Prof. Gary J. Schrobilgen

Curriculum Vitae

ADDRESS: Department of Chemistry, McMaster University, Hamilton, ON L8S 4M1, Canada
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EDUCATION:

B.S., Loras College, Iowa (Chem.); June 1963−June '67
M.Sc., Brock University (Inorganic Chem.), research supervisor, J. S. Hartman; April 1969−Dec. '70
Ph.D., McMaster University (Inorganic Chem.), research supervisor, R. J. Gillespie; Jan. 1971− Dec. '73

PROFESSIONAL ORGANIZATIONS:

Member: American Chemical Society & Divisions of Fluorine & Inorganic Chemistry
Canadian Institute of Chemistry/Canadian Society for Chemistry

EMPLOYMENT HISTORY:

01/74–01/76	National Research Council of Canada Overseas PDF, Dept. of Chem., Leicester University
01/76–08/76	Postdoctoral Fellow, Dept. of Chemistry, McMaster University, Hamilton, Ontario
09/77–09/78	Assistant Professor, Dept. of Chemistry, University of Guelph & concurrent Visiting Scientist Appointment, Dept. of Chemistry, McMaster University
09/78–07/79	Research Associate, Dept. of Chemistry, McMaster University, Hamilton, Ontario
08/79–12/79	Overseas Collaborator, Centre d' Etudes Nucléaires de Saclay, France
12/79–09/80	Research Associate, Dept. of Engineering Physics, McMaster University, Hamilton, Ontario
09/80–07/83	Assistant Professor, Dept. of Chemistry, McMaster University, Hamilton, Ontario
07/83–07/88	Associate Professor (tenured July 1, 1985), Dept. of Chem., McMaster University, Hamilton, Ontario
07/88–	Professor, Department of Chemistry, McMaster University, Hamilton, Ontario

SELECTED AWARDS AND RECOGNITIONS:

1980–90	Natural Sciences & Engineering Research Council of Canada, University Research Fellowship, McMaster University
1998–99	Canada Council Killam Research Fellow
1998	ACS Award for Creative Work in Fluorine Chemistry
1999	Elected a Fellow of the Royal Society of Canada
2002	Award for Pure or Applied Inorganic Chemistry, Canadian Society for Chemistry
2002	Alcan Lecture Award, Canadian Society for Chemistry
2003	E.W.R. Steacie Award, Canadian Society for Chemistry
2010	Senior Research Award, Alexander von Humboldt Foundation
2011	Distinguished Alumni Award in the Sciences, McMaster University, Hamilton, Ontario
2012	Lifetime Achievement Award in Fluorine Chemistry sponsored by SciFluor (Cambridge,

MA); awarded March 24, 2012 at the 243rd Natl. ACS Meeting, San Diego, CA

2013 Elected a Fellow of the American Chemical Society

2014 Symposium Honoring G.J. Schrobilgen, "Exploring the Frontiers of Fundamental and Applied Fluorine Chemistry", 248th National ACS Meeting, San Francisco, CA, Aug. 10−14, 2014.

2014 Distinguished Mathematics & Science Alumni Award, Brock University, St. Catharines, Ontario

2017 Neil Bartlett Lectureship in Inorganic Chemistry, University of California, Berkeley

2021 ACS, Division of Fluorine Chemistry Distinguished Service Award

2022 European Academy of Sciences' Blaise Pascal Medal in Chemistry &
Member of the European Academy of Sciences

NUMBER OF PUBLICATIONS & PRESENTATIONS:

Papers in peer-reviewed journals: 228
Chapters in books & reviews: 28
Published conference proceedings: 17
Plenary lectures at symposia: 21 Keynote lectures at symposia: 10
Invited lectures at symposia: 79 Contributed lectures at symposia: 155

SELECTED PUBLICATIONS:

1. J. Campbell, D.A. Dixon, H.P.A. Mercier, and G.J. Schrobilgen,* "The *nido*-Pb_9^{4-} and the Jahn-Teller Distorted *closo*-Pb_9^{3-} Zintl Anions: Syntheses, X-ray Structures, and Theoretical Studies", *Inorg. Chem.* **1995**, *34*, 5798−5809.

2. J.F. Lehmann, D.A. Dixon and G.J. Schrobilgen,* "X-ray Crystal Structures of α-KrF_2, $[KrF][MF_6]$ (M = As, Sb, Bi), $[Kr_2F_3][SbF_6]\cdot KrF_2$, $[Kr_2F_3]_2[SbF_6]_2\cdot KrF_2$, and $[Kr_2F_3][AsF_6]\cdot[KrF][MF_6]$; Synthesis and Characterization of $[Kr_2F_3][PF_6]\cdot n KrF_2$; and Theoretical Studies of KrF_2, KrF^+, $Kr_2F_3^+$, and the $[KrF][MF_6]$ (M = As, Sb, Bi) Ion Pairs", *Inorg. Chem.* **2001**, *40*, 3002−3017.

3. J. Campbell, H.P.A. Mercier, D.P. Santry, R.J. Suontamo, H. Borrmann, and G.J. Schrobilgen,* "First Examples of Thallium Chalcogenide Cages. Syntheses, ^{77}Se, ^{203}Tl, and ^{205}Tl NMR Study of the $Tl_4Se_5^{4-}$ and $Tl_4Se_6^{4-}$ Anions, the X-ray Crystal Structure of (2,2,2-crypt-K^+)$_3Tl_5Se_5^{3-}$, and Theoretical Studies", *Inorg. Chem.* **2001**, *40*, 233−254.

4. J. Campbell, H.P.A. Mercier, H. Franke, D.P. Santry, D.A. Dixon, G.J. Schrobilgen,* "Syntheses, Crystal Structures, and Density Functional Theory Calculations of the *closo*-[1-$M(CO)_3(\eta^4\text{-}E_9)]^{4-}$ (E = Sn, Pb; M = Mo, W) Cluster Anions and Solution NMR Spectroscopic Characterization of *closo*-[1-$M(CO)_3(\eta^4\text{-}Sn_9)]^{4-}$ (M = Cr, Mo, W)", *Inorg. Chem.* **2002**, *41*, 86−107.

5. H.P.A. Mercier, M.D. Moran, G.J. Schrobilgen,* C. Steinberg, R.J. Suontamo, "The Syntheses of Carbocations by Use of the Noble-Gas Oxidant, $[XeOTeF_5][Sb(OTeF_5)_6]$: The Syntheses and Characterization of the CX_3^+ (X = Cl, Br, $OTeF_5$) and $CBr(OTeF_5)_2^+$ Cations and Theoretical Studies of CX_3^+ and BX_3 (X = F, Cl, Br, I, $OTeF_5$)", *J. Am. Chem. Soc.* **2004,** *126*, 5533–5548.

6. J.F. Lehmann and G.J. Schrobilgen,* "Synthesis and Characterization of Salts Containing the $BrO_3F_2^-$ Anion; a Rare Example of a Bromine(VII) Species", *J. Am. Chem. Soc.* **2005***, 127,* 9416−9427.

7. A.M. Pirani, H.P.A. Mercier, R.J. Suontamo, G.J. Schrobilgen,* D.P. Santry, and H. Borrmann, "Syntheses; ^{77}Se, ^{203}Tl, and ^{205}Tl NMR; and Theoretical Studies of the $Tl_2Se_6^{6-}$, $Tl_3Se_6^{5-}$ and $Tl_3Se_7^{5-}$ Anions and the X-ray Crystal Structures of [2,2,2-crypt-Na]$_4$[Tl_4Se_8]·en and [2,2,2-crypt-Na]$_2$[Tl_2Se_4]$^1{}_\infty$·en", *Inorg. Chem.* **2005***, 44*, 8770–8785.

8. G.L. Smith, H.P.A. Mercier, G.J. Schrobilgen,* "Solid-State and Solution Rearrangements of $F_3S{\equiv}NXeF^+$ Leading to the $F_4S{=}NXe^+$ Cation; Syntheses, HF Solvolyses, and Structural Characterizations of [$F_4S{=}NXe$][AsF_6] and [$F_4S{=}NH_2$][AsF_6]", *J. Am. Chem. Soc.* **2009**, *131*, 7272–7286.

9. M. Gerken, M.D. Moran, H.P.A. Mercier, B.E. Pointner, G.J. Schrobilgen,* B. Hoge, K.O. Christe,* and J.A. Boatz, "On the XeF^+/H_2O System: Synthesis and Characterization of the Xenon(II) Oxide Fluoride Cation, $FXeFXeOXeF^+$", *J. Am. Chem. Soc.* **2009**, *131*, 13474–13489.

10. D. Brock, J.J. Casalis de Pury, H.P.A. Mercier, G.J. Schrobilgen,* B. Silvi, "A Rare Example of a Krypton Difluoride Coordination Compound; [$BrOF_2$][AsF_6]·2KrF_2", *J. Am. Chem. Soc*. **2010**, *132*, 3533–3542.
Highlighted in: "The Krypton Factor", *Nature Chemistry*, **2010**, *2*, 342.

11. D.S. Brock, G.J. Schrobilgen,* "Synthesis of the Missing Oxide of Xenon, XeO_2, and Its Implications for the Earth's Missing Xenon", *J. Am. Chem. Soc*. **2011**, *133*, 6265–6269 **(*JACS* cover page).**
Highlighted in: (1), S.K. Ritter, "The Case of the Missing Xenon", ***Chemical & Engineering News***, **2011**, *89*, 10; **(2)** ***Nature, Research Highlights***, "Chemistry: Where did the xenon go?", **2011**, *471*, 138; **(3)** ***RSC Chemistry World,*** "Earth's missing xenon could be hiding in quartz", **2011**, *March*); **(4)** ***Canadian Chemical News***, "Xenon Dioxide May Help to Solve One of Earth's Mysteries", **2011**, *May*, 9; **(5)** ***Aktuel Naturvidenskab***, "På Sporet af den Forsvundne Xenon", **2011**, June 6.

12. M.V. Ivanova, H.P.A. Mercier, G.J. Schrobilgen,* " $[XeOXeOXe]^{2+}$, the Missing Oxide of Xenon(II); Synthesis, Raman Spectrum, and X-ray Crystal Structure of [XeOXeOXe][μ-$F(ReO_2F_3)_2]_2$", *J. Am. Chem. Soc.* **2015**, *137*, 13398-13413.
Highlighted in: S.K. Ritter, "Xenon Expands its Molecular Portfolio", ***Chemical & Engineering News – Concentrates,*** **2015**, *93*, 29.

13. K. Matsumoto, H. Haner, H.P.A. Mercier, G.J. Schrobilgen,* "Syntheses and Structures of $F_6XeNCCH_3$ and $F_6Xe(NCCH_3)_2$", *Angew. Chem. Intl. Ed.* **2015**, *54*, 14169-14173, **VIP** (**Very Important Paper**).
Highlighted in: S.K. Ritter, "Xenon Expands its Molecular Portfolio", ***Chemical & Engineering News – Concentrates,*** **2015**, *93*, 29.

14. J.T. Goettel, K. Matsumoto, H.P.A. Mercier, G.J. Schrobilgen,* "Syntheses and Structures of Xenon Trioxide Alkyl Nitrile Adducts", *Angew. Chem. Int. Ed.* **2016**, *55*, 13780–13783, **VIP** (**Very Important Paper**).
Highlighted in: (1) "The Taming of Xenon Trioxide", ***ChemistryViews*** **2016**, *October* 21 and **(2)** "Anorganische Chemie 2016" ***Nachrichten aus der Chemie,*** **2017**, *65*, 243.

15. J.R. DeBackere, M.R. Bortolus, G.J. Schrobilgen,* "Synthesis and Characterization of $[XeOXe]^{2+}$ in the Adduct-Cation Salt, [CH_3CN---XeOXe---$NCCH_3$][AsF_6]$_2$", *Angew. Chem. Int. Ed.* **2016**, *55*, 11917–11920; **VIP (Very Important Paper).**
Highlighted in: "Anorganische Chemie 2016" ***Nachrichten aus der Chemie,*** **2017**, *65*, 243.

16. J.T. Goettel, V.G. Haensch, and G.J. Schrobilgen,* "Stable Chloro- and Bromoxenate Cage Anions; $[X_3(XeO_3)_3]^{3-}$ and $[X_4(XeO_3)_4]^{4-}$ (X = Cl or Br)", *J. Am. Chem. Soc.* **2017**, *139*, 8725–8733.

17. K.M. Marczenko, H.P.A. Mercier, G.J. Schrobilgen,* "A Stable Crown Ether Complex with a Noble-Gas Compound", *Angew. Chem. Int. Ed.* **2018**, *57*, 12448–12452.
Highlighted in: (1) *Science*, **2018**, *316*, 242). **(2)** "Notizen aus de Chemie", ***Nachrichten aus der Chemie***, **2019**, *67*, 62–64, and **(3)** B. Halford, "Challenging What We Know About Noble Gases", for the International Year of the Periodic Table, ***Chemical & Engineering News*** **2019**, *97*, 24–25.

18. M.R. Bortolus, H.P.A. Mercier, B. Nguyen, and G.J. Schrobilgen,* "Syntheses and Characterizations of the Mixed Noble-Gas Compounds, $[FKr^{II}FXe^{II}F][AsF_6]\cdot 0.5Kr^{II}F_2\cdot 2HF$, $([Kr^{II}{}_2F_3][AsF_6])_2\cdot Xe^{IV}F_4$, and $Xe^{IV}F_4\cdot Kr^{II}F_2$", *Angew. Chem. Int. Ed.* **2021**, *60*, 23678–23686, **VIP** (**Very Important Paper**) and inside cover page.
Highlighted in: M. Jacoby, "Mixed-Noble-gas Compounds Combine Krypton and Xenon", ***Chemical & Engineering News – Science Concentrates,*** **2021**, *99*, 8.

19. M. Lozinšek,* H.P.A. Mercier,* and G.J. Schrobilgen,* "Mixed Noble-Gas Compounds of Krypton(II) and Xenon(VI); $[F_5Xe(FKrF)AsF_6]$ and $[F_5Xe(FKrF)_2AsF_6]$", *Angew. Chem. Int. Ed*. **2021**, *60*, 8149–8156 (**Hot Paper**).
Highlighted in "Trendbericht: Anorganische Chemie", ***Nachrichten aus der Chemie***, **2022**, *70*, 50–51.

20. M.R. Bortolus, G.J. LaChapelle, H.P.A. Mercier, and G.J. Schrobilgen,* "XeF_2 Coordination Complexes of the $[BrO_2]^+$ Cation, $[O_2Br(FXeF)_n][AsF_6]$ (n = 1, 2) and $[O_2Br(FXeF)_2][SbF_6]$; Their Syntheses and Structural Charaterizations", *Inorg. Chem.* **2023**, *62*, 8761−8771.
Highlighted in: **(1)** *Inorganic Chemistry* as a Featured Article and awarded the distinction of ACS Editors' Choice. **(2)** "Trendbericht: Anorganische Chemie", ***Nachrichten aus der Chemie***, **2024**, *72*, 56−57.

21. H.P.A. Mercier, M.R. Bortolus, G.J. Schrobilgen,* "Noble-gas Chemistry", *Comprehensive Inorganic Chemistry III,* R. S. Laitinen, J. Reedijk and K. Poepplemeier, Eds.: Elsevier, Oxford, U.K.; **2023**, Vol. 1, Chapter 8, pp 439–526.

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