



Frédéric-Georges Fontaine

Full Professor

Canada Research Chair in Green Catalysis and Metal-Free Processes

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Education

Postdoctorate	University of California, Berkeley Prof. T. Don Tilley, Supervisor	Jan. 2003 – June 2004
Ph.D. Organometallic Chemistry	Université de Montréal Prof. Davit Zargarian, Supervisor	May 1998 – Dec. 2002
B.Sc. Chemistry	Université de Montréal	Jan. 1995 – April 1998

Positions

Full Professor	Université Laval	Since June 2013
Associate Professor	Université Laval	June 2009 – May 2013
Adjunct Professor	Mount Allison University	Since June 2010
Visiting Professor	University of Ottawa	Nov. 2010 – May 2011
Visiting Professor	Université de Bourgogne	Sept. 2010 – Oct. 2010
Assistant Professor	Université Laval	July 2004 – May 2009

Postdoctoral Fellow	University of California, Berkeley	Jan. 2003 – June 2004
Research Assistant	Université de Montréal	May 1997 – Dec. 2002
Research Assistant	CNRS, Toulouse, France	October 2000

Professional Affiliations

American Chemical Society
Canadian Society for Chemistry

Professional Service

Topic Reviewer Pacificchem 2020	December 2020
President of the Inorganic Division for the 102 nd Canadian Chemistry Conference and Exhibition (Quebec City)	June 2019
Symposium Organizer “Main Group Molecules: from Reagents to Catalysts” with Steve A. Westcott	June 2019
Member of the Research Tool and Instrumentation NSERC	2017-2018
Scientific Advisory Board for the 12 th International Conference on Heteroatom Chemistry (Vancouver)	June 2017
Organizing Committee for the 19 th International Symposium on Homogeneous Catalysis (Ottawa)	July 2014
President of the Inorganic Division for the 96 th CSC National Meeting (Quebec City)	May 2013
Organizing Committee for the 14 th International Meeting on Boron Chemistry (Niagara Falls)	September 2011
Vice-President of the Inorganic Division for the 94 th CSC National Meeting (Montreal)	June 2011
Member of the 502 Committee – Organic Chemistry – Synthesis for <i>Projet de recherche en équipe</i> grants - FQRNT	February 2009
Committee member for the undergraduate program of the Département de chimie - Université Laval	Sept. 2005 – April 2016
Member of the Centre de Catalyse et Chimie Verte	Since July 2004
Organizer of the Symposium Annuel de Chimie Inorganique du Québec (provincial inorganic chemistry symposium)	August 2006 to 2009
Departmental conference organizer	May 2006 – Dec. 2007
Member of the Board for the Canadian Chemistry Olympiads	June 2007 – June 2012
Organizer of the National Training Camp for the Canadian Chemistry Olympiads (Quebec City and Montreal)	June 2007, June 2011
Mentor at the National Training Camp for the Canadian Chemistry Olympiads	June 2006, June 2011

Awards

Professor of the Year at the 2018 Gala du Mérite Étudiant de l'AESGUL	March 2018
Star Professor 2016-2017 (Teaching Award), Faculté des Sciences et Génie de l'Université Laval	May 2018
Nomination by Université Laval as a candidate for the upcoming competition for a Canada Research Chair Tier 1	August 2016
Star Professor 2015 (Teaching Award), Faculté des Sciences et Génie de l'Université Laval	May 2016
Top 10 Discovery of Year 2015 by Québec Science	January 2016
Top 10 Discovery of the Year 2015 by Le Soleil	December 2015
Star Professor 2014 (Teaching Award), Faculté des Sciences et Génie de l'Université Laval	May 2015
Nomination for Professor of the Year at the 41 th Gala du Mérite Étudiant de l'AESGUL	March 2015
Star Professor 2013 (Teaching Award), Faculté des Sciences et Génie de l'Université Laval	May 2014
Nomination for Professor of the Year at the 40 th Gala du Mérite Étudiant de l'AESGUL	March 2014
Star Professor 2012 (Teaching Award), Faculté des Sciences et Génie de l'Université Laval	May 2013
Star Professor 2009-2010 (Teaching Award), Faculté des Sciences et Génie de l'Université Laval	February 2011
Professor of the year at the 36 ^{ième} Gala du Mérite Étudiant de l'AESGUL	February 2010
Star Professor 2008-2009 (Teaching Award), Faculté des Sciences et Génie de l'Université Laval	February 2010
Star Professor 2007-2008 (Teaching Award), Faculté des Sciences et Génie de l'Université Laval	November 2008
Nomination for Professor of the Year at the 34 th Gala du Mérite Étudiant de l'AESGUL	February 2008
Star Professor 2006-2007 (Teaching Award), Faculté des Sciences et Génie de l'Université Laval	November 2007
Traveling Fellowship, Centre de Coopération Interuniversitaire Franco-Québécoise (CCIFQ)	April 2007
Nomination comme Professeur de l'année au 33 ^{ième} Gala du Mérite Étudiant de l'AESGUL	February 2007
Star Professor 2005-2006 (Teaching Award), Faculté des Sciences et Génie de l'Université Laval	November 2006
NSERC postdoctoral fellow	Jan. 2003 – Dec. 2004
Academic Gold Medal of the Governor General of Canada	September 2003

**Research Support
Granted**

FRQNT et FRQSC, Programme de recherche en partenariat <i>Valorisation du CO₂ émis par les grandes industries: Source de richesse et d'indépendance face aux combustibles fossiles</i> (PI, with 7 other people)	\$300 000	2018 – 2021
Newton International Exchanges <i>Bifunctional Bron Lewis Acids for Catalysis</i> (Rebecca Melen)	£10 800	2018 – 2025
Canada Research Chair <i>Green Catalysis and Metal-Free Processes</i>	\$1 400 000	2018 – 2025
NSERC, Idea to Innovation <i>Catalyseurs sans métal pour la borylation des arènes</i>	\$124 900	2016 – 2017
NSERC, Discovery Acceleration Grant <i>Exploration of Novel Paradigms in Metal-Free Catalysis</i>	\$120 000	2016 – 2019
NSERC, Discovery Grant <i>Exploration of Novel Paradigms in Metal-Free Catalysis</i>	\$370 000	2016 – 2021
FRQNT, Strategic Research Centre <i>Centre in Catalysis and Green Chemistry</i> (with 44 other people)	\$3 420 000	2013 – 2019
NSERC, Idea to Innovation <i>Nouveau procédé catalytique sans métal pour la préparation de composés organiques</i>	\$15 000	2015 – 2016
NSERC, Strategic Grant <i>Functionalized mesoporous materials for lanthanides (rare earths) extraction from industrial and mining wastes</i>	\$522 800	2014 – 2017
FRQNT, Team Project Grant <i>Matériaux mésoporeux fonctionnalisés à l'aide de nouveaux ligands pour la séparation et la purification des terres rares</i> (with Freddy Kleitz and Dominic Larivière)	\$129 000	2013 – 2016
FRQNT, Team Project Grant <i>Nouveaux matériaux pour la séquestration du CO₂ à grande échelle en utilisant la technologie des systèmes amphiphiles</i> (PI, with Freddy Kleitz and Faïçal Larachi)	\$138 000	2013 – 2016
NSERC, Discovery Grant <i>Transition metal complexes with ambiphilic and borabenzene ligands and their reactivity with small molecules</i>	\$225 000	2011 – 2016
FRQNT, Team Project Grant <i>Synthèse et immobilisation de cavitands inorganiques possédant des fonctions pi-conjuguées sur l'or comme hôte pour l'adsorption de fullerènes</i> (PI, with Jean-François Morin)	\$216 420	2010 – 2013
FRQNT, Strategic Research Centre <i>Centre de Catalyse et Chimie Verte</i> (with 43 other people)	\$1 350 000	2009 – 2012
NSERC, Discovery Grant <i>Synthesis and Reactivity of Ambiphilic Transition Metal Complexes</i>	\$126 000	2008 – 2011
NSERC, Discovery Grant, Equipment <i>APCI source for LC-MS-TOF</i> (with 8 other people)	\$18 049	2008
NSERC, Discovery Grant, Equipment <i>GC-MS Instrumentation</i> (PI, with 8 other people)	\$118 672	2008
NSERC, Discovery Grant, Equipment <i>LC-MS Instrumentation</i> (with 8 other people)	\$148 832	2007
FRQNT, Team Project Grant (PI, with Pr. Kleitz) <i>Immobilisation de catalyseurs organométalliques sur des surfaces mésoporeuses</i>	\$110 346	2006 – 2009
CFI, Exploitation Funds	\$60 000	2006 – 2011

Laboratoire de synthèse et de caractérisation de catalyseurs organométalliques

CFI, New Opportunities Fund	\$200 000	2006 – 2009
<i>Laboratoire de synthèse et de caractérisation de catalyseurs organométalliques</i>		
Ministère de l'Éducation, New Opportunities Fund	\$200 000	2006 – 2009
<i>Laboratoire de synthèse et de caractérisation de catalyseurs organométalliques</i>		
FRQNT, New Researcher Grant	\$43 620	2005 – 2008
<i>Synthèse de ligands bifonctionnels de type Al-P, leur coordination à des composés de Rh et d'Ir et l'utilité des complexes pour l'activation des liens C-H</i>		
NSERC, Discovery Grant	\$111 000	2005 – 2008
<i>Synthesis of bifunctional ligands, their coordination to transition metals and studies of their reactivity in C-H bond activation</i>		
FRQNT, Equipment	\$50 000	2005
NSERC, Discovery Grant, Equipment		
<i>Glove-box for inert synthesis</i>	\$79 300	2005
Johnson and Matthey (Gift of Precious Metals)	\$5 000	2005
Virochem Pharma (Gift in Equipement)	\$100 000	2004
Starting Funds, Université Laval	\$116 000	2004

Publications

- 85) Jayaraman, A.; Powell-Davies, H.; Fontaine, F.-G. « Revisiting the Reduction of Indoles by Prototypical Boranes: A Combined Experimental and Computational Study» *Tetrahedron*, submitted. **Invited Contribution.**
- 84) Hu, Y.; Giret, S.; Meinus, R.; Han, J.; Fontaine, F.-G.; Kleitz, F.; Larivière, D. « Selective Separation and Preconcentration of Th(IV) Using Organo-Functionalized, Hierarchically Porous Silica Monoliths» *J. Mat. Chem. A* **2019**, DOI: 10.1039/C8TA07952H.
- 83) Jayaraman, A.; Misal Castro, L. C.; Fontaine, F.-G.; « Practical and Scalable Synthesis of Borylated Heterocycles using Bench-Stable Precursors of Metal-Free Frustrated Lewis Pair Catalysts» *Org. Process. Res. Dev.* **2018**, 22, 1489-1499.
- 82) Jayaraman, A.; Misal Castro, L. C.; Desrosiers, V.; Fontaine, F.-G. « Metal-Free Borylation Dearomatization of Indoles: Exploring the Divergent Reactivity of Frustrated Lewis Pair C-H Borylation Catalysts» *Chem. Sci.* **2018**, 9, 5057-5063.
- 81) Hu, Y.; Florek, J.; Larivière, D.; Fontaine, F.-G.; Kleitz, F. « Recent Advances in the Separation of Rare Earth Elements Using Mesoporous Hybrid Materials» *Chem. Rec.* **2018**, 18, 1261-1276.
- 80) Zakharova, M. V.; Masoumifard, N.; Hu, Y.; Kleitz, F.; Fontaine, F.-G. « Designed Synthesis of Mesoporous Solid-Supported Lewis Acid-Base Pairs and Their CO₂ Adsorption Behaviors» *ACS Appl. Mater. Interfaces* **2018**, 10, 13199-13210.
- 79) Fontaine, F.-G.; Rochette, É. «Ambiphilic Molecules: From Organometallic Curiosity to Metal-Free Catalysts» *Acc. Chem. Res.* **2018**, 51, 454-464.
- 78) Hu, Y.; Drouin, E.; Larivière, D.; Kleitz, F.; Fontaine, F.-G. « Highly Efficient and Selective Recovery of Rare Earth Elements Using Mesoporous Silica Functionalized by Preorganized Chelating Ligands» *ACS Appl. Mater. Interfaces* **2017**, 9, 38584-38593.
- 77) Lègaré Lavergne, J.; Jayaraman, A.; Misal-Castro, L. C.; Rochette, É.; Fontaine, F.-G. «Metal-Free Borylation of Heteroarenes using Ambiphilic Aminoboranes: On the Importance of Sterics in Frustrated Lewis Pair C-H Bond Activation» *J. Am. Chem. Soc.* **2017**, 139, 14714-14723.

- 76) Rochette, É.; Boutin, H.; Fontaine, F.-G. «Frustrated Lewis Pair Catalyzed S-H Bond Borylation» *Organometallics* **2017**, *36*, 2870–2876.
- 75) Fontaine, F.-G.; Stephan, D.W. «On The Concept Of Frustrated Lewis Pairs» *Phil. Trans. R. Soc. A* **2017**, *375*:20170239.
- 74) Bura, T.; Beaupré, S.; Légaré, M.-A.; Quinn, J.; Blaskovits, J. T.; Rochette, E.; Fontaine, F.-G.; Pron, A.; Li, Y.; Leclerc, M. «Direct Heteroarylation Polymerization: Guidelines for Defect-Free Conjugated Polymers» *Chem. Sci.* **2017**, *8*, 3913-3925.
- 73) Zakharova, M.; Kleitz, F.; Fontaine, F.-G. «Lewis Acidity Quantification and Catalytic Activity of Ti, Zr and Al-Supported Mesoporous Silica» *Dalton Trans.* **2017**, *46*, 3864-3876.
- 72) Zakharova, M. V.; Kleitz, F.; Fontaine, F.-G. «Carbon Dioxide Oversolubility in Nanoconfined Liquids for the Synthesis of Cyclic Carbonates» *ChemCatChem* **2017**, *9*, 1886-1890.
- 71) Rochette, E.; Courtemanche, M.-A.; Fontaine, F.-G. «Frustrated Lewis Pair Mediated Csp³-H Activation» *Chem. Eur. J.* **2017**, *23*, 3567-3571.
- 70) Fontaine, F.-G.; Stephan, D. W. «Metal-Free Reduction of CO₂» *Current Opinion in Green and Sustainable Chemistry* **2017**, *3*, 28-32. **Invited Contribution.**
- 69) Fontaine, F.-G.; Courtemanche, M.-A.; Légaré, M.-A.; Rochette, É. «Design Principles in Frustrated Lewis Pair Catalysis for the Functionalization of Carbon Dioxide and Heterocycles» *Coord. Chem. Rev.* **2017**, *334*, 124-135. **Invited Contribution.**
- 68) Rochette, É., Bouchard, N.; Légaré Lavergne, J.; Matta, C.; Fontaine, F.-G. «Spontaneous Reduction of a Hydroborane to Generate a B-B Single Bond using a Frustrated Lewis Pair» *Angew. Chem. Int. Ed.* **2016**, *55*, 12722-12726.
- 67) Bélanger-Chabot, G.; Fontaine, F.-G. «Mono-boratabenzene and phospholyl zirconocene(IV) derivatives: Towards mixed heterocycles zirconocene complexes» *Polyhedron* **2016**, *108*, 15 – 22. **Invited Contribution.**
- 66) Légaré, M.-A.; Rochette, É.; Légaré Lavergne, J.; Bouchard, N.; Fontaine, F.-G. «Bench-stable frustrated Lewis pair chemistry: fluoroborate salts as precatalysts for the C-H borylation of heteroarenes» *Chem. Commun.* **2016**, *52*, 5387 – 5390.
- 65) Courtemanche, M.-A.; Rochette, É.; Légaré, M.-A.; Bi, W.; Fontaine, F.-G. «Reversible hydrogen activation by a bulky haloborane based FLP system» *Dalton Trans.* **2016**, *45*, 6129 – 6135. **Invited Contribution.**
- 64) Perez, V; Audet, P.; Bi, W.; Fontaine, F.-G. «Phosphidoboratabenzene-rhodium(I) complexes as precatalysts for the hydrogenation of alkenes at room temperature and atmospheric pressure» *Dalton Trans.* **2016**, *45*, 2130 – 2137. **Invited Contribution.**
- 63) Florek, J.; Mushtaq, A.; Larivière, D.; Cantin, G.; Fontaine, F.-G.; Kleitz, F. «Selective recovery of rare earth elements using chelating ligands grafted on mesoporous surfaces» *RSC Advances* **2015**, *5*, 103782 – 103789.
- 62) Rochette, É.; Courtemanche, M.-A.; Pulis, A. P.; Bi, W.; Fontaine, F.-G. «Ambiphilic Frustrated Lewis Pairs Exhibiting High Robustness and Reversible Water Activation: Towards the Metal-Free Hydrogenation of Carbon Dioxide» *Molecules* **2015**, *20*, 11902 – 11904. **Invited Contribution.**
- 61) Légaré, M.-A.; Courtemanche, M.-A.; Rochette, É.; Fontaine, F.-G. «Metal-free catalytic C-H activation and borylation of heteroarenes» *Science* **2015**, *349*, 513 – 516.
- 60) Daigle, M.; Légaré, M.-A.; Bi, W.; Morin, J.-F.; Fontaine, F.-G. «Synthesis of Carboxylate Cp*Zr(IV) Species : Towards the Formation of Novel Metallocavitands» *Inorg. Chem.* **2015**, *54*, 5547 – 5555.

- 59) Courtemanche, M.-A.; Pulis, A. P.; Rochette, É.; Légaré, M.-A.; Stephan, D. W.; Fontaine, F.-G. «Intramolecular B/N frustrated Lewis pairs and the hydrogenation of carbon dioxide» *Chem. Commun.* **2015**, 51, 9797 – 9800.
- 58) Courtemanche, M.-A.; Légaré, M.-A.; Rochette, É.; Fontaine, F.-G. «Phosphazenes: efficient organocatalysts for the catalytic hydrosilylation of carbon dioxide» *Chem. Commun.* **2015**, 51, 6858 – 6861.
- 57) Declercq, R.; Bouhadir, G.; Bourissou, D.; Légaré, M.-A.; Courtemanche, M.-A.; Nahi, K. S.; Bouchard, N.; Fontaine, F.-G.; Maron, L. «Hydroboration of CO₂ using Ambiphilic Phosphine-Borane Catalysts : On the role of the formaldehyde adduct» *ACS Catal.* **2015**, 5, 2513 – 2520.
- 56) Pérez, V.; Barnes, S. S.; Fontaine, F.-G. «Generation of Group VI Piano-Stool and Triple-Decker complexes from [(IMes)₂PtH(Cl-boratabenzene)] species» *Eur. J. Inorg. Chem.* **2014**, 5698 – 5702.
- 55) Légaré, M.-A.; Courtemanche, M.-A.; Fontaine, F.-G. «Lewis Base Activation of Borane-Dimethylsulfide into Strongly Reducing Ion Pairs for the Transformation of Carbon Dioxide to Methoxyboranes» *Chem. Commun.* **2014**, 50, 11362 – 11365.
- 54) Courtemanche, M.-A.; Légaré, M.-A.; Maron, L.; Fontaine, F.-G. «Reducing CO₂ to Methanol using Frustrated Lewis Pairs: On the Mechanism of Phosphine-Borane Mediated Hydroboration of CO₂» *J. Am. Chem. Soc.* **2014**, 136, 10708 – 10717.
- 53) Mushtaq, A.; Bi, W.; Légaré, M.-A. «Synthesis and Reactivity of Novel Mesitylboratabenzene Ligands and Their Coordination to Transition Metals» *Organometallics* **2014**, 33, 3173 – 3181.
- 52) Légaré, M.-A.; Bélanger-Chabot, G.; De Robillard, G.; Languérand, A.; Fontaine, F.-G. «Insights on the Formation of Borabenzene Adducts via Ligand Exchange Reactions and TMSCl Elimination from Boracyclohexadiene Precursors» *Organometallics* **2014**, 33, 3596 – 3606.
- 51) Iden, H.; Morin, J.-F.; Fontaine, F.-G. «Synthesis of Tetrathiafulvalene-Containing Zirconium(IV) Pincers and Metallocavitands for Hosting Fullerenes» *Inorg. Chem. Acta.* **2014**, 422, 235 – 242. **Invited Contribution.**
- 50) Iden, H.; Morin, J.-F.; Fontaine, F.-G. «Zirconium(IV) metallocavitands as blue-emitting materials» *Inorg. Chem.* **2014**, 53, 2883 – 2891.
- 49) Iden, H.; Bi, W.; Morin, J. F.; Fontaine, F.-G. «Synthesis and Complexation Study of New Ex-TTF-Based Hosts for Fullerenes» *Org. Biomol. Chem.* **2014**, 12, 4117 – 4123.
- 48) Fontaine, F.-G.; Courtemanche, M.-A.; Légaré, M.-A. «Transition Metal-Free Catalytic Reduction of Carbon Dioxide» *Chem. Eur. J.* **2014**, 20, 2990 – 2996. **Invited Contribution.**
- 47) Magnan, F.; Gagnon, J.; Fontaine, F.-G.; Boudreau, D. «Indium@silica core-shell nanoparticles as plasmonic enhancers of molecular luminescence in the UV region» *Chem. Commun.* **2013**, 49, 9299 – 9301.
- 46) Courtemanche, M.-A.; Larouche, J.; Légaré, M.-A.; Bi, W.; Maron, L.; Fontaine, F.-G. «A tris(triphenylphosphine)aluminium ambiphilic system as precatalyst for the Reduction of Carbon Dioxide with Hydroboranes» *Organometallics* **2013**, 32, 6488 – 6499. **Invited Contribution.**
- 45) Courtemanche, M.-A.; Légaré, M.-A.; Maron, L.; Fontaine, F.-G. «A Highly Active Phosphine-Borane Organocatalyst for the Reduction of CO₂ to Methanol using Hydroboranes» *J. Am. Chem. Soc.* **2013**, 135, 9326 – 9329.
- 44) Staub, H.; Kleitz, F.; Fontaine, F.-G. «Confinement of the Grubbs Catalyst in Alkene-Functionalized Mesoporous Silica» *Micropor. Mesopor. Mat.* **2013**, 175, 170 – 177.

- 43) Ferland, P.; Prosser, K. E.; Bourque, J. L.; Edwards, I. C.; Hamilton, N. S.; Joyce, L. E.; Finniss, M. C.; Yorke, S. R.; Vogels, C. M.; Fontaine, F.-G.; Decken, A.; Westcott, S. A. «Addition of boranes to (E)-(η⁵-C₅H₅)₂Zr(CH=CHPh)Cl» *Cent. Eur. J. Chem.* **2013**, *11*, 811 – 816.
- 42) Boudreau, J.; Marx, V. M.; Burnell, D. J.; Fontaine, F.-G. «Ambiphilic molecules for trapping reactive intermediates : interrupted Nazarov of allenyl vinyl ketones with Me₂AlCH₂PMe₂» *Chem. Commun.* **2012**, *48*, 11250 – 11252.
- 41) Staub, H.; Del Rosal, I.; Maron, L.; Kleitz, F.; Fontaine, F.-G. «Interaction of ClPPh₂ with Silica Mesoporous Materials» *J. Phys. Chem. C* **2012**, *116*, 25919 – 25927.
- 40) Garon, C. M.; Daigle, M.; Lévesque, I.; Dufour, P.; Iden, H.; Tessier, C.; Marris, T.; Morin, J.-F.; Fontaine, F.-G. «Lewis Acidic Metallocavitands with Extended Cavity» *Inorg. Chem.* **2012**, *51*, 10384 – 10393.
- 39) Macha, B. B.; Maron, L.; Boudreau, J.; Fontaine, F.-G. «Synthesis and Coordination of a Boratabenzene-Phosphine Ligands with Group 10 Transition Metals» *Organometallics* **2012**, *31*, 6428 – 6437.
- 38) Babin, M.; Clément, R.; Gagnon, J.; Fontaine, F.-G. «Homogeneous Asymmetric Transfer Hydrogenation of Ketones using a Ruthenium Catalyst Anchored on Chitosan: Natural Chirality at Work»- *New. J. Chem.* **2012**, *36*, 1548 – 1551.
- 37) Pham, M.-H.; Vuong, G.-T.; Fontaine, F.-G.; Do, T.-O. «Rational Synthesis of Nanocubes and Nanosheets of Metal-Organic Frameworks with High CO₂ Uptake using Selective Modulators» *Crystal Growth & Design* **2012**, *12*, 3091 – 3095.
- 36) Khan, H.; Badshah, A.; Butler, I. S.; Murtaza, G.; Said, M.; Ahmed, S.; Fontaine, F.-G.; Mirza, B. «Anti-Tumour Activity and DNA-Binding Studies of mixed Ligand Dithiocarbamate Palladium(II) Complexes» *Polyhedron* **2012**, *39*, 1 – 8.
- 35) Pham, M.-H.; Vuong, G.-T.; Fontaine, F.-G.; Do, T.-O. «A bottom-up route to bimodal Micro-Mesoporous Metal-Organic Frameworks Nanocrystals» *Crystal Growth & Design* **2012**, *12*, 1008 – 1013.
- 34) Barnes, S. S.; Légaré, M.-A.; Maron, L.; Fontaine, F.-G. «Reactivity of a Cl-boratabenzene Pt(II) complex with Lewis bases : generation of the kinetically favoured Cl-boratabenzene anion» *Dalton Trans.* **2011**, *40*, 12439 – 12442.
- 33) Boudreau, J.; Courtemanche, M.-A.; Fontaine, F.-G. «Reactivity of Lewis Pairs (R₂PCH₂AlMe₂)₂ with carbon dioxide» *Chem. Commun.* **2011**, *47*, 11131 – 11133.
- 32) Murtaza, G.; Badshah, A.; Said, M.; Khan, H.; Khan, A.; Khan, S.; Siddiq, S.; Choudhary, M. I.; Boudreau, J.; Fontaine, F.-G. «Urease Inhibition and Anti-leishmanial Assay of Substituted Benzoylguanadines and Their Copper(II) Complexes» *Dalton Trans.* **2011**, *40*, 9202 – 9211.
- 31) Thibault, M.-H.; Bélanger-Chabot, G.; Boccon, N.; Fontaine, F.-G. «Reactivity of a functionalized trisamido ligand with Zr(NMe₂)₄ and GaMe₃» *J. Organomet. Chem.* **2011**, *696*, 2211 – 2216.
- 30) Boudreau, J.; Fontaine, F.-G. «Coordination and Insertion of Ethylene to Ambiphilic Complexes of Rh(III)» *Organometallics* **2011**, *30*, 511 – 519.
- 29) Staub, H.; Kayser, L.; Even, N.; Kleitz, F.; Fontaine, F.-G. «Substantiating the Influence of Pore Surface Functionalities on the Stability of Grubbs Catalyst in Mesoporous SBA-15 Silica» *Chem. Eur. J.* **2011**, *17*, 4254 – 4265.
- 28) Bélanger-Chabot, G.; Rioux, P.; Maron, L. Fontaine, F.-G. «Synthesis of a 1-boratabenzene-(2,3,4,5-tetramethylphosphole): towards a planar monophosphole» *Chem. Commun.* **2010**, 6816 – 6818.

- 27) Thibault, M.-H.; Fontaine, F.-G. «Aluminum Complexes Bearing Functionalized Trisamido Ligands and their Reactivity in the Polymerization of ϵ -Caprolactone and rac-Lactide» *Dalton Trans.* **2010**, 5688 – 5697.
 - 26) Boudreau, J.; Grenier-Desbiens, J.; Fontaine, F.-G. «MS-TOF Study of the Formation of Thiolato bridged Rhodium Oligomers» *Eur. J. Inorg. Chem.* **2010**, 2158 – 2164.
 - 25) Thibault, M.-H.; Fontaine, F.-G. «(η^4 -Cycloocta-1,5-diene)diiodidoplatinum(II)» *Acta. Cryst.* **2009**, E65, m1028.
 - 24) Languérand, A.; Barnes, S. S.; Bélanger-Chabot, G; Maron, L.; Berrouard, P.; Audet, P.; Fontaine, F.-G. «[(IMes)₂Pt(H)(CIBC₅H₄SiMe₃)]: a Borabenzene-Platinum Adduct with an Unusual Pt-Cl-B Interaction» *Angew. Chem. Int. Ed.* **2009**, 48, 6695 – 6698.
 - 23) Thibault, M.-H.; Lucier, B. E. G.; Schurko, R. W., Fontaine, F.-G. «Synthesis and Solid-State Characterization of Platinum Complexes with Hexadentate Amino- and Iminophosphine Ligands» *Dalton Trans.* **2009**, 7701 – 7716.
 - 22) Garon, C. N.; Gorelsky, S.; Sigouin, O.; Woo, T. K.; Fontaine, F.-G. «Structural Study of Acidic Metallocavitands and Characterization of their Interactions with Lewis Bases» *Inorg. Chem.* **2009**, 48, 1699 – 1710.
 - 21) Fontaine, F.-G.; Boudreau, J.; Thibault, M.-H. «Coordination Chemistry of neutral (L_n)-Z Amphoteric and Amphiphilic Ligands» *Eur. J. Inorg. Chem.* **2008**, 5439 – 5454. **Invited Contribution.**
 - 20) Burford, R.; Garon, C. N.; Fontaine, F.-G.; Westcott, S. A. «Chloridobis(η^5 -cyclopentadienyl)(4-methoxyphenethyl)zirconium(IV)» *Acta. Cryst.* **2007**, E63, m2790.
 - 19) Garon, C. N.; Milliard, A.; Fontaine, F.-G. «6-Bromo-N-methylnaphthalen-2-amine» *Acta. Cryst.* **2007**, E63, o4338.
 - 18) Decken, A.; Michaud, A.; Mathiotte, S.; Fontaine, F.-G. «(Diphenyl sulfoxide)dimethyl(η^5 -pentamethylcyclopentadienyl)rhodium(III)» *Acta. Cryst.* **2007**, E63, m2253.
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 - 11) Michaud, A.; Fontaine, F.-G.; Zargarian, D. «[Bis[tris(3,5-dimethylpyrazolyl)methane] nickel(II)][tetrachloronickelate(II)]-methanol-water (1/1/1)» *Acta Cryst.* **2005**, E61, m904 – m906.
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- 9) Michaud, A.; Fontaine, F.-G.; Zargarian, D. «Bis[tris(3,5- dimethylpyrazolyl)methane] nickel(II) dibromide.» *Acta Cryst.* **2005**, *E61*, m784 – m786.
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- 4) Fontaine, F.-G.; Dubois, M.-A.; Zargarian D. «Solid State Structures and Phosphine Exchange Reactions of (1-Me-Indenyl)Ni(PR₃)Cl» *Organometallics* **2001**, *20*, 5145 – 5161.
- 3) Beaudoin, S.; Zargarian, D.; Bélanger-Gariépy, F.; Fontaine, F.-G. «[1,2-Bis(diphenylphosphino)ethane]dibromonickel(II) tetrahydrofuran solvate» *Acta Cryst.* **2001**, *E57*, m433 – m434.
- 2) Fontaine, F.-G. «Cis-bis(2,2-bipyridine)dichloronickel(II) methanol solvate» *Acta Cryst.* **2001**, *E57*, m270 – m271.
- 1) Fontaine, F.-G.; Kadkhodazadeh, T.; Zargarian D. «Nickel Indenyl Complexes as Precatalysts for Dehydropolymerization of Phenylsilane» *J. Chem. Soc., Chem. Commun.* **1998**, 1253 – 1254.

Patents

- 5) Marc-André Légaré, Marc-André Courtemanche, Frédéric-Georges Fontaine. «Process for the Functionalization of sp² carbons». Patent Pending PCT/CA2016/000124. Deposited on April 21, 2016.
- 4) Marc-André Légaré, Étienne Rochette, Frédéric-Georges Fontaine. «Precatalysts and Process for the metal-free functionalization of sp² carbons using the same». Provisional Patent US 62/267,637. Deposited on December 15, 2015.
- 3) Marc-André Légaré, Marc-André Courtemanche, Frédéric-Georges Fontaine. «Process for the Functionalization of sp² carbons ». Provisional Patent US 62/151,647. Deposited on April 23, 2015.
- 2) Marc-André Courtemanche, Frédéric-Georges Fontaine. «Catalysts for the reduction of carbon dioxide to methanol ». US Patent No. 9,856,194. Deposited on April 23, 2014; Issued on January 2nd, 2018.
- 1) Marc-André Courtemanche, Frédéric-Georges Fontaine. «Catalysts for the reduction of carbon dioxide to methanol ». Provisional Patent US 61/815,066. Deposited on April 23, 2013.

Invited Talks

- 78) **Goethe Universität** «Metal-Free Catalysts for the Borylation Reaction : From Laboratory to Large Scale Applications» Frankfurt, Germany, November 21, 2018.
- 77) **Universität Würzburg** «Metal-Free Catalysts for the Borylation Reaction : From Laboratory to Large Scale Applications» Würzburg, Germany, November 19, 2018.

- 76) **University of Edinburgh** «Metal-Free Catalysts for the Borylation Reaction : From Laboratory to Large Scale Applications» Edinburgh, Scotland, United Kingdom, November 16, 2018.
 - 75) **Cardiff University** «Metal-Free Catalysts for the Borylation Reaction : From Laboratory to Large Scale Applications» Cardiff, Wales, United Kingdom, November 14, 2018.
 - 74) **University of Oxford** «Metal-Free Catalysts for the Borylation Reaction : From Laboratory to Large Scale Applications» Oxford, England, United Kingdom, November 13, 2018.
 - 73) **Cégep Garneau** «Chimie de l’Histoire, de CroMagnon à Napoléon» Quebec City, Quebec, Canada, October 25, 2018.
 - 72) **UNAM** «Ligand Design Taken to the Extremes: When the Metal is no Longer Needed» Mexico City, Mexico, August 13, 2018.
 - 71) **2018 Organometallics Gordon Conference** «Metal-Free Catalysts for the Borylation of Heteroarenes» Newport, Rhode Island, USA, July 8-13, 2018. (Contributed)
 - 70) **101th Canadian Chemical Society Conference** «Metal-Free Catalysts for the Borylation of Heteroarenes» Edmonton, Alberta, Canada, May 28, 2018. (Contributed)
 - 69) **York University** «Ligand Design Taken to the Extremes: When the Metal is no Longer Needed» Toronto, Ontario, November 23, 2017.
 - 68) **Polymat 2017** «Metal-Free Catalysts for the Borylation of Heteroarenes» Huatulco, Mexico, October 16, 2017.
 - 67) **Queen’s University** «Ligand Design Taken to the Extremes: When the Metal is no Longer Needed» Kingston, Ontario, October 11, 2017.
 - 66) **University of Toronto** «Ligand Design Taken to the Extremes: When the Metal is no Longer Needed» Toronto, Ontario, Canada, April 6, 2017.
 - 65) **100th Canadian Chemical Society Conference** «Metal-Free E-H Bond Functionalization: From Concept to Applications» Toronto, Ontario, Canada, May 2017.
 - 64) **100th Canadian Chemical Society Conference** «Reduction of Carbon Dioxide to methanol using a metal-free approach» Toronto, Ontario, Canada, May 2017.
 - 63) **100th Canadian Chemical Society Conference** «Frustrated Lewis Pairs: A Kinetic Concept» Toronto, Ontario, Canada, May 2017.
 - 62) **McGill University** «Ligand Design Taken to the Extremes: When the Metal is no Longer Needed» Montreal, Quebec, Canada, January 17, 2017.
 - 61) **Université de Montréal** «Ligand Design Taken to the Extremes: When the Metal is no Longer Needed» Montréal, Quebec, Canada, December 16, 2016.
 - 61) **University of Vermont** «Ligand Design Taken to the Extremes: When the Metal is no Longer Needed» Burlington, Vermont, USA, November 3, 2016.
 - 60) **Princeton University** «Ligand Design Taken to the Extremes: When the Metal is no Longer Needed», Princeton, New Jersey, USA, September 20, 2016.
 - 59) **Université de Bourgogne** «Ligand Design Taken to the Extremes: When the Metal is no Longer Needed», Dijon, France, July 11, 2016.
 - 58) **42nd International Conference on Coordination Chemistry** «Synthesis and reactivity of borabenzene complexes with unusual coordination modes» Brest, France, July 3 – 8, 2016.
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- 57) **3rd International Symposium on C-H Activation** «Metal-Free Catalysts for the Borylation of Heteroarenes» Montreal, Quebec, Canada, May 30 – June 2, 2016.
 - 56) **Collège Saint-Hilaire** «La chimie de l'histoire : La géopolitique moléculaire» Mont-Saint-Hilaire, Quebec, Canada, April 13, 2016.
 - 55) **Pacificchem 2015** «Ligand design in organometallic chemistry taken to the extreme: when the metal is no longer needed» Honolulu, Hawaii, USA, December 15 – 20 2015.
 - 54) **Pacificchem 2015** «Frustrated Lewis pairs as efficient catalyst for the C_{sp2}-H bond activation» Honolulu, Hawaii, USA, December 15 – 20 2015.
 - 53) **Université Laval** «Le design de ligands en chimie organométallique amené aux extrêmes : quand les métaux ne sont plus nécessaires» Quebec City, Quebec, Canada, November 18, 2015.
 - 52) **Cégep Saint-Laurent** «Chimie de l'Histoire, la Géopolitique Moléculaire» Montreal, Quebec, Canada, October 30, 2015.
 - 51) **University of Alberta** «Ligand Design Taken to the Extremes: When the Metal is no Longer Needed» Edmonton, Alberta, Canada, May 25, 2015.
 - 50) **6th Annual Meeting of the CCVC** «Ligand Design Taken to the Extremes: When the Metal is no Longer Needed» Quebec City, Quebec, Canada, May 12 2015.
 - 49) **Université Bishop** « A journey in Molecular Geopolitics» Sherbrooke, Quebec, Canada, March 20, 2015.
 - 48) **UC Berkeley Symposium in Honor of T. Don Tilley** « Reduction of carbon dioxide to methanol using metal-free phosphine borane organocatalysts», Berkeley, California, USA, August 9, 2014.
 - 47) **20th International Conference on Phosphorous Chemistry** « Reduction of carbon dioxide to methanol using metal-free phosphine borane organocatalysts» Dublin, Ireland, June 28 – July 2, 2014.
 - 46) **Chimistes pour l'Environnement de l'Université Laval** « De déchet à carburant: des solutions chimiques pour la diminution des GES et la valorisation du CO₂» Quebec City, Quebec, Canada, March 26, 2014.
 - 45) **247th National ACS Meeting** « Reduction of carbon dioxide to methanol using metal-free phosphine-borane organocatalysts» Dallas, Texas, USA, March 16 – 20, 2014.
 - 44) **25^{ème} Colloque Étudiant de l'Université de Sherbrooke** «Chimie de l'Histoire, de CroMagnon à Napoléon» Sherbrooke, Quebec, Canada, October 18, 2013.
 - 43) **Brock University** « Ambiphilic Molecules as ligands for transition metals and for the activation of small molecules: from a fundamental concept to catalytic applications» Ste-Catherines, Ontario, Canada, April 26, 2013.
 - 42) **McMaster University** « Ambiphilic Molecules as ligands for transition metals and for the activation of small molecules: from a fundamental concept to catalytic applications» Hamilton, Ontario, Canada, April 25, 2013.
 - 41) **Western University** « Ambiphilic Molecules as ligands for transition metals and for the activation of small molecules: from a fundamental concept to catalytic applications» London, Ontario, Canada, April 24, 2013.
 - 40) **245th National ACS Meeting**, New Orleans, Louisiana, USA, April 7 – 11. **Absent for medical reason.**
 - 39) **95th Canadian Chemical Society Conference** « Ambiphilic Molecules : Exploring a Novel Paradigm in Coordination Chemistry » Calgary, Alberta, Canada, May 27 2012.
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- 38) **80^{ème} congrès de l'ACFAS** « Les molécules amphiphiles : exploration d'un nouveau paradigme en chimie de coordination et en catalyse» Montreal, Quebec, Canada, May 7 – 8, 2012.
 - 37) **24 Heures de Chimie de l'Université Laval** «Chimie de l'Histoire, de CroMagnon à Napoléon» Quebec City, Quebec, Canada, March 29, 2012.
 - 36) **94th Canadian Chemical Society Conference** «Borabenzene Chemistry revisited » Montreal, Quebec, Canada, June 6, 2011.
 - 35) **University of Ottawa** «A Journey in Molecular Geopolitics» Ottawa, Ontario, Canada, May 7, 2011.
 - 34) **University of Ottawa** «Chimie de l'Histoire, de CroMagnon à Napoléon» Ottawa, Ontario, Canada, May 7, 2011.
 - 33) **UCLA** « Borabenzene Chemistry revisited » Los Angeles, California, USA, April 7 2011.
 - 32) **University of Santa Barbara** « Borabenzene Chemistry revisited » Santa Barbara, California, USA, April 6, 2011.
 - 31) **University of Southern California** « Borabenzene Chemistry revisited » Los Angeles, California, USA, April 5, 2011.
 - 30) **Pacifichem 2010** « Synthesis and reactivity of a Rh(III) half-sandwich complex featuring the amphiphilic bifunctional ligand $\text{PMe}_2\text{CH}_2\text{AlMe}_2$ » Honolulu, Hawaii, USA, December 18, 2010.
 - 29) **University of Ottawa** «Application of group XIII Lewis acids in coordination chemistry: towards catalysis and sensing properties» Ottawa, Ontario, Canada, December 8, 2010.
 - 28) **Université de Toulouse** «La chimie de coordination du borabenzène revisitée» Toulouse, France, October 8, 2010.
 - 27) **Université de Montpellier** « La chimie de coordination du borabenzène revisitée » Montpellier, France, October 6, 2010.
 - 26) **Université de Bourgogne** « La chimie de coordination du borabenzène revisitée » Dijon, France, October 1, 2010.
 - 25) **Université de Nantes** « La chimie de coordination du borabenzène revisitée » Nantes, France, September 28, 2010.
 - 24) **Université de Rennes** « La chimie de coordination du borabenzène revisitée » Rennes, France, September 27, 2010.
 - 23) **Shanghai Institute of Organic Chemistry** «Borabenzene Chemistry revisited » Shanghai, China, June 14, 2010.
 - 22) **Merck-Frosst Canada Ltd.** «A short course on pharmaceutically relevant metal chelation : an inorganic point of view» Kirkland, Quebec, Canada, May 13, 2010.
 - 21) **Université de Montréal** «La chimie de coordination du ligand borabenzène revisitée» Montreal, Quebec, Canada, March 17, 2010.
 - 20) **Tempête des Sciences du Cégep François Xavier-Garneau** «Chimie de l'Histoire, la géopolitique moléculaire» Quebec City, Quebec, Canada, February 3, 2010.
 - 19) **Shad Valley** «Chimie de l'Histoire, la Géopolitique Moléculaire» Quebec City, Quebec, Canada, July 10, 2009.
 - 18) **77^{ème} congrès de l'ACFAS** «Le ligand bifonctionnel et amphiphile $\text{Me}_2\text{PCH}_2\text{AlMe}_2$ dans des systèmes d'intérêt pour l'activation catalytique des liens C-H» Ottawa, Ontario, Canada, May 13, 2009.
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- 17) **24 Heures de Chimie de l'Université Laval** «Chimie de l'Histoire, la Géopolitique Moléculaire» Quebec City, Quebec, Canada, March 26, 2009.
- 16) **University of Toronto** «Synthesis and Characterization of Bifunctional Transition Metal Complexes» Toronto, Ontario, Canada, September 17, 2008.
- 15) **University of Windsor** «Synthesis and Characterization of Bifunctional Transition Metal Complexes» Windsor, Ontario, Canada, September 15, 2008.
- 14) **235th ACS National Meeting** «Tantalum(V) boronate clusters exhibiting a supramolecular Lewis acid cavity» New Orleans, Louisiana, USA, April 6, 2008.
- 13) **Cégep de Beauce-Appalaches** «Chimie de l'Histoire, de CroMagnon à Napoléon» St-Georges, Quebec, Canada, November 29, 2007.
- 12) **Université Paul-Sabatier** «Coordination de ligands ambiphiles phosphane-alane sur des métaux de transition: *On ne connaît que les choses qu'on apprivoise*» Toulouse, France, September 7, 2007.
- 11) **Université de Montpellier** «Coordination de ligands ambiphiles phosphane-alane sur des métaux de transition: *On ne connaît que les choses qu'on apprivoise*» Montpellier, France, September 6, 2007.
- 10) **Université de Bourgogne** «Coordination de ligands ambiphiles phosphane-alane sur des métaux de transition: *On ne connaît que les choses qu'on apprivoise*» Dijon, France, September 4, 2007.
- 9) **École Polytechnique** «Coordination de ligands ambiphiles phosphane-alane sur des métaux de transition: *On ne connaît que les choses qu'on apprivoise*» Palaiseau, France, September 3, 2007.
- 8) **Mount Allison University** «Synthesis and Characterization of Bifunctional Transition Metal Complexes» Sackville, Nouveau-Brunswick, Canada, July 24, 2007.
- 7) **Cégep de Limoilou** «Chimie de l'Histoire, de CroMagnon à Napoléon» Quebec City, Quebec, Canada, November 15, 2006.
- 6) **Symposium Annuel de Chimie Inorganique du Québec** «Chimie de l'Histoire, de CroMagnon à Napoléon» Trois-Rivières, Quebec, Canada, August 24 – 25, 2006.
- 5) **Université de Montréal** «Synthèse et réactivité de complexes comportant des ligands bifonctionnels» Montreal, Quebec, Canada, May 10, 2006.
- 4) **24 Heures de Chimie de l'Université Laval** «Chimie de l'Histoire, de CroMagnon à Napoléon», Quebec City, Quebec, Canada, March 30, 2006.
- 3) **University of California, Berkeley** «Catalytic C-H activation and functionalization of alkanes and arenes by σ -bond metathesis with Scandium complexes» Berkeley, California, USA, June 1st, 2004.
- 2) **Université Laval** «Nouveaux systèmes catalytiques pour la fonctionnalisation des liens Si-H et C-H du méthane» Quebec City, Quebec, Canada, November 27, 2003.
- 1) **McGill Inorganic Discussion** «Composés indényles de nickel(II): Catalyseurs pour la polymérisation du phénylsilane et l'hydrosilylation des oléfines et des cétones» Montreal, Quebec, Canada, March 29, 2000.

Contributions to popular press

Interview for the article «À la recherche du Saint-Graal» Pierre Vallée, *Le Devoir*, April 9, 2016.

Article on our research.

« Vertes découvertes » Jean Hamann, *Fil des événements*, January 14, 2016.

Article qui mentionne nos travaux de recherche.

Invited scientist at the Science Bar organized by the Association of Scientific Communicators of Quebec, February 2, 2016, La Korrigane, Quebec City.

Interview for the video « De nouveaux catalyseurs pour une chimie plus verte » Benjamin Turquet, Canal Savoir, Janvier 2016 (<https://www.youtube.com/watch?v=eKm4tGX4LIA>).
Video on our research.

Interview for the article « L'énergie de la frustration » Nathalie Kinnard, Québec Science, January-February 2016.
Article on our research.

Interview for the article « Comment faire travailler deux petits frustrés » Jean-François Cliche, Le Soleil, December 22, 2015.
Article on our research.

Interview for the article « Le Pouvoir de la Frustration » Jean Hamann, Fil des événements, August 27, 2015.
Article on our research.

Interview for the article « Frustrated Catalyst Activates C-H bonds » Stu Borman, Chemical & Engineering News, August 3, 2015.
Article on our research.

« A leap ahead for activating C-H bond » S. K. Bose and Todd Marder, *Science* **2015**, 349, 473-474.
Perspective article on our research.

Press release « Des catalyseurs verts et abordables au potentiel énorme pour l'industrie mis au point à l'Université Laval » Samuel Auger, Université Laval, July 30, 2015.
Press release on our research.

Interview (not credited) for the radio broadcast « L'Amicale du Piquant Immaculé du Québec : Une Société secrète d'amateurs » André-Pier Bérubé, Bien dans son assiette, Radio-Canada, March 9, 2015.
Radio broadcast on the chemical properties of capsaicin and hot peppers.

Interview for the radio broadcast « Des gaz à effet de serre transformés en carburant » Catherine Lachaussée, Radio-Canada cet après-midi, Radio-Canada, June 20, 2013.
Radio broadcast on our research.

Interview for the article « New catalyst improves carbon dioxide reduction » Tyler Irving, Actualité Chimique Canadienne, August 2013.
Article on our research.

Interview for the article « Non metal compound catalyzes CO₂ to Methanol Reaction » Michelle Bryner, Chemical Engineering Progress, August 2013.
Article on our research. Half a dozen students in engineering contacted me in order to have more details on our work as part of their term papers.

Press release « Trop vert pour être vrai? Des chercheurs mettent au point une prometteuse méthode de conversion du CO₂ en méthanol » Jean-François Huppé, Université Laval, June 20, 2013.
Press release on our research. It was diffused on more than 100 different web sites in more than 10 different languages.

Interview for the article « Trop vert pour être vrai » Jean Hamann, Fil des événements, June 13, 2013.
Article on our research.

Interview for the article « La chimie se met au vert » Impact Campus, January 17, 2012.
Article on our research and on green chemistry.

Interview for the article « La fureur du Eyjafjallajökull » Pascale Guéricolas, Fil des Événements, April 22, 2010.

Article on the impact of the explosion of the Eyjafjallajökull volcano on air quality.

Interview for the article « Du cuivre pour absorber le CO₂ » Dominique Auger-Gagnon, Impact Campus, January 12, 2010.

Analyst for a Nature article on CO₂ capture by copper complexes.

Highly qualified personnel

Ph.D. Students

Nicolas Bouchard <i>NSERC Graham-Bell scholarship</i>	Since May 2015
Julien Légaré-Lavergne <i>NSERC Graham-Bell scholarship</i>	Since May 2015
Théo Rongère	Since September 2016
Yimu Hu (codirector Freddy Kleitz) <i>FRONT scholarship</i>	Since September 2015
Étienne Rochette <i>NSERC Graham-Bell and Vanier scholarships</i>	Since May 2014
Maria Zakharova (codirector Freddy Kleitz) <i>Chemist, Oleotek Inc.</i>	Sept. 2012 – Oct. 2017
Viridana Torres Perez <i>PDF with Byron Gates, SFU</i>	May 2011 – Feb. 2016
Ambreen Mushtaq <i>Paul-Antoine-Giguère scholarship</i> <i>Teacher, Kashmir, India</i>	Sept. 2011 – Oct. 2015
Marc-André Courtemanche <i>NSERC Graham-Bell and NSERC PDF scholarships, CSC Inorganic Division Award for Graduate Work in Inorganic Chemistry (best Ph.D. work in Canada)</i> <i>PDF with Christopher Cummins, MIT, Cambridge, Massachusetts, USA</i> <i>Senior Chemist, Dow Chemicals, Michigan, USA</i>	Jan. 2011 – Aug. 2015
Marc-André Légaré <i>NSERC Graham-Bell and NSERC PDF scholarships, Star Student-Researcher of the Month, FRONT</i> <i>PDF with Holger Braunschweig, University of Würzburg, Germany</i>	Sept. 2010 – Aug. 2015
Hassan Iden (codirector Jean-François Morin) <i>Research associate with Younès Messaddeq, Excellence Chair, Université Laval</i>	Sept. 2010 – April 2014
Josée Boudreau <i>Rio-Tinto Alcan, NSERC Graham-Bell and NSERC Industrial PDF scholarships</i> <i>Project Leader, Distillerie Fils du Roy, Petit-Paquetville, Nouveau-Brunswick</i>	Sept. 2006 – Sept. 2011
Christian N. Garon <i>NSERC Graham-Bell scholarship</i> <i>PDF with Douglas Stephan, University of Toronto</i> <i>Industrial Operation Director, Gefco Industrial Services Faurecia, France</i>	Sept. 2007 – Aug. 2011
Hélène Staub (codirector Freddy Kleitz)	Jan. 2007 – June 2011

Quality Control, Baccinex SA, France

Marie-Hélène Thibault Sept. 2004 – Sept. 2009

Paul-Antoine-Giguère, doctoral FRONT and PDF FRONT scholarships

PDF with Todd Marder, University of Durham, England

Assistant professor at the University of Moncton, NB, Canada

Olivier Sigouin (did not complete) Sept. 2004 – Nov. 2006

R&D Engineer, Techniseal (Candiac)

R&D Director, Intersand Group Canada Inc.

M.Sc. Students

Vincent Desrosiers Since September 2018

Jonathan Gauvin-Audet Since May 2018

Thomas Bossé-Demers Since May 2017

Hugo Boutin May 2016 – April 2017

Chemist, Omegachem, Quebec City

Jérémie Larouche May 2012 – April 2014

NSERC PGS scholarship

R&D Director, Solesco

Maxime Daigle (codirector Jean-François Morin) May 2011 – April 2013

Ph.D. student with Jean-François Morin, Université Laval

R&D Project Leader, General Dynamics Ordnance and Tactical Systems

François Magnan (codirector Denis Boudreau) May 2010 – August 2012

Ph.D. with Jaclyn Brusso, University of Ottawa

Post-doc with Joe Gilroy, Western University

Bret Macha Aug. 2009 – Aug. 2011

Ph.D. with Holger Braunschweig, University of Würzburg, Germany

QA/QC Analytical Chemist, Chemicals Incorporated

Stephanie S. Barnes Sept. 2008 – Aug. 2010

FRONT and Richard J. Schmeelk scholarships

M.Sc. in Art Restoration, Queen's University

Koerner Fellow in Painting Conservation, Art Gallery of Ontario.

Mathieu Babin (codirector Jonathan Gagnon, UQAR) Sept. 2008 – July 2010

Bourse CRSNG PGS, Bourse Paul-Antoine-Giguère

Chemist, Institut des Sciences de la mer de Rimouski

Teaching position, Université de Québec à Rimouski

Patrick Ferland Jan. 2008 – Dec. 2009

Professor, Cégep Garneau

Guillaume Bélanger-Chabot Sept. 2007 – Nov. 2009

NSERC scholarship, Academic Gold Medal of the Governor General

Ph.D. with Karl Christe, University of Southern California, CA, USA

PDF with François Gabbai, Texas A&M

PDF with Holger Braunschweig, Universität Würzburg

André Languérand Jan. 2007 – Dec. 2008

Laboratory Director, H₂LAB

PDF and Research Professional

Sanjay G. Chaudhri Since Nov. 2018

Arumugam Jayaraman <i>PDF with Holger Braunschweig, Universität Würzburg</i>	Aug. 2016 – Nov. 2018
Thomas Bura <i>PDF with Mario Leclerc, Université Laval</i> <i>Chercheur, OmegaChem</i>	Aug. 2016 – Aug. 2017
Luis Carlos Misal Castro <i>PDF with Kasushi Mishama, Osaka University</i>	June 2015 – July 2017
Annie Michaud <i>Chemist for the Ministry of Environment, Quebec</i> <i>Radiosafety Officer, Université Laval</i>	July 2004 – Aug. 2005

Undergraduate interns (B.Sc. Université Laval)

Louis-Philippe Boivin <u>CCVC Scholarship</u> <i>B.Sc. Université Laval</i>	May 2018 – Aug. 2018
Laura Harter <i>B.Sc. Université Laval</i>	May 2018 – Aug. 2018
Marc-Olivier Landry (codirector Dominic Larivière) <u>CCVC Scholarship</u> <i>B.Sc. Université Laval</i>	May 2018 – Aug. 2018
Gabrielle Laurent <i>B.Sc. Université Laval</i>	May 2017 – Aug. 2017
Olivier Lessard <u>NSERC scholarship</u> <i>B.Sc. Université Laval</i>	May 2017 – Aug. 2017
Vincent Desrosiers <u>NSERC scholarship</u> <i>B.Sc. Université Laval</i> <i>M.Sc. with Frédéric-Georges Fontaine, Université Laval</i>	May 2017 – Aug. 2017
Jonathan Gauvin-Audet <i>M.Sc. with Frédéric-Georges Fontaine, Université Laval</i>	Jan. 2017 – Avril 2017
Rémi Nadeau (codirector Dominic Larivière) <u>CCVC Scholarship</u> <i>Chemist OmegaChem</i>	May 2016 – Aug. 2016
Nicolas Paiement <u>CCVC Scholarship</u> <i>M.Sc. Éric Biron, Centre Hospitalier de Québec, Université Laval</i>	May 2016 – Aug. 2016
Charles Boutin (codirector Freddy Kleitz) <i>B.Sc. Université Laval</i>	May 2016 – Aug. 2016
Hugo Boutin <i>M.Sc. with Frédéric-Georges Fontaine, Université Laval</i> <i>Chemist, OmegaChem</i>	Sept. 2015 – Dec. 2015
Lydia Parent <u>CCVC Scholarship</u> <i>Quality Control, Laboratoire MAT</i>	May 2015 – Aug. 2015
Thomas Bossé-Demers <u>CCVC Scholarship</u>	May 2015 – Aug. 2015

- M.Sc. with Frédéric-Georges Fontaine, Université Laval*
- Terence Blaskovits** Sept. – Dec. 2014
M.Sc. with Mario Leclerc, Université Laval
- Matthew Hemmings** May 2014 – Aug. 2014
CCVC Scholarship
iA Groupe Financier
- François Innes** May 2014 – Aug. 2014
M.Sc. Environmental Science, Université de Sherbrooke
Specialist, MDDELCC
- Nicolas Bouchard** May 2013 – Aug. 2013
NSERC scholarship
Ph.D. student with Frédéric-Georges Fontaine, Université Laval
- Maude Desroches** May 2011 – Dec. 2011
CCVC Scholarship
Ph.D. with Jean-François Morin, Université Laval
Senior Research Chemist, Dow Chemical Company, Michigan
- Isabelle Lévesque** (codirector Jean-François Morin) May 2010 – April 2011
M.Sc. with Jean-François Morin, Université Laval
Chemist, OmegaChem
- Marc-André Courtemanche** May 2010 – Dec. 2010
NSERC scholarship
Ph.D. with Frédéric-Georges Fontaine, Université Laval
PDF with Christopher Cummins, MIT, Cambridge, USA
Senior Research Chemist, Dow Chemical Company, Michigan
- François Magnan** (codirector Denis Boudreau) Jan. 2010 – April 2010
M.Sc. with Denis Boudreau and Frédéric-Georges Fontaine, Université Laval
Ph.D. with Jaclyn Brusso, University of Ottawa
PDF with Joe Gilroy, Western University
- Philippe Rioux** May 2009 – April 2010
Manager, Scholars at your Service, Toronto
- Marc-André Légaré** May 2008 – April 2010
NSERC scholarship
Ph.D. with Frédéric-Georges Fontaine, Université Laval
PDF with avec Holger Braunschweig, University of Würzburg, Germany
- Jérôme Delisle-Labrecque** May 2009 – August 2009
M.Sc. with Mario Leclerc, Université Laval
Chemist Strong MDI
- Jérôme Grenier-Desbiens** May 2008 – Oct. 2008
Barista Café Humble Lion (finalist for the best Canadian barista)
- Richard Burford** May 2007 – April 2008
NSERC Scholarship
B.Sc. Mount Allison University
Ph.D. with Warren Piers, University of Calgary
PDF with Michael Fryzuk, University of British Columbia
Research Scientist, SWITCH Materials, British-Columbia
- Alex Milliard** May 2007 – Aug. 2007
M.Sc. with Dominic Larivière, Université Laval
Industrial environment professional, Englobe
- Guillaume Bélanger-Chabot** May 2006 – April 2007

NSERC Scholarship*M.Sc. with Frédéric-Georges Fontaine, Université Laval**Ph.D. with Karl Christe, University of South California, CA, USA**PDF with François Gabbai, Texas A&M**PDF with avec Holger Braunschweig, University of Würzburg, Germany***Philippe Berrouard**

May 2006 – April 2007

*Ph.D. with Mario Leclerc, Université Laval**PDF with Mario Leclerc, Université Laval**President Brilliant Matters***Frédéric Drouin**

May 2006 – Aug. 2006

*M.Sc. with Frank Schaper, Université de Montréal**Chemist, Biolab (Joliette)***Gille Delaunais**

May 2005 – Aug. 2005

*M.Sc. Environnement, Université de Sherbrooke**Health Public Director, Outaouais Region, Quebec***Foreign Interns****Henry Powell-Davies** (Cardiff University)

July 2017 – June 2018

*MChem (Hons) Cardiff University***Karine Nahi** (Université Claude Bernard)

Feb. 2013 – Aug. 2014

*MBA Student, Université Laval**Associate Product Manager, Insight***Celia Gendron-Herndon** (University of Portland)

May – Aug. 2012

CCVC Scholarship*M.Sc. with Datong Song, University of Toronto**Chemist Earth Friendly Products, California***Sekou Nabe** (Université Pierre et Marie Curie)

April – Aug. 2012

*Intern at the Laboratory of processes and plasmas ENSCP-Paris Tech***Simon Feurtey** (Master Université de Bourgogne)

April– Aug. 2012

*Ph.D. Université de Bourgogne***Ilse Arévalo** (B.Sc. UNAM, Mexico)

Sept. 2011 – Feb. 2012

*Quality Control, Polioles, Mexico***Éléna Rogron** (Master Université de Montpellier)

April – Aug. 2011

*Wine production engineer, Ackerman***Guillaume De-Robillard** (Master Université de Bourgogne)

April – August 2011

*Ph.D. Université de Bourgogne**Engineer, Sopra Steria, France***Viridana Torres Perez** (B.Sc. UNAM, Mexico)

Aug. 2009 – Dec. 2009

FRONT V3 Scholarship*Ph.D. with Frédéric-Georges Fontaine, Université Laval**PDF with Byron Gates, SFU***Laure Kayser** (Master, Université de Strasbourg)

April 2008 – Aug. 2008

*Ph.D. with Bruce Ardnsten, McGill University**PDF with Darren Lopimi, UCSD***Nadège Boccon** (Master, Paris Tech)

May 2007 – Aug. 2007

*Consultant in Strategy and Innovation Funding, Benkei, Lyon, France***Nicolas Even** (Engineer)

May 2007 – Aug. 2007

R&D Leader, Solaronics Bakaert, Armentières, France

Sophie Mathiotte (Engineer, Université de Metz)
Engineer, IRIS conseil, Metz, France

April 2005 – July 2005

Teaching

B.Sc. Program

Organometallic Chemistry CHM-22876, CHM-4103 3 rd year B.Sc.	A-05 (7 students, average evaluation 88.5%) A-06 (13 students, average evaluation 95.5%) A-07 (6 students, average evaluation 96.3%) A-08 (14 students, average evaluation 96.1%) A-09 (14 students, average evaluation 96.9%) A-11 (14 students, average evaluation 94.7%) A-12 (16 students, no evaluation) A-13 (22 students, no evaluation) A-14 (27 students, average evaluation 96.8%) A-15 (18 students, average evaluation 97.3%) A-16 (12 students, no evaluation) H-18 (4 students) H-19 (13 students)
Transition Metal Chemistry CHM-10104, CHM-2005 Mandatory 2 nd year B.Sc.	H-06 (15 students, average evaluation 90.5%) H-07 (32 students, average evaluation 92.3%) H-08 (21 students, average evaluation 81.9%) H-09 (47 students, average evaluation 94.9%) H-10 (21 students, average evaluation 93.6%) H-12 (36 students, average evaluation 93.7%) H-13 (54 students, average evaluation 91.2%) H-14 (53 students, no evaluation) H-15 (43 students, no evaluation) H-16 (45 students, average evaluation 96.4%) H-17 (41 students, average evaluation 93.5%) H-18 (46 students, average evaluation 96.9%)
Main Group Chemistry CHM-1005 Mandatory 1 st year B.Sc.	H-13 (77 students, average evaluation 94.2%) H-14 (57 students, no evaluation) H-15 (94 students, no evaluation) H-16 (62 students, average evaluation 94.2%) H-17 (54 students, average evaluation 95.3%)
Environmental Chemistry CHM-10141, CHM-2150 3 rd year B.Sc.	H-08 (27 students, average evaluation 92.7%) H-09 (22 students, average evaluation 95.7%) H-10 (21 students, average evaluation 97.9%) H-12 (16 students, average evaluation 98.9%)
Communication for chemists (1/13)	A-2015 (47 students, no evaluation) A-2016 (44 students)

Mandatory 2nd year B.Sc. A-2018 (27 students)

Sciences et Grands défis de l'humanité

GSC-6000 (1/13)

On-line course for the microprogram on science journalism. First module on History of Science.

Graduate Courses

Organometallic Chemistry A-05 (7 students); A-06 (5 students);
A-09 (2 students); A-11 (3 students);
A-12 (3 students)

Advanced Organometallic Chemistry H-10 (7 students); A-14 (5 students)

Industrial Catalysis H-08 (7 students)
