student Symposium, Second annual student conference in Montreal with approximately 60 participants. (see Interface, 21(3-4), p.102-103) June 2012
- **Chair and organizer,** 1st ECS Montreal Student Symposium, First annual student conference in Montreal with approximately 30 participants. (see Interface, 20(4), p.72) June 2011

Steering Committee Member, ELEVATE UK national project 2017-2018

Co-founder, ECS Oxford Student Chapter, 09/2016

Co-founder and elected chair, ECS Montreal Student Chapter, ecsmontreal.blogspot.com and electrochem.org. 09/2010 – 03/2014

Service to the University

Standing committees

- **Member,** Research Grants Committee, University of Manitoba, since 2023
- **Member,** Honours and Awards Committee, Faculty of Science, University of Manitoba, since 2023
- **Member,** Academic Subcommittee, University Sustainability Committee, since 2023
- **Member,** Chemistry Department Webpage / Social media Committee 2022-2023
- **Member,** Chemistry Department Strategic Plan Committee 2020, 2022
- **Member,** Chemistry Department Newsletter Committee 2022-2023
- **Member,** Chemistry Department Curriculum Committee 2022-2023
- **Representative of the Chemistry Constituency**, Board of Representatives, University of Manitoba Faculty Association 2019-2022
- **Chair,** Chemistry Department Seminar Committee 2020/2021
- **Chair,** Chemistry Department Social Committee 2019-2022
- **Member,** Chemistry Graduate Studies Selection Committee 2019-2020
- **Member,** Materials Department Safety Committee, University of Oxford 2017-2018

Ad Hoc committees

- **Member,** Hiring Committee CRC Tier 2 chair in Sustainable Energy Materials
- **Member,** Hiring Committee CHEM 3390 Sessional Instructor, August 2020
- **Member,** Hiring Committee CHEM 1300, 1310 Sessional Laboratory Instructor, August 2020

Advisory committee member, nine graduate advisory committees

Thesis examination committee member, five M.Sc. theses, five Ph.D. theses

Outreach, Community Involvement and Media

- Interview: CBC North Trailbreaker, How Electric Vehicles Perform in Cold Weather – February 1, 2024
- Interview: CBC Manitoba Up to Speed, How do EVs handle sub-zero temperatures? – January 22, 2024
- Interview: CJOB, on Lithium-ion batteries and the role of separators – January 4 2024
- Interview: UM Magazine print edition: "The Battery Revolution" – fall 2021
- Op-ed: C. Kuss, "Material concerns" in PV Magazine 08/2021, 54-55.
- Interview: Winnipeg Free Press: "This ain't your grandpa's batteries" 2021
- Speaker: Science First / University of Manitoba: Resilience and Climate Change: Sustainable Solutions for the Future, 09/23/2021
- Interview: Canadian Light Source Featured Story: "Preparing for the Next Generation of Batteries" 2020
- Featured Speaker: Pint of Science Winnipeg 2019
- École River Heights School Science Fair judge, Winnipeg 2019
- Lecturer at UNIQ outreach summer school, Department of Materials, University of Oxford 2017
- Judging and demonstrations at Big Science Oxford primary school event, 04/04/2017