Curriculum Vitae

Travis D. Fridgen
Associate Dean of Science
Professor, Department of Chemistry
Memorial University

Personal Data

Address: Department of Chemistry
Memorial University
St. John's, NL
Canada, A1B 3X7

Telephone: 709-864-8155 (office)
709-631-2930 (cell)

e-mail: tfridgen@mun.ca
webpage: https://www.mun.ca/faculty/tfridgen/

Research

Mass spectrometry and vibrational spectroscopy of ions, self-assembled ionic complexes, gas-phase ion chemistry. Structure, thermochemistry, and reactivity of bare and hydrated metal ion coordinated biological complexes in the gas phase. One of the goals of our research is to determine the 3-dimensional structure of these ionic complexes which contain strong non-covalent interactions such as ionic hydrogen bonding, ion-dipole, and ion-induced dipole interactions. These types of intermolecular and intramolecular non-covalent interactions are abundant in nature, and we are trying to understand them more deeply. This fundamental knowledge will lead to intelligent design of new materials and drugs.

Appointments and Awards

05/25 – present	Associate Dean of Science (Undergraduate and Administration)
05/20 – 04/25	Interim Dean of Science, Memorial University
12/19	President's Award for Distinguished Teaching
05/19 – present	Cross Appointed to the Department of Biochemistry
09/18 – 04/20	Associate Dean of Science (Undergraduate and Administration)
10/17	Inaugural Faculty of Science Distinguished Teacher Award
09/15 – 08/18	Head, Department of Chemistry, Memorial University
09/15 – present	Professor, Department of Chemistry, Memorial University
09/10 – 09/15	Associate Professor, Department of Chemistry, Memorial University
08/05 – 09/10	Assistant Professor, Department of Chemistry, Memorial University
07/03 – 08/05	Assistant Professor, Department of Chemistry, Laurier University, Waterloo, ON
07/03 – 07/06	Adjunct Assistant Professor, Department of Chemistry, University of Waterloo, Waterloo, ON
09/03	Professeur Invite, Laboratoire de Chimie Physique, Universite Paris Sud XI, Orsay, FR
07/01 – 07/03	Research Associate, Department of Chemistry, University of Waterloo, Waterloo, ON
07/99 – 06/01	NSERC Postdoctoral Fellow, University of Waterloo, Waterloo, ON Supervisor: Dr. Terry McMahon

Education

1999	Ph.D., Chemistry, Queen's University, Kingston, ON.
	Thesis title: *"FT-Infrared Spectroscopic and Computational Studies of the Matrix-Isolated Products Formed Following Gas-Phase Electron Bombardment of Rare-Gas/Organic Molecule Mixtures"*
	Supervisor: Dr. J. Mark Parnis
1994	B.Ed., Queen's University, Kingston, ON
	Specialized in teaching chemistry and mathematics
1993	B.Sc. Hons, Chemistry, Trent University, Peterborough, ON
	Thesis title: *"O($^1D_2$) Reactions with hydrocarbons and inorganics: Trapping and Characterization of Transient Primary Reaction Products in Low Temperature Matrices"*
	Supervisor: Dr. J. Mark Parnis

Research Funding ($2.46 M to date)

NSERC Discovery Grant	2019 – 2026	$168 000 ($24K/yr)
NSERC Discovery Grant	2014 – 2018	$270 000 ($54K/yr)
NSERC Discovery Grant	2009 – 2013	$200 000 ($40K/yr)
NSERC Discovery Grant	2006 – 2008	$102 300 ($34.1K/yr)
CFI Leaders Opportunity Fund	2006	$547 630
IRIF - Matching to CFI	2006	$500 000
In-Kind Matching to CFI	2006	$545 286
NSERC RTI	2006	$71 876
Memorial Start-Up	2005	$87 000
University of Waterloo Research Funds	2004 – 2005	$10700
University Paris Sud. XI Professor Invite Travel Fund	2003	$4700

Refereed Publications (<u>Undergraduate Researchers Bolded and Underlined**</u>, <u>Graduate Students Underlined</u>)**

87. "Complexation of Tetraanisolyl-Anthraquinodimethanes with Alkali Metal Ions: A Combined Mass Spectrometric and Computational Study"
    <u>Y. Chen</u>, M.F. Abdollahi, Y. Zhao, T.D. Fridgen *J. Mass Spectrom*. **2025**, *60*, e5166.
86. "Structural elucidation of a unique glycerophospho lipid A from phenol-phase soluble lipopolysaccharide of Vibrio anguillarum serovar SJ-41"
    <u>T.N. Youssef</u>, A. Mikhael, D.R. Goodlett, T.D. Fridgen, J. Banoub, *Rapid Comm. Mass Spectrom.* **2025**, e10083.
85. "An Investigation of the Structures of [(Glycine)(1-Methyluracil)]M^+ Complexes (M = H, Li, Na, K) in the Gas Phase by IRMPD Spectroscopy and Theoretical Methods"
    <u>S.C. Atkinson</u> and T.D. Fridgen, *ChemPhysChem*, **2025**, *26*, e202400884.
84. "Structures and Unimolecular Chemistry of Alkali Metal Cation Complexes with Glutathione in the Gas Phase"
    <u>M. Sharifi</u>, E. Loire, J. Martens, T.D. Fridgen, *Int. J. Mass Spectrom*. **2024**, *505*, 117309.
83. "Proteomic Blueprint of Atlantic Cod (Gadus morhua) Otoliths Revealing Environmental Stress Insights through Label-Free Quantitative Shotgun Proteomics"
    <u>T.N. Youssef</u>, S.L. Christian, R. Rideout, A. Adamack, P. Thibault, E. Bonneil, T.D. Fridgen, J.H. Banoub, *BioChem*, **2024**, *4*, 144-155.
82. "Glycine in a Basket: The Physical Chemistry of Protonated Host-Guest Complexes in the Gas-Phase"

Y. Chen, P. Ghods Ghasemabadi, G. Bodwell, M. Demireva and T.D. Fridgen, *PhysChemChemPhys*, **2023**, *25*, 16597-16612.

81. "Qualitative shotgun proteomics strategy for protein expression profiling of fish otoliths"

R.M. Rideout *, T.N. Youssef, A.T. Adamack, R. John, A.M. Cohen, T.D. Fridgen, J.H. Banoub, *BioChem*, **2023**, 3, 102-117.

80. "A Vibrational Spectroscopic and Computational Study of the Structures of Protonated Imidacloprid and its Fragmentation Products in the Gas Phase"

K. J. Menard, J. Martens, T. D. Fridgen, *PhysChemChemPhys*, **2021**, 23, 3377-3388.

79. "Top–down lignomics analysis of the French oak lignin by atmospheric pressure photoionization and electrospray ionization quadrupole time-of-flight tandem mass spectrometry: Identification of a novel series of lignans"

A. Mikhael, T. D. Fridgen, M. Delmas J. Banoub, *J. Mass Spectrom.*, **2021**, *56*, e4676.

78. "An IRMPD Spectroscopic and Computational Study of Protonated Guanine-Containing Mismatched Base Pairs in the Gas Phase"

R. Cheng, E. Loire, J. Martens, and T.D. Fridgen, *PhysChemChemPhys*, **2020**, *22*, 2999-3007.

77. "A vibrational spectroscopic and computational study of gaseous protonated and alkali metal cationized G-C base pairs"

R. Cheng, J. Martens, and T.D. Fridgen, *PhysChemChemPhys*, **2020**, 22, 11546-11557.

76. "Top-down lignomics analysis of the French pine lignin by atmospheric pressure photoionization quadrupole time-of-flight tandem mass spectrometry: Identification of a novel series of lignin–carbohydrate complexes"

A. Mikhael, T. D. Fridgen, M. Delmas J. Banoub, *Rapid. Comm. Mass. Spectrom.* **2020**, *34*, e8910.

75. "The K_2(9-ethylguanine)$_{12}^{2+}$ quadruplex is more stable to unimolecular dissociation than the K(9-ethylguanine)$_8^+$ quadruplex in the gas phase: A BIRD, Energy Resolved SORI-CID, IRMPD Spectroscopic, and Computational Study"

M. Azargun, P. Meister, J. W. Gauld, and T.D. Fridgen, *PhysChemChemPhys*, **2019**, *21*, 15319-15326. PCCP Hot Paper

74. "Demystifying and Unravelling The Factual Molecular Structure Of The Biopolymer Sporopollenin"

A. Mikhael, K. Jurcic, C. Schneider, D. Carr, G. Fisher, T. D. Fridgen, A. Diego-Taboada, P. Georghiou, G. Mackenzie and J. Banoub, *Rapid Comm. Mass Spectrom*, **2020**, *34*, e8740.

73. "Hydrogen Bonding in Alkali Metal Cation-Bound i-Motif-Like Dimers of 1-Methyl Cytosine: An IRMPD Spectroscopic and Computational Study"

R. Cheng, E. Loire, and T.D. Fridgen, *Phys. Chem. Chem. Phys.* **2019**, *21*, 11103-11110.

72. "Top-Down Lignomic MALDI-TOP-Tandem MS Analysis of Lignin Oligomers Extracted from Saudi Date Palm Wood (SDPW)"

T. Albishi, A. Mikhael, F. Shahidi, T. D. Fridgen, M. Delmas, and J. Banoub, *Rapid Comm. Mass. Spectrom*., **2019**, 33, 539-560.

71. "Strong Intramolecular Hydrogen Bonding in Protonated β-Methylaminoalanine (BMAA): A Vibrational Spectroscopic and Computational Study"

B. D. Linford, A. Le Donne, D. Scuderi, E. Bodo, and T. D. Fridgen, *Eur. J. Mass Spectrom.,* **2019**, 25, 133-141.

70. "Endo or Exo? Structures of Gas Phase Alkali Metal Cation/Aromatic Half-Belt Complexes"

Y. Chen, K.S. Unikela, Y. Jami-Alahmadi, G.J. Bodwell, and T.D. Fridgen, *ChemPhysChem*, **2018**, 19, 2194-2199.

69. "Self-Assembled Uracil Complexes Containing Tautomeric Uracils: An IRMPD Spectroscopic and Computation Study of the Structures of Gaseous Uracil$_n$Ca^{2+} (n=4, 5, or 6) Complexes"

R. Cheng, **V.E. Rose**, B. Power, and T.D. Fridgen *Phys. Chem. Chem. Phys*., **2018**, *20*, 572-580.

68. "Structural investigation by tandem mass spectrometry analysis of a heterogeneous mixture of Lipid An isolated from the lipopolysaccharide of Aeromonas hydrophila SJ-55Ra"

M. Almostafa, T.D. Fridgen, and J. Banoub, *Rapid Comm. Mass. Spectrom*., **2018**, *32*, 167-183.

67. "Distinguishing Complexes of Isomeric Peptides: Structures, Energetic, and Reactions of Sodium Cation-Coordinated ProLeu or LeuPro Trimers in The Gas Phase"

Y. Jami-Alahmadi and T.D. Fridgen, *Int. J. Mass Spectrom*., **2018**, *429*, 136-141.

66. "Structures of $[M(Ura-H)(Ura)]^+$ and $[M(Ura-H)(H_2O)_n]^+$ (M = Cu, Zn, Pb; n = 1 – 3) Complexes in the Gas Phase by IRMPD Spectroscopy in the Fingerprint Region and Theoretical Studies"

B. Power, V. Haldys, J.-Y. Salpin, and T.D. Fridgen, *Int. J. Mass Spectrom*., **2018**, *429*, 56-65.

65. "Ammoniated complexes of uracil and transition metal ions: structures of $[M(Ura-H)(Ura)(NH_3)]^+$ by IRMPD spectroscopy and computational methods (M = Fe, Co, Ni, Cu, Zn, Cd)"

B. Power, **S. Rowe**, and T.D. Fridgen, *J. Phys. Chem. B*, **2017**, *121*, 58-65.

64. "The intrinsic stabilities and structures of alkali metal cationized guanine quadruplexes"

M. Azargun, Y. Jami-Alahmadi, and T. D. Fridgen, *PhysChemChemPhys*, **2017**, *19*, 1281-1287.

63. "Distinguishing Isomeric Peptides: The Unimolecular Reactivity and Structures of $(LeuPro)M^+$ and $(ProLeu)M^+$ (M=alkali metal)"

Y. Jami-Alahmadi, B.D. Linford, and T. D. Fridgen, *J. Phys. Chem. B*, **2016**, *120*, 13039-13046.

62. "Structures, Unimolecular Fragmentations, and Reactivities of Self-Assembled Multimetallic/Peptide Complexes: $[Mn_n(GlyGly-H)_{2n-1}]^+$ and $[Mn_{n+1}(GlyGly-H)_{2n}]^{2+}$"

M. B. Moghaddam and T. D. Fridgen, *ChemPhysChem*, **2016**, *17*, 2181-2189.

61. "Tandem mass spectrometry determination of the structure of a heterogeneous mixture of Lipid An isolated from the LPS of the Gram-negative bacteria Aeromonas Liquefaciens SJ-19"

M. Almostafa, B. Allehyane, S. Egli, C. Bottaro, T. D. Fridgen, and J. Banoub, *Rapid Comm. Mass Spectrom.*, **2016**, 30, 1043-1058.

60. "Structures of $M(Ura-H)(H_2O)_n]^+$ (M=Mg, Ca, Sr, Ba; n=1-3) complexes in the gas phase by IRMPD spectroscopy and theoretical studies"

B. Power, V. Haldys, J.-Y. Salpin, and T.D. Fridgen, *J. Mass Spectrom*., **2016**, *51*, 236-244.

59. "Structures and Unimolecular Chemistry of $M(Pro_2-H)^+$ (M=Mg, Ca, Sr, Ba, Mn, Fe, Co, Ni, Cu, Zn) by IRMPD Spectroscopy, SORI-CID, and Theoretical Studies"

Y. Jami-Alahmadi, and T. D. Fridgen, *Phys. Chem. Chem. Phys*., **2016**, *18*, 2023-2033.

58. "Self-Assembled Multimetallic/Peptide Complexes: Structures and Unimolecular Reactions of $[M_n(GlyGly-H)_{2n-1}]^+$ and $[M_{n+1}(GlyGly-H)_{2n}]^{2+}$ Clusters (M=Mg, Ca, and Sr) in the Gas Phase"

M. B. Moghaddam, Y. Jami-Alahmadi, and T. D. Fridgen, *ChemPhysChem*., **2015**, *15*, 3290-3301.

57. "The in situ gas-phase formation of C-glycoside ion obtained during electrospray ionization tandem mass spectrometry. A unique intramolecular mechanism involving an ion-molecule reaction"

J. Banoub, W.L.L. Demian, P. Piazzetta, G. Sarkis, B. Kanawati, D. Lafont, N. Laurent, C. Vaillant, E. Randell, G. Giorgi, and T.D. Fridgen, *Rapid Comm. Mass Spectrom*., **2015**, *17*, 1717-1732.

56. "Guanine Tetrads: An IRMPD Spectroscopy, Energy Resolved SORI-CID, and Computational Study of $M(9\text{-ethylguanine})_4^+$ (M=Li, Na, K, Rb, Cs) in the Gas Phase"

M. Azargun and T.D. Fridgen, *Phys. Chem. Chem. Phys*., **2015**, *17*, 25778-25785.

55. "Structures of bare and singly hydrated $[M(Ura-H)(Ura)]^+$ (M=Mg, Ca, Sr, Ba) complexes in the gas phase by IRMPD spectroscopy in the fingerprint region"

B. Power, V. Haldys, J.-Y. Salpin, and T.D. Fridgen, *Int. J. Mass Spectrom*., **2015**, *378*, 328- 355.

54. "The Protonated and Sodiated Dimers of Proline by IRMP D Spectroscopy in the N-H and O-H Stretching Region and Computational Methods"

Y.J. Alahmadi, A. Gholami, and T.D. Fridgen, *Phys. Chem. Chem. Phys*., **2014**,*16*, 26855-26863.

53. "The unimolecular chemistry of $[Zn(Amino Acid)-H]^+$ in the gas phase: H_2 elimination when the amino acid is a secondary amine"

A. Gholami and T.D. Fridgen, *Phys. Chem. Chem. Phys*., **2014**, *16*, 3134-3143.

52. "High-energy collision dissociation-tandem mass spectrometry of regioisomeric lactose palmitic acid monoesters using MALDI ionization"

M. R. Narouz, S. E. Soliman, T. D. Fridgen, M. A. Nashed, and J. H. Banoub, *Rapid Comm. Mass Spectrom.*, **2014**, *28*, 169-177.

51. "Infrared spectroscopic characterization of hydrogen-bonded propylene oxide/ethanol and propylene oxide/2-fluoroethanol complexes isolated in solid neon matrices"

    O.Y. Ali, **E. Jewer**, and T.D. Fridgen *Can. J. Chem*., **2013**, *91*, 1292-1302.

50. "Structures and Unimolecular Reactivity of Gas Phase[Zn(Proline-H)]$^+$ and [Zn(Proline-H)(H_2O)]$^+$"

    A. Gholami and T.D. Fridgen *J. Phys. Chem. B*, **2013**, *117*, 8447-8456.

49. "IRMPD Spectroscopic Study of Microsolvated [Na(GlyAla)]$^+$ and [Ca(GlyAla-H)]$^+$, and the Blue-Shifting of the Hydrogen-Bonded Amide Stretch With Each Water Addition"

    M.B. Moghaddam and T.D. Fridgen, *J. Phys. Chem. B*, **2013**, *117*, 6157-6164.

48. "Structure and Energetics of Gas Phase Halogen-Bonding in Mono-, Bi-, and Tri-dentate Anion Receptors as Studied by Blackbody Infrared Radiative Dissociation"

    E.A.L. Gillis, M. Demireva, M.G. Chudzinski, M.S. Taylor, E.R. Williams, and T.D. Fridgen *Phys. Chem. Chem. Phys*., **2013**, *15*, 7638-7647.

47. "Gas-Phase Dehydrogenation and Demethanation of 2-Methylpropane and Propane by the 16-Electron Complex [Ru(bipy)$_2$CO]$^{2+}$* Chemically Activated by the Association of [Ru(bipy)$_2$]$^{2+}$ and CO"

    A. Gholami and T.D. Fridgen, *Dalton Trans.*, **2013**, *42*, 3979-3985.

46. "Gas-phase Structures of Pb^{2+} Cationized Phenylalanine and Glutamic Acid Determined by Infrared Multiple Photon Dissociation Spectroscopy and Computational Chemistry"

    M.B. Burt and T.D. Fridgen *J. Phys. Chem. A*, **2013**, *176*, 1283-1290.

45. "IRMPD Spectroscopic and Computational Study of Gas Phase [M(Ura-H)(Ura)]$^+$ and [M(Ura-H)(H_2O)$_n$]$^+$ (M=Sr, Ba; n=1,2) Complexes"

    A.A. Power, O.Y. Ali, M.B. Burt, and T.D Fridgen *Int. J. Mass Spectrom*., **2012**, *330-332*, 233-240.

44. "Water Binding Energies of [Pb(AminoAcid-H)H2O]+ Complexes Determined by Blackbody Infrared Radiative Dissociation"

    M.B. Burt, **S.G.A. Decker**, and T.D. Fridgen *Phys. Chem. Chem. Phys*., **2012**, *14*, 15118-15126.

43. "Primary Fragmentation Pathways of Gas Phase [M(Uracil-H)(Uracil)]$^+$ Complexes (M= Zn, Cu, Ni, Co, Fe, Mn, Cd, Pd , Mg, Ca, Sr, Ba, and Pb)"

    O.Y. Ali, **N. Randall**, and T.D. Fridgen, *ChemPhysChem.* **2012**, *13*, 1507-1513.

42. "Mechanistic and Kinetic studies of Low-Pressure Ion-Molecule Reactions of Unsaturated Ru(II) Complexes"

    A.Gholami and T.D. Fridgen, *Int. J. Mass Spectrom*. **2012**, *313-316*, 192-198.

41. "Structures and Physical Properties of Gaseous Metal Cationized Biological Ions"

    M.B. Burt and T.D Fridgen, *Eur. J. Mass Spectrom*. **2012**, *18*, 235-250.

40. "Structures and Energetics of Electrosprayed Uracil$_n$Ca Clusters (n=14-4) in the Gas Phase"

    E.A.L. Gillis, M. Demireva, K. Nanda, G.J.O. Beran, E. Williams, and T.D. Fridgen *Phys. Chem. Chem. Phys.*, **2012**, *14*, 3304-3315.

39. "Structures and Fragmentation of [Cu(Uracil-H)(Uracil)]+ in the Gas Phase"

    O. Y. Ali and T.D. Fridgen *ChemPhysChem*, **2012**, *13*, 588-596.

38. "Structures of bare and hydrated [Pb(AminoAcid-H)]+ complexes using infrared multiple photon dissociation spectroscopy"

    M.B. Burt, **S.G.A. Decker**, C.G. Atkins, M. Rowsell, A. Peremans, and T.D. Fridgen, *J. Phys. Chem. B*, **2011**, *115*, 11506-11518.

37. "Structures of Electrosprayed Pb(Uracil-H) complexes using infrared multiple photon dissociation spectroscopy"

    O.Y. Ali and T.D. Fridgen, *Int. J. Mass Spectrom*., **2011**, *308*, 167-174.

36. "The Hydrated Li^+-Adenine-Thymine Complex by IRMPD Spectroscopy in the N-H/O-H Stretching Region"

    E.A.L. Gillis and T.D. Fridgen, *Int. J. Mass Spectrom*., **2010**, *297*, 2-8.

35. "Structures of Alkali Metal Ion-Adenine Complexes and Hydrated Complexes by IRMPD Spectroscopy and Electronic Structure Calculations"

    K. Rajabi, E.A.L. Gillis, and T.D. Fridgen, *J. Phys. Chem. A* **2010**, *114*, 3449-3456.

34. "The Structure of Pb(Gly-H)+ and the Water and Methanol Solvated Species by IRMPD Spectroscopy, Energy Resolved CID, and Electronic Structure Calculations"

    C.G. Atkins, L. Banu, **M. Rowsell**, V. Blagojevic, D.K.Bohme and T.D. Fridgen* *J. Phys. Chem. B* **2009** *113*, 14457-14464.

33. "The Structure of the Protonated Adenine Dimer by IRMPD Spectroscopy and Electronic Structure Calculations"

    K. Rajabi, K. Theel, E.A.L. Gillis, G. Beran and T. D. Fridgen*, *J. Phys. Chem. A* **2009**, *113*, 8099-8107.

32. "Infrared Consequence Spectroscopy of Gaseous Protonated and Metal Ion Cationized Complexes"

    T. D. Fridgen* *Mass Spectrom. Rev.* **2009**, *28*, 586.

31. "Structures of Hydrated Li^+-Thymine and Li^+-Uracil Complexes by IRMPD Spectroscopy in the N-H/O-H Stretching Region"

    Elizabeth A. L. Gillis, Khadijeh Rajabi and Travis D. Fridgen* *J. Phys Chem. A,* **2009**, *113*, 824.

30. "Solvation of Electrosprayed Ions in the Accumulation/Collision Hexapole of a Hybrid Q- FTMS"

    Khadijeh Rajabi, Michael L. Easterling, and Travis D. Fridgen* *J. Am. Soc. Mass Spectrom.,*

    2009, *20*, 411.

29. "Investigations of Strong Hydrogen Bonding in (ROH)---FHF^- (n = 1, 2 and R = H, CH_3,

    C_2H_5) Clusters via High Pressure Mass Spectrometry and Quantum Calculations"

    R.J. Nieckarz, N. Oldridge, T.D. Fridgen, G.P. Li, I.P. Hamilton and T.B. McMahon*, *J. Phys. Chem. A*, **2009**,*113* 644.

28. "IRMPD Spectra of Proton- and Sodium Ion-Bound Glycine Dimers In the N-H and O-H Stretching Region"

    Chad G. Atkins, Khadijeh Rajabi, Elizabeth A.L. Gillis and Travis D. Fridgen*, *J. Phys. Chem. A*, **2008**, *112*, 10220.

27. "The Correlation of Binary Acid Strengths with Molecular Properties in First Year (Freshman) Chemistry"

    T. D. Fridgen*, *J. Chem. Ed.* **2008**, *85*, 1220.

26. "Structures of Aliphatic Amino Acid Proton-Bound Dimers by IRMPD Spectroscopy in the 700 to 2000 cm^{-1} Region"

    Negar Rajabi and Travis D. Fridgen* *J. Phys. Chem. A*. **2008**, *112*, 23.

25. "Heterogeneous Proton-Bound Dimers with a High Dipole Moment Monomer: How Could we Experimentally Observe these Anomalous Ionic Hydrogen Bonds?"

    M. B. Burt, T. D. Fridgen, *J. Phys. Chem. A.* **2007**, *111*, 10738.

24. "Infrared Multiphoton Dissociation Spectra as a Probe of Ion Molecule Reaction Mechanisms: The Formation of the Protonated Water Dimer via Sequential Bimolecular Reactions with 1,1,3,3-Tetrafluorodimethyl Ether"

    R. A. Marta, T. B. McMahon, T. D. Fridgen*, *J. Phys. Chem. A.* **2007**, *111*, 8792- 8802.

23. "Structures of Heterogeneous Proton-Bound Dimers With a High Dipole Moment Monomer: Covalent vs. Electrostatic Interactions"

    T. D. Fridgen*, *J. Phys. Chem. A.* **2006**, *110*, 6122.

22. "Experimental Infrared Spectra of Cl-(ROH), R=H, CH_3, CH_3CH_2) Complexes in the Gas Phase"

    T. D. Fridgen*, T. B. McMahon, J. Lemaire and P. Maitre *Phys. Chem. Chem. Phys.* **2006**, *8* 2483.

21. "Gas Phase Infrared Multiple-Photon Dissociation Spectra of Methanol, Ethanol and Propanol Proton-Bound Dimers, Protonated Propanol and the Protonated Propanol/Water Proton-Bound Dimer"

    Travis D. Fridgen*, Luke MacAleese, Terry McMahon, Joel Lemaire and Philippe Maitre, *Phys. Chem. Chem. Phys.* **2006**, *8*, 955.

20. "High-Pressure Mass Spectrometric Studies of the Potential Energy Surfaces of Gas-Phase SN2 Reactions Involving Substituted Nitriles"

    T. D. Fridgen*, J. L. Burkell, A. N. Wilsily, V. Hoffman, J. Wasylycia, and T. B. McMahon,

J. Phys. Chem. A, **2005** *109*, 7519.

19. "Infrared Spectra of the Homogenous and Heterogeneous Dimethylether and Tetrahydrofuran Proton-Bound Dimers"

    T. D. Fridgen*, P. Maitre, L. MacAleese, P. Boissel, T. B. McMahon, J. Lemaire, *Phys. Chem. Chem. Phys.* **2005**, *7*, 2747.

18. "A Study of the Methane Catalyzed HCO^+ to HOC^+ Proton Transfer Isomerization and The Elimination of Methane from Metastable Methoxymethyl Cation"

    T. D. Fridgen* and J. L. Holmes, *Eur. J. Mass Spectrom.,* **2004**, *10*, 747.

17. "The Infrared Spectrum of the Protonated Water Dimer in the Gas Phase"

    T. D. Fridgen*, T. B. McMahon, L. MacAleese, J. Lemaire, P. Maitre, *J. Phys. Chem. A.,* **2004** *108*, 9008.

16. "The Gas-Phase Formation of Methyl Formate in Hot Molecular Cores"

    A. Horn, H. Møllendal, O. Sekiguchi, E. Uggerud, H. Roberts, E. Herbst, A. A. Viggiano, and T. D. Fridgen, *The Astrophysical Journal*, **2004**, *611*, 605.

15. "Experimental and Theoretical Studies of the Benzylium$^+$/Tropylium$^+$ Ratio after Charge Transfer to EtBz"

    T. D. Fridgen, Jurgen Troe, Al Viggiano, T. B. McMahon, A. J. Midey, and Skip Williams *J. Phys. Chem. A*, **2004**, *108*, 5600.

14. "IRMPD" in "Encyclopedia of Mass Spectrometry, Vol. 4", **2005**, Gross and Caprioli Eds., T. D. Fridgen* and T. B. McMahon

13. "Gas-Phase Acidities and Sites of Deprotonation of 2-Ketones and Structures of the Corresponding Enolates"

    J.L. Burkell, T.D. Fridgen, and T.B. McMahon, *Int. J. Mass Spectrom*., **2003**, *227*, 497.

12. "Enthalpy Barriers for Asymmetric SN2 Alkyl Cation Transfer Reactions Between Neutral and Protonated Alcohols"

    T.D. Fridgen and T.B. McMahon, *J. Phys. Chem. A*., **2003**, *107*, 668.

11. "Experimental Determination of Activation Energies for Gas-Phase Ethyl and n-Propyl Cation Transfer Reactions"

    T.D. Fridgen and T.B. McMahon, *J. Phys. Chem. A*., **2002**, *106*, 9648.

10. "Binding Energies of Proton-Bound Ether/Alcohol Mixed Dimers Determined by FTICR Radiative Association Kinetics Measurements"

    T.D. Fridgen and T.B. McMahon, *J. Phys. Chem. A*., **2002**, *106* 1576.

9. "Direct Experimental Determination of Energy Barriers for Methyl Cation Transfer in the Reactions of Methanol With Protonated Methanol, Protonated Acetonitrile, and Protonated Acetaldehyde: A Low Pressure FTICR Mass Spectrometric Study"

    T.D. Fridgen, J. D. Keller and T.B. McMahon, *J. Phys. Chem. A*., **2001**, *105*, 3816.

8. "Reaction of Protonated Dimethyl Ether With Dimethyl Ether: Temperature and Isotope Effect of the Side Reaction Producing Trimethyl Oxonium Cation and Methanol"

    T.D. Fridgen and T.B. McMahon, *J. Am. Chem. Soc*., **2001**, *123*, 3980.

7. "A Fourier Transform Ion Cyclotron Resonance Mass Spectrometric Study of the Temperature and Isotope Effects on the Kinetics of Low-Pressure Association Reactions of Protonated Dimethyl Ether With Dimethyl Ether"

    T.D. Fridgen and T.B. McMahon, *J. Phys. Chem. A*., **2001**, *105*, 1011.

6. "Isomerization and Fragmentation Products of CH2Cl2 and Other Dihalomethanes in Rare-Gas Matrices: An Electron-Bombardment Matrix-Isolation FTIR-Spectroscopic Study"

    T.D. Fridgen, X.K. Zhang, J.M. Parnis and R.E. March, *J. Phys. Chem. A*, **2000**, *104*, 3487.

5. "A Density Functional Theory Study of the Catalytic Role of Ar, Kr, Xe, and N_2 in the $CH_3OH^{+\bullet}$ to $CH_2OH_2^{+\bullet}$ Isomerization reaction"

    Travis D. Fridgen and J. Mark Parnis, *Int. J. Mass Spectrom. Ion Processes*, **1999**, *190/191*, 181.

4. "Density Functional Theory Study of the Proton-Bound Rare-Gas Dimers Rg_2H^+ and $(RgHRg')^+$ (Rg=Ar,Kr,Xe): Interpretation of Experimental Matrix Isolation Infrared Data"

T. D. Fridgen and J. M. Parnis, *J. Chem. Phys*., **1998**, *109*, 2162.

3. "Electron Bombardment Matrix Isolation of Rg/Rg'/Methanol Mixtures (Rg=Ar,Kr,Xe): FTIR Characterization of the Proton-Bound Dimers Kr_2H^+, Xe_2H^+, $(ArHKr)^+$, and $(ArHXe)^+$ in Ar Matrices and $(KrHXe)^+$ and Xe_2H^+ in Kr Matrices"

   T. D. Fridgen and J. M. Parnis, *J. Chem. Phys*. **1998**, *109*, 2155.

2. "Gas-Phase Ion Chemistry of Oxalyl Chloride: An Electron Bombardment Matrix Isolation FTIR Spectroscopic Study"

   T. D. Fridgen and J. M. Parnis, *J. Phys. Chem*., **1997**, *101*, 5117-5123.

1. "Stabilization of the Primary Products of $O(^1D)$ Reactions with CO, CO_2, CH_4, and Other Hydrocarbons in Cryogenic Matrices"

   J. M. Parnis, L. E. Hoover, T. D. Fridgen, and R. D. Lafleur, *J. Phys. Chem*., **1993**, *97*, 10708-10711.

Invited Lectures

60. 2026 Canadian Chemistry Conference and Exhibition, Toronto, ON, May 24, 2026.
"Proton Solvation in Gas-Phase Ions: Structure, Energetics, and Dynamics"
59. Department of Chemistry, Acadia University, November 20, 2025.
"Modern Mass Spectrometry: A Physical Chemist's Approach to Unraveling the Reactions, Structures, and Energetics of Noncovalent Complexes in the Gas Phase—The Shared Proton(s)"
58. Department of Chemistry, St. Francis Xavier University, November 19, 2025.
"Modern Mass Spectrometry: A Physical Chemist's Approach to Unraveling the Reactions, Structures, and Energetics of Noncovalent Complexes in the Gas Phase—The Shared Proton(s)"
57. Department of Chemistry and Biochemistry, Mount Allison University, November 17, 2025.
"Modern Mass Spectrometry: A Physical Chemist's Approach to Unraveling the Reactions, Structures, and Energetics of Noncovalent Complexes in the Gas Phase—The Shared Proton(s)"
56. Centre for Research in Molecular Modelling Symposium, Concordia University, May 6, 2025.
"Proton Solvation in Gaseous Glutathione Complexes"
55. Department of Chemistry and Biochemistry, UQAM, Montreal, PQ, February 26, 2025.
"Modern Mass Spectrometry: A Physical Chemist's Toolkit to Study Structures, Energetics and Reactions of Noncovalently-Bound Ionic Complexes in the Gas Phase"
54. 2024 Canadian Chemistry Conference and Exhibition, Winnipeg, MB, June 3, 2024.
"Solvation of the proton in gas-phase complexes of amino acids and glutathione"
53. Ruhr Universität Bochum, Bochum, Germany, June 23, 2023.
"Modern Mass Spectrometry: A Physical Chemist's Laboratory for Studies of Noncovalently Bound Ion-Molecule Complexes in the Gas Phase"
52. Department of Chemistry & Biochemistry, Brigham Young University, Provo, Utah, USA, April 13, 2021.
"Structures and Energetics of Noncovalently Bound Ion/Molecule Self-Assembled Complexes in the Gas Phase"
51. Department of Chemistry, Wayne State University, Detroit, Michigan, USA, March 23, 2021.
"Structures and Energetics of Noncovalently Bound Ion/Molecule Self-Assembled Complexes in the Gas Phase"
50. Department of Chemistry, Queen's University, Kingston, ON, December 3, 2019
"Structures of Gaseous Ionic Self-Assembled DNA Base Complexes"
49. Department of Chemistry, Acadia University, Wolfville, NS, November 14, 2019
"The Physical Chemistry of Ionic Nucleic Acid Base Complexes Using Ion Trapping Mass Spectrometry"
48. Department of Chemistry, Trent University, Peterborough, ON, October 2, 2019
"Structures and Energetics of Noncovalently-Bound Ion-Molecule Self-Assembled Complexes in the Gas Phase"
47. 101st Canadian Chemistry Conference and Exhibition, Edmonton, AB, May 27 – May 31, 2018
"Structures of Gas-Phase Metal Cation/Aromatic Half-Belt Complexes by Vibrational Spectroscopy and Electronic Structure Calculations"
46. 101st Canadian Chemistry Conference and Exhibition, Edmonton, AB, May 27 – May 31, 2018
"The Structures and Energetics of Metal Cationized G-Tetrads and Quadruplexes in the Gas Phase"
45. Department of Chemistry, Memorial University, St. John's, NL, June 20, 2017.
"Gas Phase Structures and Energetics of Self-Assembled Noncovalent Metal Cation Complexes"
44. Department of Chemistry, York University, Toronto, Ontario, March 6, 2017/
"Gas Phase Structures and Energetics of Self-Assembled Noncovalent Metal Cation Complexes"

43. 11th Montreal Post-ASMS Mass Spec Symposium, Montreal, Quebec, October 18, 2016.
"The Physical Chemistry of Gaseous Ion-Molecule Complexes Studied by Tandem Mass Spectrometry Methods: $[U_nCa]^{2+}$ (n=4-6) and Endo vs Exo Complexes"
42. 16th Toronto Post-ASMS Mass Spec Symposium, Toronto, Ontario, October 17, 2016.
"The Physical Chemistry of Gaseous Ion-Molecule Complexes Studied by Tandem Mass Spectrometry Methods: $[U_nCa]^{2+}$ (n=4-6) and Endo vs Exo Complexes"
41. Department of Chemistry, Guelph University, Guelph, Ontario, May 31, 2016.
"Gas Phase Structures and Energetics of Self-Assembled Noncovalent Metal Cation Complexes"
40. Department of Chemistry, Concordia University, Montreal, Quebec, February 12, 2016.
"The Physical Chemistry of Self-Assembled Metal Cation/DNA Base Complexes in the Gas Phase"
39. Department of Chemistry, Trent University, Peterborough, ON, January 14, 2016.
"The Physical Chemistry of Metal Cation/DNA base complexes in the Gas Phase"
38. 98th Canadian Chemistry Conference and Exhibition, Ottawa, ON, June 13-17, 2015.
"A Physical Chemists View of Gas Phase Ionic DNA Base Complexes"
37. University of Manitoba, Winnipeg, Manitoba, April 27th, 2015.
"The Physical Chemistry of Metal Cation/DNA base complexes in the Gas Phase"
36. 22nd International Conference on Physical Organic Chemistry, University of Ottawa, Ottawa, ON, August 10-15, 2014.
"Structures and Energetics of Alkali Metal Cation-Bound 9-Ethylguanine Quadruplexes in the Gas Phase"
35. 29th Annual Symposium on Chemical Physics, University of Waterloo, Waterloo, ON, November 1, 2013.
"Experimental and Computational Studies of Gas Phase Structures and Energetics of Non-Covalent Ionic Complexes of DNA Bases"
34. 96th Canadian Chemistry Conference and Exhibition, Quebec, PQ, May 29th, 2013. "Structures and Energetics of Noncovalent Complexes in the Gas Phase by Blackbody Infrared Radiative Dissociation Kinetics"
33. Toronto Area Mass Spectrometry Discussion Group and Canadian Association of Analytical Sciences and Spectroscopy, Toronto, ON, May 4th, 2012.
"Structures of Gaseous Metal Ion-Molecule Complexes of Amino Acids and DNA Bases"
32. Department of Chemistry, Concordia University, Montreal, Quebec, January 27th, 2012.
"Structures of Gaseous Metal Ion-Molecule Complexes of Amino Acids and DNA Bases"
31. Carleton University, Ottawa, ON, February 18th, 2011.
"Structures of Electrosprayed Complexes Formed Between Pb2+ and the Conjugate Bases of Amino Acids"
30. Lake Louise Tandem Mass Spectrometry Workshop, Lake Louise, AB, December 3rd, 2010
"Structures of Electrosprayed Complexes of Pb^{2+} and the Conjugate Bases of Amino Acids"
29. University of Prince Edward Island, Charlottetown, PEI, September 24th, 2010.
"Structures of Gaseous Metal Ion-Molecule Complexes of Amino Acids and DNA Bases"
28. Cape Breton University, Sydney, Nova Scotia, September 22nd, 2010.
"Structures of Gaseous Metal Ion-Molecule Complexes of Amino Acids and DNA Bases"
27. Mount Allison University, Sackville, New Brunswick, September 20th, 2010.
"Structures of Gaseous Metal Ion-Molecule Complexes of Amino Acids and DNA Bases"
26. York University, Toronto, Ontario, April 30th, 2010.
"Puzzling Over Structures and Reactions of Gaseous Ions and Ion/Molecule Complexes"
25. University of Manitoba, Winnipeg, Manitoba, December 1st, 2009.
"Gaseous Ion-Molecule Complexes: A Quest for Structures"
24. Dalhousie University, Halifax, Nova Scotia, November 6th, 2009.
"Probing Structures of Gaseous Ion-Molecule Complexes"
23. Acadia University, Wolfville, Nova Scotia, November 5th, 2009.
"Probing Structures of Gaseous Ion-Molecule Complexes"
22. St. Francis Xavier University, Antigonish, Nova Scotia, November 4th, 2009.
"Probing Structures of Gaseous Ion-Molecule Complexes"
21. Université de Moncton, Moncton, New Brunswick, November 3rd, 2009.
"Probing Structures of Gaseous Ion-Molecule Complexes"
20. University of New Brunswick, Fredericton, New Brunswick, November 2nd, 2009. Title: "Probing Structures of Gaseous Ion-Molecule Complexes"
19. Brock University, St. Catherines, Ontario, May 1st, 2009.
"Structures of Biomolecular Complexes by Infrared Multiple Photon-Dissociation Spectroscopy"
18. Saint Mary's University, Halifax, Nova Scotia, April 28th, 2008.

"Infrared Multiple Photon Dissociation Spectroscopy of Proton-and Metal Ion-Bound Complexes in the Gas-Phase"

17. Trent University, Peterborough, Ontario, February 19th, 2008.
"Infrared Multiple Photon Dissociation Spectroscopy of Proton-and Metal Ion-Bound Complexes in the Gas-Phase"
16. University of Ottawa, Ottawa, Ontario, February 14th, 2008.
"Infrared Multiple Photon Dissociation Spectroscopy of Proton-and Metal Ion-Bound Complexes in the Gas-Phase"
15. 6th Annual Centre for Research in Molecular Modelling Symposium, Montreal, QC, February 10-12, 2006.
"Infrared Spectroscopy of Ion/Molecule Complexes in the Gas Phase"
14. Canadian Society for Spectroscopy and Analytical Sciences Conference, Toronto, ON, April 6th, 2005
"Infrared Spectra of Protonated Dimers by FTICR Mass Spectrometry Coupled to a Free- Electron Laser"
13. 87th Annual Canadian Chemistry Conference and Exhibition, London, ON, May 29th - June 1st 2004
"Kinetic, Thermodynamic and Spectroscopic Studies of the Ionic Hydrogen Bond"
12. Ecole Polytechnique, Paliseau, France, May 3rd, 2004.
"Spectroscopy and Thermodynamics of Mixed Proton-Bound Dimers"
11. University of Toledo, Toledo, Ohio, April 17th, 2003.
"Studies of Ion/Molecule Potential Energy Surfaces Using Mass Spectrometry"
10. Wayne State University, Detroit, Michigan, April 16th, 2003.
"Studies of Ion/Molecule Potential Energy Surfaces Using Mass Spectrometry"
9. Dalhousie University, Halifax, Nova Scotia, April 10th, 2003.
"Studies of Ion/Molecule Potential Energy Surfaces Using Low Pressure and High Pressure Mass Spectrometry"
8. Memorial University, St. John's, Newfoundland, December 16th, 2002.
"High Pressure Mass Spectrometric and FT-Ion Cyclotron Resonance Studies of Ion/Molecule Potential Energy Surfaces"
7. University of Calgary, Calgary, Alberta, November 13th, 2002.
"Studies of Ion/Molecule Potential Energy Surfaces Using Mass Spectrometry"
6. University of Ottawa, Ottawa, Ontario, May 6th, 2002.
"Mapping Potential Energy Surfaces by Low-Pressure Ion/Molecule Radiative Association Kinetics Studies"
5. Trent University Chemistry/Physics Seminar Series, Trent University, Peterborough, Ontario, March 20, 2002.
"Low-Pressure Kinetic Studies of Gas-Phase SN2 and Radiative Association Reactions: Mapping Potential Energy Surfaces a Piece at a Time"
4. York University, Toronto, Ontario, November 1st, 2001.
"Mapping Potential Energy Surfaces by Low-Pressure Ion/Molecule Radiative Association and Nucleophillic Substitution Kinetics Studies"
3. University of Saskatchewan, Saskatoon, Saskatchewan, May 14th, 2001.
"Mapping Potential Energy Surfaces by Low-Pressure Ion/Molecule Radiative Association and Nucleophillic Substitution Kinetics Studies"
2. University of Waterloo Chemical Physics Seminar Series, Waterloo, Ontario December 3rd, 1999
"Homogenous and Heterogeneous Proton-Bound Rare-Gas Dimers(?) Isolated in Rare Gas Matrices"
1. Trent University Chemistry/Physics Seminar Series, Trent University, Peterborough, Ontario, March 24th, 1999.
"Are Rare Gases Really Inert: Proton-Bound Rare-Gas Dimers 'Isolated' in Rare-Gas Matrices and the Possibility of Rare-Gas Catalysis"

Conference Presentations (presenting author underlined)

2022 Canadian Chemistry Conference and Exhibition, Calgary, AB, June 13-17, 2022.

189. Oral Presentation: "Glycine in a Basket: The Physical Chemistry of Protonated Host-Guest Complexes in the Gas Phase"
Y. Chen, G. J. Bodwell, M. Demireva and Travis D. Fridgen

1st Annual Scientific Endeavors in Academia, Memorial University, April 8-9, 2022

188. Poster Presentation: “Glycine in a Basket: The Physical Chemistry of Protonated Host-Guest Complexes in the Gas Phase”
Y. Chen, G. J. Bodwell, M. Demireva and Travis D. Fridgen

2021 IUPAC and Canadian Chemistry Conference and Exhibition, Virtual, August 13-20, 2021.
187. “A Study of the Binding in Protonated Host-Guest Complexes of Glycine and Belt-like Pyrenophanes in the Gas Phase”
Y. Chen and Travis D. Fridgen

36th Trent Conference in Mass Spectrometry, August 10-11, 2020
186. Oral Presentation: “Structure, thermochemistry, and reactivity studies of gas-phase doubly charged metal ion-coordinated L-Glutathione”
M. Sharifi, T. D. Fridgen
185. Oral Presentation: “Structures and Decomposition Energetics of Protonated Glycine/Half-belt Complexes: An Experimental and Computational Study”
Y. Chen, T. D. Fridgen
184. Oral Presentation: “Elucidation of Structures of Protonated Nitroimidazolic Radiosensitizers Bound to Methyl-Substituted Nucleobases Using Spectroscopic and Computational Methods”
S. C. Atkinson and T. D. Fridgen
183. Oral Presentation “An IRMPD Spectroscopic and Computational Study of the Structures and Unimolecular Fragmentations of the Protonated Neonicotinoid Insecticide, Imidacloprid”
K. Menard, J.Martens, T. Fridgen

67th ASMS Conference on Mass Spectrometry and Allied Topics, Atlanta, Georgia, June 2 – 6, 2019.
182. Poster Presentation: “Tautomerization of the Protonated Insecticide, Imidacloprid, and its Fragmentation Products in the Gas Phase: A Vibrational Spectroscopic and Computational Study”
K. Menard, J. Martens, and T. D. Fridgen
181. Poster Presentation: “An IRMPD Spectroscopic and Computational Study of Gaseous Protonated and Metal Cationized Guanine-Cytosine Base Pairs and Guanine-Containing Mismatches”
R. Cheng and T. D. Fridgen

102nd Canadian Chemistry Conference and Exhibition, Quebec City, PQ, June 3 – 7, 2019.
180. Oral Presentation: “Tautomerization in the Protonated Insecticide, Imidacloprid, and its Fragmentation Products in the Gas Phase: A Vibrational Spectroscopic and Computational Study”
K. Menard, J. Martens, and T. D. Fridgen
179. Oral Presentation: “Structures and Unimolecular Dissociation Reactions of Alkali metal and Silver Cations/Aromatic Half-Belt Complexes in Gas Phase”
Y. Chen and T. D. Fridgen
178. Poster Presentation: “An IRMPD Spectroscopic and Computational Study of Gaseous Protonated Guanine-Containing Mismatches”
R. Cheng and T. D. Fridgen
177. Poster Presentation: “Investigating Metalated Amino Acid/Uracil Dimer Structures By IRMPD Spectroscopy and Density Functional Theory Calculations”
S. Atkinson and T. D. Fridgen
176. Poser Presentation: “Reactivity and structural investigation of gaseous metal cationized glutathione (GSH) by tandem mass spectrometry methods”
M. Sharifi and T.D. Fridgen

101st Canadian Chemistry Conference and Exhibition, Edmonton, AB, May 27 – May 31, 2018
175. Oral Presentation: “Structures of Gas-Phase Metal Cation/Aromatic Half-Belt Complexes by Vibrational Spectroscopy and Electronic Structure Calculations”
Y. Chen, Y. Jami-Alahmadi, K.S. Unikela, G.J. Bodwell, and T.D. Fridgen
174. Oral Presentation: “The Structures and Energetics of Metal Cationized G-Tetrads and Quadruplexes in the Gas Phase”
M. Azargun and T.D. Fridgen
173. Oral Presentation: “The IRMPD Spectroscopic and Computational study of Protonated Guanine-Containing Base Pairs in the Gas Phase”
R. Cheng and T.D Fridgen

172. Poster Presentation: “Determination of Protonated and Metal Cationized Glycine/Uracil Structures Via Mass Spectrometry and DFT Calculations”
S. Atkinson and T.D. Fridgen
171. Poster Presentation: “Structure, thermochemistry, and reactivity studies of gas-phase alkali metal ion-coordinated L-Glutathione”
M. Sharifi, K. Menard, and T.D. Fridgen

33rd Annual Symposium on Chemical Physics, Waterloo, ON, Nov. 3-5, 2017
170. Poster Presentation: “Structures of Gas-Phase Metal Cation/Aromatic Half-Belt Complexes: Ascertaining Whether Metal Cations Hold or Wear Their Teropyreneophane Belts”
Y. Chen, G.J. Bodwell, and T.D. Fridgen
169. Poster Presentation: “The IRMPD and computational study of 1-methylcytosine and 9-ethylguanine base pair with alkali metal cation and proton”
R. Cheng, V.E. Rose, and T.D. Fridgen

2017 Atlantic Theoretical Chemistry Symposium, Halifax, NS, Aug. 1 – 3, 2017.
168. Oral Presentation: “Using molecular dynamics and density functional theory with infrared multiple photon dissociation to determine the structure of protonated beta-methylamino-L-alanine”
B.D. Linford, E. Bodo, T.D. Fridgen
167. Oral Presentation: “Structures and energetics of metal cationized [1,1,n,n-tetramethyl[n](2,11)teropyrenophen] complexes (metal = Li, Na, K, Rb, Cs; n=8,9) studied by mass spectrometric and computational methods”
Y. Chen, G. J. Bodwell, and T.D. Fridgen
166. Poster Presentation: “Structures of Beta-methylamino-L-alanine isomers in the gas phase by IRMPD spectroscopy in the O-H/N-H stretching region and comparison of computational methods.
K. J. Menard, B.D. Linford, and T. D. Fridgen

34th Annual Trent Conference on Mass Spectrometry, Orillia, ON, Aug. 14 – 17, 2017
165. Oral Presentation: “Investigation of $[M(Gly)(Ura)-H]^+$ complexes using CID, IRMPD, and computational chemistry”
S. C. Atkinson and T. D. Fridgen
164. Oral Presentation: “Structures of the $Uracil_nCa^{2+}$ complexes (n=4, 5, 6) Complex by IRMPD Spectroscopy”
V. E. Rose, R. Cheng, and T. D. Fridgen
163. Oral Presentation: “Elucidating the structure of protonated beta-methylamino-L-alanine using infrared multiphoton dissociation spectroscopy and computational methods”
B.D. Linford, E. Bodo, and T.D. Fridgen

100th Canadian Chemistry Conference and Exhibition, Toronto, ON, May 28 – June 1, 2017
162. Oral Presentation: “Distinguishing Complexes of Isomeric Peptides: Structures and Energetics of Sodium Cationized ProLeu or LeuPro Trimers in the Gas Phase”
Y.J. Alahmadi and T.D. Fridgen
161. Poster Presentation: “Structures and Energetics of $M[1,1,8,8\text{-Tetramethyl}[8](2,11)\text{Teropyrenophane}]^+$ (M=Li, Na, K, Rb, Cs) Studied by Mass Spectrometric and Computational Methods”
Y. Chen, G.J. Bodwell, and T.D. Fridgen

21st International Mass Spectrometry Conference, Toronto, ON, August 20-26, 2016
160. Oral Presentation: “Structure, thermochemistry, and reactivity studies of gas-phase alkali metal-coordinated monomer and trimers of ProLeu vs LeuPro dipeptide sequences”
Y.J. Alahmadi and T.D. Fridgen
159. Poster Presentation: “Fragmentation of BMAA clusters with Alkali and Alkali earth metals using SORI-CID”
B.D. Linford and T.D. Fridgen
158. Poster Presentation: “Mass spectrometry fragmentation methods BIRD, SORI-CID, IRMPD): powerful techniques to study the physical chemistry of guanine quadruplexes”
M. Azargun and T.D. Fridgen

64th ASMS Conference, San Antonio, TX, June 5 – 9, 2016

157. Poster Presentation: "Structures of $[UnCa]^{2+}$ (n=4-6) Complex Structure by IRMPD Spectroscopy"
R. Cheng, V.E. Rose and T.D. Fridgen
156. Poster Presentation: "Structure, thermochemistry, and reactivity studies of gas-phase alkali metal ion-coordinated ProLeu and LeuPro"
Y.J. Alahmadi and T.D. Fridgen

99th Canadian Chemistry Conference and Exhibition, Halifax, Ontario, June 5 – 9, 2016.
155. Oral Presentation: "Bare and hydrated Complexes of Alkaline Earth Metal Ions with Uracil"
B. Power, V. Haldys, J.Y. Salpin, and T.D. Fridgen
154. Poster Presentation: "Structures of Alkali/Alkaline Earth Metal Complexes of Melatonin, Serotonin, and Tryptophan"
S.C. Atkinson, B.D. Linford, and T.D. Fridgen
153. Poster Presentation: "Structures and Unimolecular Reactions of M+[1,1,9,9-tetramethyl(2,11)terophyrenophane] (M=Li, Na, K, Rb, Cs) Studied by Mass Spectrometric and Computational Methods"
Y. Chen, G.J. Bodwell, and T.D. Fridgen
152. Poster Presentation: "Structures of $[UnCa]^{2+}$ (n=4-6) Complex Structure by IRMPD Spectroscopy"
R. Cheng and T.D. Fridgen

28th Workshop on Tandem Mass Spectrometry, Lake Louise Alberta, December 1 – 5, 2015
151. Poster Presentation: "Structure, thermochemistry, and reactivity studies of metal ion coordinated proline-containing peptides in the gas phase"
Y. Jami-Alahmadi and T.D. Fridgen

98th Canadian Chemistry Conference and Exhibition, Ottawa, Ontario, June 13-17, 2015
150. Poster Presentation: "Structures of Unimolecular Chemistries of β-methylaminoalanine (BMAA) Complexes with Metal Cations"
B.D. Linford and T.D. Fridgen

63rd ASMS Conference on Mass Spectrometry & Allied Topics, Baltimore, MD, May 31 - June 4, 2015.
149. Poster Presentation: "Unimolecular Decomposition of $M(Pro_2\text{-}H)^+$ Ni, Cu, Zn) by IRMPD, SORI-CID, and Theoretical Studies"
Y.J. Alahmadi and T.D. Fridgen
(M=Mg, Ca, Sr, Ba, Mn, Fe, Co, Ni, Cu, Zn) by IRMPD, SORI-CID, and Theoretical Studies"
148. Poster Presentation: "Methylaminoalanine (BMAA) Complexes with Alkali and Alkali Earth Metal Cations"
B. Linford and T.D. Fridgen

Lake Louise Tandem Mass Spectrometry Workshop, Lake Louise, AB, December 3-6, 2014.
147. Oral Presentation: "Structures and stabilities of ionized (9-ethyl) guanine tetraplexes"
M. Azargun and T.D. Fridgen
146. Poster Presentation: "Structures and stabilities of ionized (9-ethyl) guanine quadruplexes"
M. Azargun and T.D. Fridgen

31st Annual Trent Conference on Mass Spectrometry, Orillia, ON, August 11-14, 2014.
145. Oral Presentation: "Unimolecular Chemistry of $[M_n(GlyGly\text{-}H)_{2n-1}]^+$ and $[M_{n+1}(GlyGly\text{-}H)_{2n}]^{2+}$ Clusters in the Gas Phase"
M. Moghaddam and T.D. Fridgen,
144. Oral Presentation: "Unimolecular chemistry of metal cation-tryptophan complexes"
S. Hanna-Quinn and T.D. Fridgen
143. Oral Presentation: "CID and IRMPD of B-Methylamino-L-Alanine Cation Adducts"
B. Linford and T.D. Fridgen

62nd ASMS Conference on Mass Spectrometry & Allied Topics, Baltimore, MD, June 16, 2014
142. Oral Presentation: "Structures and Energetics of Alkali Metal-Bound Clusters of 9-Ethylguanine"
M. Azargun and T.D. Fridgen

97th Canadian Chemistry Conference and Exhibition, Vancouver, BC, June 4th, 2014.

141. Oral Presentation: “Gas Phase Structures and Energetics of Alkali Metal Cation-bound Complexes of 9-ethylguanine”
M. Azargun and T.D. Fridgen

30th Annual Trent Conference on Mass Spectrometry, Orillia, ON, August 12-15, 2013.
140. Oral Presentation: “Structures and Gaseous Dissociation Pathways of Dication-Threose Complexes”
A. Hogan, Y. Jami Alahmadi, and T.D. Fridgen
139. Oral Presentation: “IRMPD and computational studies of the proton-bound amino acid dimer in the gas phase”
Y. Jami Alahmadi, A. Gholami, and T.D. Fridgen
138. Oral Presentation: “Study of 9-ethylguanine tetramers by mass spectrometry”
M. Azargun and T. D. Fridgen
137. Oral Presentation: “Structural Study of Microsolvated Na+ and Ca2+ Complexes with Isomeric Dipeptides Using IRMPD Spectroscopy”
M. Moghaddam and T.D. Fridgen

2013 Atlantic Theoretical Chemistry Symposium, St. John’s, NL, August 3-4, 2013.
136. Oral Presentation: “Structures and Gaseous Dissociation Pathways of Dication-Threose Complexes”
A. Hogan, Y. Jami Alahmadi, and T.D. Fridgen
135. Oral Presentation: “IRMPD and computational studies of the proton-bound amino acid dimer in the gas phase”
Y. Jami Alahmadi, A. Gholami, and T.D. Fridgen
134. Oral Presentation: “Study of 9-ethylguanine tetramers by mass spectrometry”
Mohammad Azargun and Travis D. Fridgen
133. Oral Presentation: “Structural Study of Microsolvated Na^+ and Ca^{2+} Complexes with Isomeric Dipeptides Using IRMPD Spectroscopy”
M. Moghaddam and T.D. Fridgen

96th Canadian Chemistry Conference and Exhibition, Quebec, PQ, May 29th, 2013.
132. Poster Presentation: “IRMPD Spectroscopic Study of Microsolvated $[Na(GlyAla)]^+$ and $Ca(GlyAla-H)]^+$, and the Blue-Shifting of the Hydrogen-Bonded Amide Stretch with Each Water Addition”
M.B. Moghaddam and T.D. Fridgen

2013 Gordon Conference on Gaseous Ions: Structures, Energetics and Reactions, Galveston, TX, Feb 24 - March 1, 2013.
131. Poster Presentation: “Structures and fragmentations of $[Zn(Proline-H)(Proline)]^+$ in the gas phase”
A. Gholami and T.D. Fridgen

29th Annual Trent Conference on Mass Spectrometry, Orillia, Ontario, Aug. 13th - 16th, 2012.
130. Oral Presentation: “Water Binding Energies of $[Pb(AminoAcid-H)H_2O]^+$ Complexes Determined Blackbody Infrared Radiative Dissociation”
M.B. Burt and T.D. Fridgen
129. Oral Presentation: “IRMPD Spectroscopic and Computational Study of Gas Phase $[M(Ura-H)(Ura)]^+$ and $[M(Ura-H)(H_2O)n]^+$ (M=Sr, Ba; n=1,2) Complexes”
A. Power, O.Y. Ali, and T.D. Fridgen
128. Oral Presentation: “Fragmentation and structures of gas-phase complexes of metal dications with 2-deoxyribose, ribose, and arabinose”
T. Strange and T.D. Fridgen

95th Annual Canadian Chemistry Conference and Exhibition, Calgary, Alberta, May 26th - 30th, 2012.
127. Oral Presentation: “Primary Fragmentation Pathways of Gas Phase $[M(Uracil-H)(Uracil)^+$ Complexes (M = Zn, Cu, Ni, Co, Fe, Mn, Cd, Pd, Mg, Ca, Sr, Ba, and Pb): Loss of Uracil vs HNCO”
O.Y. Ali, N.M. Randell, and T.D. Fridgen
126. Oral Presentation: “Experimental and Theoretical Study of the Gas Phase Dehydrogenation of Small Alkanes by $Ru(bipy)_2CO^{2+}$
A. Gholami and T.D. Fridgen
125. Oral Presentation: “Structures of bare and hydrated $[M(AminoAcid-H)]^+$ complexes using infrared multiple photon dissociation spectroscopy”
M. Burt and T.D. Fridgen

124. Oral Presentation: “IRMPD Spectroscopic Study of Solvated $[Na(AlaGly)]^+$, and [Ca(AlaGly-H)]+ complexes in the Gas Phase”
M.B. Moghaddam and T.D. Fridgen
123. Poster Presentation: “Structures and fragmentations of some $[Zn(A-H)(A)]^+$ complexes in the gas phase: loss of H_2 when A contains a secondary amine”
A. Gholami and T.D. Fridgen

60th ASMS Conference on Mass Spectrometry and Allied Topics, Vancouver, BC, May 20th - 24th, 2012.
122. Oral Presentation: “Gas Phase Ion-Molecule Reactions Between Unsaturated Bis(2,2'-bipyridine Ruthenium Complex and O2, CO, and Hydrocarbons”
A. Gholami and T.D. Fridgen
121. Poster Presentation: “Structures of bare and hydrated [M(AminoAcid-H)]+ complexes using infrared multiple photon dissociation spectroscopy”
M. Burt and T.D. Fridgen
120. Poster Presentation: “IRMPD Spectroscopic Study of Solvated [Na(AlaGly)]+, and [Ca(AlaGly-H)]+ complexes in the Gas Phase”
M.B. Moghaddam and T.D. Fridgen
119. Poster Presentation: “Structures and fragmentations of some [Zn(A-H)(A)]+ complexes in the gas phase: loss of H2 when A contains a secondary amine”
A. Gholami and T.D. Fridgen

28th Annual Trent Conference on Mass Spectrometry, Orillia, Ontario, Aug. 8th - 11th, 2011.
118. Oral Presentation: “IRMPD Spectroscopic Study of Solvated [Ca(AlaGly-H)]+, [Ca(GlyAla-H)]+, Na(AlaGly)]+, and [Na(GlyAla)]+ Complexes in the Gas Phase”
M.B. Moghaddam and T.D. Fridgen
117. Oral Presentation: “Structures of bare and hydrated [Pb(AminoAcid-H)]+ complexes using infrared multi-photon dissociation spectroscopy: Deprotonation at amine”
M.B. Burt, S.G.A. Decker, C.G. Atkins, M. Rowsell, and T.D. Fridgen
116. Oral Presentation: “Gas phase activation of hydrocarbons by the unsaturated bipyridinium ruthenium $Ru(bipy)_2^{2+}$ complex: The effect of ligation of $Ru(bipy)_2^{2+}$ with CO on the dehydrogenation of i-butane, and propane”
A. Gholami and T.D. Fridgen

94th Annual Canadian Chemistry Conference and Exhibition, Montreal, Quebec, June 5th - 9th, 2011.
115. Oral Presentation: “Mechanistic Studies of $Ru(bipy)_2^{2+}$ and $Ru(bipy)_2CO^{2+}$ With Hydrocarbons in the Gas Phase: Dehydrogenation by a Vibrationally Excited 16-Electron Complex”
A. Gholami and T.D. Fridgen

114. Oral Presentation: “Structures of Pb2+-Uracil Complexes by IRMPD Spectroscopy in the N-H/O-H Stretching Region”
O.Y. Ali and T.D. Fridgen
113. Poster Presentation: “Structures and Fragmentation of Gas Phase $[M(Ura-H)(Ura)]^+$ Complexes (M= Zn^{2+}, Cu^{2+}, Ni^{2+}, Co^{2+}, Fe^{2+}, Mn^{2+}, Cd^{2+}, Pd^{2+}, Mg^{2+}, Ca^{2+}, and Pb^{2+})”
O.Y. Ali, N.M. Randell, and T.D. Fridgen (Award-Winning Poster in Undergraduate Category)

11th Annual CERMM Symposium, Concordia University, Montreal, Quebec, June 4-5, 2011.
112. Oral Presentation: “Structures of M^{2+}/Uracil Complexes by Collision Induced Dissociation CID and IRMPD Spectroscopy in the N-H/O-H Stretching Region”
O.Y. Ali and T.D. Fridgen

2011 Gordon Conference on Gaseous Ions: Structures, Energetics and Reactions, Galvestion, TX, Feb 27th - March 4, 2011.
111. Oral Presentation: “$Uracil_nCa^{2+}$ Clusters (n=14-4) by BIRD, Electronic Structure Calculations, and IRMPD Studies”
Elizabeth A.L. Gillis, Maria Demireva, Kaushik Nanda, Evan R. Williams, Gregory Beran and Travis D. Fridgen
110. Poster Presentation: “Structures of bare and hydrated $[Pb(AminoAcid-H)]^+$ complexes using infrared multiple photon dissociation spectroscopy”
M.B. Burt, S.G. Decker, C.G. Atkins, M. Rowsell, and Travis D. Fridgen

Lake Louise Tandem Mass Spectrometry Workshop, Lake Louise, AB, December 2nd, 2010.

109. Poster Presentation: "Structures and Energetics of $[(Uracil)_nCa]^{2+}$ (n=14-4) Clusters by Blackbody Infrared Radiative Dissociation and Theoretical Studies"
Elizabeth A.L. Gillis, Maria Demireva, Kaushik Nanda, Evan R. Williams, Gregory Beran and Travis D. Fridgen

27th Annual Trent Conference on Mass Spectrometry, Orillia, Ontario, July 26th - 29st, 2010.

108. Poster Presentation: "Structures and Energetics of $[(Uracil)_nCa]^{2+}$ (n=14-4) Clusters by Blackbody Infrared Radiative Dissociation and Theoretical Studies"
Elizabeth A.L. Gillis and Travis D. Fridgen
107. Oral Presentation: "Kinetics of Low-Pressure Association Reactions of Unsaturated Ru2+ Complexes"
Ameneh Gholami and Travis D. Fridgen
106. Oral Presentation: "Gas-Phase Interactions Between Copper (II) Ions and Nucleobases (Uracil, Thymine): A Combined Experimental and Theoretical Study"
Osama Ali, Nicholas Randell, and Travis Fridgen
105. Poster Presentation: "Structures and Solvent Binding Energies of [Pb(AminoAcid-H)]H2O by IRMPD Spectroscopy, BIRD Kinetics and Computational Studies"
Michael B. Burt, Sarah Decker and Travis D. Fridgen
104. Poster Presentation: "CID/SORI-CID Fragmentation of [M(Uracil)2-H]+ Dimers of M2+ Cations"
Nicholas Randell, Osama Ali, Travis D. Fridgen

93rd Annual Canadian Chemistry Conference and Exhibition, Toronto, Ontario, May 29th - June 2nd, 2010.

103. Poster Presentation: "Structures and Energetics of $[(Uracil)_nCa]^{2+}$ (n=14-4) Clusters by Blackbody Infrared Radiative Dissociation and Theoretical Studies"
Elizabeth A.L. Gillis and Travis D. Fridgen

58th ASMS Conference on Mass Spectrometry and Allied Topics, Salt Lake City, Utah, May 23rd - 27th, 2010.

102. Oral Presentation: "Structures of Bare and Hydrated $Pb[AA-H]^+$ Complexes by IRMPD Spectroscopy and Computational Chemistry"
Michael Burt, Sarah Decker, Chad Atkins, Mark Rowsell, and Travis D. Fridgen
101. Poster Presentation: "Structures and Energetics of $[(Uracil)_nCa]^{2+}$ (n=14-4) Clusters by BIRD and Theoretical Studies"
Elizabeth, A.L. Gillis and Travis D. Fridgen

ASMS Asilomar Conference on Gaseous Ion Spectroscopy, Pacific Grove, California, October 16-20, 2009.

100. Poster Presentation: "Structure determination of $[Pb(AminoAcid-H)]^+$ complexes using infrared multiple photon dissociation"
Michael Burt, Chad Atkins, Sarah Decker, Mark Rowsell, and Travis D. Fridgen

2009 Gordon Conference on the Physics and Chemistry of Matrix-Isolated Species, Oxford, United Kingdom, July 19-24, 2009.

99. Oral Presentation: "Vibrational Spectrum of the Propylene Oxide/Ethanol and propylene oxide/2-fluoroethanol Hydrogen bonded Complexes: A Matrix Isolation FTIR and Theoretical Study" O. Ali, E. Jewer, and T.D. Fridgen
98. Poster Presentation: "Hydrogen Bonded Complexes of Propylene Oxide with Ethanol and 2-Fluoroethanol: A Matrix Isolation FTIR and Theoretical Study"
O. Ali, E. Jewer, and T.D. Fridgen

26th Annual Trent Conference on Mass Spectrometry, Orillia, Ontario, July 27th - 30st, 2009.

97. Oral Presentation: "Energetics and Structures of $[Uracil_nCa]^{2+}$ (n=14-6) Clusters by BIRD and IRMPD Spectroscopy"
E.A.L. Gillis and T.D. Fridgen
96. Oral Presentation: "Structures of [Pb(AminoAcid-H)]+ Complexes by Infrared Multiple Photon Dissociation Spectroscopy"
M.B.Burt, C.G. Atkins, M. Rowsell, S. Decker and T.D. Fridgen
95. Poster Presentation: "The structure of Pb(Gly-H)+ and the water and methanol solvated species by IRMPD spectroscopy, energy resolved CID, and electronic structure calculations"
C.G. Atkins, L. Banu, M. Rowsell, V. Blagojevic, D.K. Bohme and T.D. Fridgen

94. Poster Presentation: “Mass Spectrometric Characterization of Supramolecular Polynuclear Self-Assembled Complexes by Collision Induced Dissociation of Electrosprayed Ions”
A. Norman, J. Collins, L.K. Thompson and T.D. Fridgen

57th ASMS Conference on Mass Spectrometry and Allied Topics, Philadelphia, PA May 31st - 5th, 2009.

93. Oral Presentation: “Structures of Hydrated Metalated and Proton-bound Dimer Adenine by IRMPD Spectroscopy”
K. Rajabi, E.A.L. Gillis and T.D. Fridgen

ChemCon 2009, St. Francis Xavier University, Antigonish, NS, May 14-16, 2009.

92. Oral Presentation: “The Structural Identification of Gas-Phase Amino Acid Complexes Containing Pb^{2+} Ions”
M. Rowsell, C.G. Atkins, M.B. Burt and T.D. Fridgen

2009 Gordon Conference on Gaseous Ions: Structures, Energetics and Reactions, Galvestion, TX, March 1 - March 6, 2009.

91. Poster Presentation: “Structural Investigation of Pb2+-Amino Acid Complexes Using IRMPD Spectroscopy,”
C.G. Atkins, M. Rowsell, T.D. Fridgen
90. Poster Presentation: “Structures of the Hydrated Li+-Adenine/Thymine Complex by IRMPD Spectroscopy in the N-H/O-H Stretching Region”
E.A.L. Gillis and T.D. Fridgen
89. Poster Presentation: “The Solution-Phase Structure of the Adenine Proton-Bound Dimer by Gas-Phase IRMPD Spectroscopy and Electronic Structure Calculations”
K. Rajabi, E.A.L. Gillis, K. Theel, G. Beran, and T.D. Fridgen

2008 Tandem Mass Spectrometry Workshop, Lake Louise, Alberta, Dec. 3rd - Dec. 6th, 2008

88. Poster Presentation: “Structures of Hydrated Li+-Thymine and Li+-Uracil and the mixed Li+-Adenine/Thymine Complexes by IRMPD Spectroscopy in the N-H/O-H Stretching Region”
E.A.L. Gillis, K. Rajabi, and T.D. Fridgen

2008 Atlantic Theoretical Chemistry Symposium, Cape Breton, NS, Aug. 13th - 14th, 2008.

87. Oral Presentation: “Structures of Hydrated Li+-Thymine and Li+-Uracil Complexes by IRMPD Spectroscopy in the N-H/O-H Stretching Region”
E.A.L. Gillis, K. Rajabi, and T.D. Fridgen

25th Annual Trent Conference on Mass Spectrometry, Orillia, Ontario, July 28th - 31st, 2008.

86. Oral Presentation: “Characterizing Intermolecular Interactions and Structures of Glycine Homodimers using IRMPD Spectroscopy in the N-H/O-H Stretching Region”
C. G. Atkins, E. A. L. Gillis, K. Rajabi and T. D. Fridgen
85. Oral Presentation: “Structures of Hydrated Li+-Thymine and Li+-Uracil Complexes by IRMPD Spectroscopy in the N-H/O-H Stretching Region”
E.A.L. Gillis, K. Rajabi, and T. D. Fridgen
84. Poster Presentation: “Structures of Metal Ion-Bound Adenine Complexes by IRMPD and Density Functional Calculations”
K. Rajabi, E.A.L. Gillis and T. D. Fridgen

56th ASMS Conference on Mass Spectrometry and Allied Topics, Denver, Colorado, June 1st - 5th, 2008.

83. Oral Presentation: “Structures of Hydrated Li^+-Thymine and Li^+-Uracil Complexes by IRMPD Spectroscopy in the N-H/O-H Stretching Region”
E.A.L Gillis, K. Rajabi, C. Atkins, and T. D. Fridgen
82. Oral Workshop Presentation: “Where are My Multiply-Charged Ions”
T. D. Fridgen

91st Annual Canadian Chemistry Conference and Exhibition, Edmonton, Alberta, May 24th - 28th, 2008.

81. Oral Presentation: “Structures of Hydrated Li+-Thymine and Li+-Uracil Complexes by IRMPD Spectroscopy in the N-H/O-H Stretching Region”
E.A.L Gillis, K. Rajabi, C. Atkins, and Travis D. Fridgen
80. Poster Presentation: “Structures of matalated adenine and its hydrated complexes”

K. Rajabi, E.A.L Gillis, and Travis D. Fridgen

2007 Tandem Mass Spectrometry Workshop, Lake Louise, Alberta, Nov. 28th - Dec. 1st, 2007.

79. Oral Presentation: "Infrared Spectra of Ion and Solvated Complexes from IRMPD Spectroscopy"
Khadijeh Rajabi and Travis D. Fridgen

2007 Atlantic Theoretical Chemistry Symposium, St. John's, NL, Aug. 2nd - 4th, 2007.

78. Oral Presentation: "The O-H Stretch of the Enol Form of α-Diketones"
Elyse Jewer, Khadijeh Rajabi and Travis D. Fridgen
77. Oral Presentation: "Structures of Aliphatic Amino Acid Proton-Bound Dimersby IRMPD Spectroscopy in the 700 to 2000 cm^{-1} Region"
Khadijeh Rajabi and Travis D. Fridgen

24th Annual Trent Conference on Mass Spectrometry, Orillia, Ontario, July 30th - Aug. 2nd, 2007.

76. Oral Presentation: "Structures of Aliphatic Amino Acid Proton-Bound Dimers by IRMPD Spectroscopy in the 700 to 2000 cm^{-1} Region"
Khadijeh Rajabi and Travis D. Fridgen
75. Poster Presentation: "Solvation of Electrosprayed DNA Base and Amino Acid Clusters in the Accumulation Quadrupole of a Hybrid Q-FTMS"
Khadijeh Rajabi, Travis D. Fridgen, Michael L. Easterling and Christian B. Berg

2007 Gordon Conference on the Chemistry and Physics of Matrix Isolated Species, Lewiston, ME, July 15^{th} - 20^{th}, 2007

74. Poster Presentation: "The O-H Stretch of the Enol Form of α-Diketones"
Elyse Jewer, Khadijeh Rajabi and Travis D. Fridgen

55th ASMS Conference on Mass Spectrometry, Indianapolis, Indiana, June 3-7, 2007.

73. Poster Presentation: "Solvation of Electrosprayed DNA Base and Amino Acid Clusters in the Accumulation Quadrupole of a Hybrid Q-FTMS"
Khadijeh Rajabi, Travis D. Fridgen, Michael L. Easterling and Christian B. Berg

2007 Gordon Conference on Gaseous Ions: Structures, Energetics and Reactions, Ventura, CA, Feb. 25- March 2, 2007

72. Poster Presentation: "IRMPD Spectra of Amino Acid Proton-Bound Dimers"
Kahdijeh Rajabi and Travis D. Fridgen
71. Poster Presentation: "Infrared Multiphoton Dissociation Spectra as a Probe of Ion Molecule Reaction Mechanisms: Formation of the Protonated Water Dimer via Sequanetial Bimolecular Reactions with Tetrafluorodimethyl Ether"
Rick A. Marta, Terry B. McMahon and Travis D. Fridgen

2006 Symposium on Chemical Physics, Waterloo, ON, Oct. 28-30, 2006

70. Poster Presentation: "Probing ion Molecule Reaction Mechanisms with Infrared Photo-Dissociation Spectra and ab initio Calculations: The Formation of the Protonated Water Dimer via Sequential Bimolecular Reactions with 1,1,3,3-Tetrafluorodimethyl Ether"
Rick A. Marta, Travis D. Fridgen and Terry B. McMahon

2006 Atlantic Theoretical Chemistry Symposium, Antagonish, NS, Aug. 11-13, 2006

69. Oral Presentation: "Exploring the High Dipole-Moment Monomer: Binding Energies and Structural Anomalies in Proton-Bound Dimers"
Michael Burt and Travis D. Fridgen

23rd Annual Trent Conference on Mass Spectrometry, Orillia, Ontario, July 31st - Aug. 3rd 2006

68. Oral Presentation: "Cation-Bound DNA Bases: Experiments and Calculations Leading to Gas-Phase Infrared Spectroscopic Studies"
Khadijeh Rajabi and Travis D. Fridgen
67. Oral Presentation: "An Efficient Process for the Formation of Protonated Water Dimer via Ion- Molecule Reaction Beginning With 1, 1, 3, 3 - Tetrafluorodimethyl Ether at Very Low Pressure"
Rick Marta, Travis D. Fridgen, Terry McMahon

66. Oral Presentation: “Solvation Thermochemistry of Linear Triatomic Anions Obtained via HPMS Measurments and ab initio Calculations”
Rob Nieckarz, Nathan Oldridge, Travis D. Fridgen, Terry McMahon
65. Poster Presentation: “Structures and Binding Energies of Proton-Bound Dimers Containing High Dipole-Moment Monomers”
Michael B. Burt and Travis D. Fridgen

6th Annual CERMM Symposium, Montreal, QC, February 10-12, 2006

64. Poster Presentation: “An HPMS/Computational Study of the Solvation of FHF^- and NNN^- by H_2O, CH_3OH, and C_2H_5OH”
Rob Nieckarz, Melissa Clements, Travis Fridgen, Terry McMahon, Guangping Li and Ian Hamilton.

2005 Symposium on Chemical Physics, Waterloo, ON, Oct. 28-30, 2005

63. Poster Presentation: “A Thermochemical Investigation of Ketone and Diketone Protonated Clusters in the Gas Phase via High Pressure Mass Spectrometry (HPMS)”
Matthew A. Furzecott, Rick A. Marta, Travis D. Fridgen and Terry B. McMahon
62. Poster Presentation: “An HPMS/Computational Study of the Solvation of FHF^- and NNN^- by H_2O, CH_3OH, and C_2H_5OH”
Rob Nieckarz, Melissa Clements, Travis Fridgen, Guangping Li, Ian Hamilton and Terry McMahon
61. Poster Presentation: “Probing Strong Hydrogen Bonding in the Gas Phase Association Reactions of Protonated 2-Pentanone and 2,4-Pentanedione with Their Neutral Conterparts via Mass Spectrometric and Computational Methods”
Rick A. Marta, Travis D. Fridgen, Matt A. Furzecott and Terry B. McMahon

22nd Annual Trent Conference on Mass Spectrometry, Orillia, Ontario, August 8-11 2005

60. Oral Presentation: “The Thermochemistry of Ketone and Diketone Proton-Bound Clusters in the Gas Phase: Probing Strong Hydrogen Bonding Interactions”
Matt A. Furzcott, Rick A. Marta, Terry B. McMahon and Travis D. Fridgen
59. Oral Presentation: “Investigation of Anionic Clusters Involving (HF) F- Via HPMS and IRMPD”
Robert J. Nieckarz, Travis D. Fridgen and Terry B. McMahon

2005 Gordon Conference on Gaseous Ions: Structures, Energetics and Reactions, Ventura, CA, Feb 27- March 3, 2005

58. Poster Presentation: “An Attempt at Modeling The O-H-O Asymmetric Stretch in $H_5O_2^+$”
Travis D. Fridgen and Carey Bissonnette
57. Poster Presentation: “Infrared Spectra of Gaseous Proton-Bound Dimers From 600 cm^{-1} to 1800 cm-1”
Travis D. Fridgen, Luke MacAleese, Terry McMahon, Joel Lemaire and Philippe Maitre
56. Poster Presentation: “A Mass Spectrometric and Infrared Spectroscopic Study of the Mechanism for Generation of Protonated Water Dimers Under Very Low Pressure Conditions”
Richard A. Marta, Travis D. Fridgen, Sabrina Lorenz and Terry B. McMahon
55. Poster Presentation: “An HPMS/Computational Study of the Solvation of FHF^- and NNN^- by H_2O, CH_3OH, and C_2H_5OH”
Robert Nieckarz, Melisa Clements, Travis D. Fridgen, Terry B. McMahon, G. Li, and Ian P. Hamilton

2004 Symposium on Chemical Physics, Waterloo, ON, Oct. 29-31, 2004

54. Poster Presentation: “Structures of Asymmetric Proton-Bound Dimers With a Large Dipole Moment Monomer: Covalent vs. Electrostatic Interactions”
Travis D. Fridgen
53. Poster Presentation: “IRMPD Spectra of Gas-Phase Proton-Bound Dimers From 600 to 1800 cm^{-1}”
Travis D. Fridgen, Luke MacAleese, Terry McMahon, Joel Lemaire and Philippe Maitre
52. Poster Presentation: “Bihalide FHF^- vs Pseudobihalide NNN^-: An Experimental and Theoretical Study of Solvation by nROH (R=H, CH_3, C_2H_5)”
Rob Nieckarz, Melissa Clements, Travis D. Fridgen, Guang-Ping Li, Ian Hamilton, and Terry B. McMahon
51. Poster Presentation: “Experimental and Theoretical Study of Ion-Molecule Reactions Under Low-Pressure Conditions in the Gas Phase”
Po Shan Ng, Travis D. Fridgen and Terry B. McMahon
50. Poster Presentation: “The Tetrafluorodimethyl Ether Catalyzed Formation of the Proton-Bound Dimer of Water at Very Low Pressure”

Richard A. Marta, Travis D. Fridgen, Sabrina J. Lorenz, and Terry B. McMahon

21st Annual Trent Conference on Mass Spectrometry, Orillia, Ontario, August 9-12, 2004.

49. Poster Presentation: "Covalent vs Electrostatic Interactions in Asymmetric Proton-Bound Dimers With a Large Dipole Moment Monomer"
Travis D. Fridgen
48. Poster Presentation: "Potential Energy Surfaces for Gas-Phase SN2 Reactions Involving Nitriles and Substituted Nitriles: A High-Pressure Mass Spectrometric and Computational Study"
Travis D. Fridgen, Jami L. Burkell, Ashraf N. Wilsily, Vicki Braun, Josh Wasylycia, and Terry B. McMahon
47. Oral Presentation: "The Solvation of FHF^- by ROH (R = H, CH_3, C_2H_5): An Investigation of the Structures and Thermochemistry"
Rob Nieckarz, Melisa Clements, Travis D. Fridgen, Terry B. McMahon
46. Oral Presentation: "Revisiting the Mechanism of Proton-Bound Dimer Formation via Ion-Molecule Reaction Involving Tetrafluordimethyl Ether"
Rick Marta, Travis D. Fridgen, Sabrina Lorenz Terry B. McMahon
45. Oral Presentation: "A Theoretical/Experimental Study of the Thermochemical and Structural Aspects of the Pseudo-halide NNN-."
Melisa Clements, Rob Nieckarz, Travis Fridgen, Terry McMahon
44. Oral Presentation: "The Low-Pressure Ion-Molecule Association Reactions of Ethers with Protonated Ethers by FTICR Spectrometry"
Polly Ng, Travis Fridgen, Terry McMahon

19th Annual Symposium on Chemical Physics, Waterloo, ON, Oct. 31-Nov.2, 2003.

43. Poster Presentation: "Explaining Experimental $Benzylium^+$/$Tropylium^+$ Yields From the Fragmentation of Ethylbenzene Cations"
T. D. Fridgen, T. B. McMahon, Jurgen Troe, Al Viggiano, A. J. Midey, and Skip Williams
42. Poster Presentation: "Clustering/Solvation of FHF- with ROH (R=H, CH_3, CH_2CH_3) to Elucidate and Ion Structure From the Thermochemistry"
Rob Nieckarz, Travis D. Fridgen, Guang-Ping Li, Ian Hamilton and Terry B. McMahon
41. Poster Presentation: "Infrared Radiative Association and Blackbody Infrared Radiative Dissociation of Gaseous Cluster Ions"
Polly Ng, Richard Marta, Travis D. Fridgen, Terry B. McMahon

20th Annual Ontario Gas Phase Ion Chemists' Meeting, Minden, Ontario, August 11-14, 2003.

40. Oral Presentation: "A Mass Spec-tacular Study of How Much Biflouride Likes Its Alcohol"
Rob Nieckarz, Travis D. Fridgen, Guang-Ping Li, Ian Hamilton and Terry B. McMahon
39. Oral Presentation: "Infrared Radiative Association and Blackbody Infrared Radiative Dissociation of Gaseous Cluster Ions"
Polly Ng, Travis D. Fridgen and Terry B. McMahon

2003 Gordon Conference on Gaseous Ions: Structures, Energetics and Reactions, Ventura, CA, March 1-7, 2003

38. Poster Presentation: "Isomeric Forms of the Iodide-Bound Methanol Dimer Investigated by BIRD Kinetics" Travis D. Fridgen, Rob Nieckarz and Terry B. McMahon.
37. Poster Presentation: "High-Pressure Mass Spectrometric Studies of the Potential Energy Surfaces of Gas-Phase SN2 Reactions Involving Substituted Nitriles," Travis D. Fridgen, Jami L. Burkell, Ashraf N. Wilsily, Vicki Hoffman, Josh Wasylycia, and Terry B. McMahon.

2003 Conference on Ion Chemistry and Mass Spectrometry, Lake Arrowhead, CA, January 17-19, 2003

36. Oral Presentation: "Potential Energy Surfaces for Reactions of Gas Phase Ions," T.B. McMahon, T. Fridgen, J. Burkell, and R. Nieckarcz

15th Workshop on Tandem Mass Spectrometry, Lake Louise, AB, December 4-7, 2002

35. Oral Presentation: "Isomerization in Gas-Phase Ions," Travis D. Fridgen, Rob Nieckarcz and Terry B. McMahon.

18th Annual Symposium on Chemical Physics, Waterloo, ON, October 25-27, 2002.

34. Poster Presentation: “High-Pressure Mass Spectrometric Studies of the Potential Energy Surfaces of Gas-Phase SN2 Reactions Involving Substituted Nitriles,” Travis D. Fridgen, Jami L. Burkell, Ashraf N. Wilsily, Vicki Hoffman, Josh Wasylycia, and Terry B. McMahon.

19th Annual Ontario Gas Phase Ion Chemists' Meeting, Minden, Ontario, August 12-15, 2002

33. Oral Presentation: “Covalent & Electrostatic Isomers of Association Reactions Between Protonated Cyclic Dienes and Small Organics: A Computational Prelude to Experiment,” R.A. Marta, T.D. Fridgen and T.B. McMahon.
32. Oral Presentation: “Gas-Phase Acidities and Sites of Deprotonation of 2-Ketones and Structures of the Corresponding Enolates,” J. L. Burkell, T.D. Fridgen and T.B. McMahon.

50th ASMS Conference on Mass Spectrometry and Allied Topics, Orlando, Florida, June 2-6, 2002.

31. Poster Presentation: “An FTICR Study of the S_N2 Reaction Between SiF_4H^+ and SiF_4,” T.D. Fridgen and T.B. McMahon.
30. Poster Presentation: “The Gas Phase Acidities of 2-Ketones: Are 2-Alkanone Anions Stabilized by Intramolecular Solvation,” J. L. Burkell, T.D. Fridgen and T.B. McMahon.

17th Annual Symposium on Chemical Physics, Waterloo, ON, November 9-11, 2001.

29. Poster Presentation: “HPMS Determination of the Gas-Phase Acidities of 2-Alkanones: Stabilization of Anionic Centres by Chain Coiling,” J.L. Burkell, T.D. Fridgen and T.B. McMahon.
28. Poster Presentation: “Experimental Energy Barriers for Methyl, Ethyl, and Propyl Cation Transfer Reactions by Temperature-Dependent Kinetics in an FTICR Cell,” T.D. Fridgen and T.B. McMahon.
27. Poster Presentation: “Binding Energies of Mixed Proton-Bound Ether/Alcohol Dimers by Low-Pressure Radiative Association Kinetic Studies in a FTICR Mass Spectrometer,” T.D. Fridgen and T.B. McMahon.

18th Annual Ontario Gas Phase Ion Chemists' Meeting, Minden, Ontario, August 13-15, 2001.

26. Oral Presentation: “Gas-Phase Acidities of Some 2-Alkanones: Stabilization of Anionic Centres by Chain Coiling,” J.L. Burkell, T.D. Fridgen and T.B. McMahon.

49th ASMS Conference on Mass Spectrometry and Allied Topics, Chicago, Illinois, May 27-31, 2001.

25. Oral Presentation: “Experimental Energy Barriers for Ethyl and Propyl Cation Transfer Reactions by Low Pressure FTICR Mass Spectrometry,” T.D. Fridgen and T.B. McMahon
24. Oral Presentation (Fundamentals Workshop): “Kinetics and Equilibrium in the Reaction of Protonated Dipropyl Ether With Ethanol Under Very low Pressure Conditions,” T.D. Fridgen and T.B. McMahon.
23. Oral Presentation: “Determination of Barriers to Methyl Cation Transfer Reactions from Fourier Transform Ion Cyclotron Resonance Kinetics Experiments,” T.B. McMahon and T.D. Fridgen.

2001 Gordon Conference on Gaseous Ions: Structures, Energetics and Reactions, Ventura, California, February 25 - March 2, 2001.

22. Poster Presentation: “Experimental Energy Barriers for Methyl Cation Transfer Reactions by Low-Pressure Temperature Dependent Kinetic Studies in an FTICR Cell,” T.D. Fridgen, J.D. Keller and T.B. McMahon
21. Poster Presentation: “Experimental Evidence for High Energy Isomers in the Entrance Channel for the Reaction of Dimethyl Ether and Protonated Dimethyl Ether by Temperature-Dependent Radiative Association Kinetics Studies,” T.D. Fridgen and T.B. McMahon

16th Annual Symposium on Chemical Physics, Waterloo, ON, November 3-5, 2000.

20. Poster Presentation: “Experimental Barrier Heights for Methyl Cation Transfer Reactions by Fourier Transform Ion Cyclotron Resonance Mass Spectrometry,” T.D. Fridgen, J.D. Keller and T.B. McMahon
19. Poster Presentation: “Temperature Effects on the Low-Pressure Radiative Association Reaction of Dimethyl Ether with Protonated Dimethyl Ether: An FTICR-MS Study,” T.D Fridgen and T.B. McMahon

48th ASMS Conference on Mass Spectrometry and Allied Topics, Long Beach, California, June 10-15, 2000.

18. Oral Presentation: “Temperature Effect on the Low-Pressure Reactions of Dimethyl Ether with Protonated Dimethyl Ether: An FTICR-MS Study,” T.D. Fridgen

15th AnnualSymposium on Chemical Physics, Waterloo, ON, November 5-7, 1999.

17. Poster Presentation: “Density Functional Theory Studies of the Neutral-Base Catalyzed 1,3-Hydrogen-Shift Isomerization Reaction: Comparison of Methanol, Acetone, Acetaldehyde, Ethanol and Formamide Radical Cation Isomerization Reactions,” T.D. Fridgen and J.M. Parnis

Chemistry and Physics of Matrix Isolated Species, Plymouth, New Hampshire (Gordon Research Conference) July 11 - 16th, 1999.

16. Poster Presentation: “Density Functional Theory Studies of the Neutral-Base Catalyzed 1,3-Hydrogen-Shift Isomerization Reaction: Comparison of Acetone, Acetaldehyde and Formamide Radical Cation Isomerization Reactions” T.D. Fridgen and J.M. Parnis
15. Poster Presentation: “Spectroscopic Identification of (RgHRg0)+ (Rg=Ar, Kr, and/or Xe) Ions Isolated in Rare Gas Matrices Following Electron-Bombardment Matrix Isolation of Rg/Methanol Mixtures” T.D. Fridgen and J.M. Parnis

47th ASMS Conference on Mass Spectrometry and Allied Topics, Dallas, Texas, June 12-17, 1999

14. Poster Presentation: “A Density Functional Theory Study of the Neutral-Base Catalyzed 1,3-Hydrogen-Shift Isomerization Reactions of the Acetone, Acetaldehyde and Formamide Radical Cations,” T.D. Fridgen and J.M. Parnis

82nd Canadian Society for Chemistry Conference and Exhibition, Toronto, Ontario, May 30th-June 2nd, 1999

13. Poster Presentation: “Neutral-Base-Catalyzed H-Transfer Isomerization Reactions of Organic Radical Cations,” T. D Fridgen and J.M. Parnis

14th Annual Symposium on Chemical Physics, Waterloo, ON, November 6-8, 1998.

12. Poster Presentation: “(RgHRg')+ ions (Rg = Ar, Kr and/or Xe) Isolated in Rare-Gas Matrices by Electron-Bombardment Matrix Isolation: Experimental Results and DFT Calculations” T.D. Fridgen and J.M. Parnis
11. Poster Presentation: “1,2,-Proton-Transport Catalysis by Ar, Kr, Xe and N2: Theoretical Calculations and Possible Experimental Evidence” T.D. Fridgen and J.M. Parnis

46th ASMS Conference on Mass Spectrometry and Allied Topics, Orlando, Florida, May 31-June 4, 1998

10. Poster Presentation: “(RgHRg0)+ (Rg=Ar, Kr, and/or Xe) Ions in Rare Gas Matrices by Electron Bombardment Matrix Isolation of Rg/Methanol Mixtures: Experimental Results and Density Functional Theory Calculations” T.D. Fridgen and J.M. Parnis
9. Poster Presentation: “Density Functional Theory Study of the CH_3OH^+ to $CH_2OH_2^+$ Isomerization and the Rare Gas Catalyzed Reactions” T.D. Fridgen and J.M. Parnis

14th Annual Ontario Gas Phase Ion Chemists' Meeting, Peterborough, ON, October 24-25, 1997.

8. Oral Presentation: “Effects of Doping Ar/Methanol Mixtures with Kr or N2 on Electron Bombardment Matrix Isolation Experiments,” T. D. Fridgen and J. M. Parnis

International Conference on Chemistry and Physics in Matrices, Spital am Pyhrn, Austria, August 2-7, 1997.

7. Poster Presentation: “Gas-Phase Ion Chemistry of Oxalyl Chloride: An Electron Bombardment Matrix Isolation FTIR Spectroscopic Study,” T.D. Fridgen and J.M. Parnis
6. Poster Presentation: “Gas-Phase Electron Bombardment of Argon/Methanol Mixtures: A Matrix Isolation FTIR Spectroscopic Study,” T.D. Fridgen and J.M. Parnis

80th Canadian Society for Chemistry Conference and Exhibition, Windsor, ON, June 1-4, 1997.

5. Oral Presentation: “Gas-Phase Ion Chemistry by Electron Bombardment Matrix Isolation Infrared Spectroscopy,” T.D. Fridgen and J.M. Parnis

12th Annual Symposium on Chemical Physics, Waterloo, ON, November 1-3, 1996.

4. Poster Presentation: “Electron Bombardment Matrix Isolation of Oxalyl Chloride and Effects of Adding a Gas-Phase Quencher,” T.D. Fridgen and J.M. Parnis

13th Annual Ontario Gas Phase Ion Chemists' Meeting, Peterborough, ON, October 25-26, 1996.

3. Oral Presentation: “Electron bombardment Matrix Isolation And The Need For Selectivity: Mass-Selected Neutralization Matrix Isolation,” T.D. Fridgen and J. M. Parnis

Chemistry and Physics of Matrix Isolated Species, Plymouth, New Hampshire (Gordon Research Conference) July 30 - August 4, 1995.

2. Poster Presentation: "FTIR Spectroscopic Investigation of the Matrix-Isolated Isomerization and Decomposition Reaction Products of Ionized Vinylene Carbonate," T.D. Fridgen and J. M. Parnis

26th Canadian Society for Chemistry Conference and Exhibition, May 30 - June 3, 1993.

1. Poster Presentation: "O(^{1}D) Atom Insertion and Abstraction Reactions in Cryogenic Matrices: FTIR Characterization of Primary Reaction Products," J.M. Parnis, T.D. Fridgen, and R.D. Lafleur

Published Textbooks and Teaching Resources

Chemistry: A Molecular Approach**,** Authors: Tro, Fridgen, Shaw.

7. **4th Canadian Edition.** © 2023, Pearson

6. **3rd Canadian Edition.** © 2020, Pearson

5. **2nd Canadian Edition.** © 2017, Pearson

4. **1st Canadian Edition.** © 2014, Pearson

Personal Response System Questions in

3. "Instructor's Resource CD/DVD, for *Atoms First*" by McMurry, Fridgen © 2010, Prentice Hall

2. "Instructor's Resource CD/DVD, 5/E" by McMurray, Fridgen © 2008, Prentice Hall

1. "Instructor's Resource CD/DVD." by Petrucci, Fridgen, Gentleman & Dutton © 2007, Prentice Hall.

Presentations in Education and Chemical Education

23. Pearson Digital Learning Summit, Toronto, ON, May 8-9, 2025.
Oral Presentation/Discussion Leader: "Unleashing the Power of Digital Learning in Science Education"
22. ChemEd2023, Guelph, ON, July 23-27, 2023.
Oral Presentation: "Remotely Delivered Uber-Algorithmic Tests for Intro Chemistry Courses"
21. Canadian Chemistry Conference and Exhibition, Calgary, AB, June 13-17, 2022.
Oral Presentation: "Uber Algorithmic Assignments and Tests"
20. 47th C3 Conference, Virtual, May 27, 2021.
Oral Presentation: "Uber-Algorithmic Tests and Final – A tool for COVID and Beyond"
19. Faculty of Science Teaching Retreat, St. John's, NL, February 20, 2020
Oral Presentation: "Toward Universal Design and Unleashing Student Creativity"
18. 2019 The Active Classroom: Digital Learning Summit, Toronto, ON, May 24, 2019
Oral Presentation: "Snapchat in University Courses"
17. 2019 Faculty of Science Teaching Retreat, St. John's, NL, February 22, 2019
Oral Presentation: "Using Snapchat in a First Year Chemistry Course"
16. 2018 Faculty of Science Teaching Retreat, St. John's, NL, February 23, 2018
Oral Presentation: Active (Group) Learning in a Large 1st Year Class
15. 2016 Canadian Chemistry Conference and Exhibition, Halifax, NS, June 4 – 9, 2016
Oral Presentation: "Dispense of Bad Analogies: Microstates and Entropy"
14. Strategies for Success, Toronto, Ontario, May 13, 2016
Oral Presentation: "Beyond Multiple-Choice Polling Questions: Using Other Question Types to Engage Students in Lecture"
13. 2015 College Chemistry Canada Conference, Halifax, NS, June 4 - 6, 2015.
Oral Presentation: "The Electron Configurations of Transition Metals: Ions and Neutrals and Sigma and Pi Orbital Ordering in the MO's for 3rd Period Diatomics, And the Role of s-p Mixing"
12. 2013 College Chemistry Canada Conference, Corner Brook, NL, June 6 - 8, 2013.
Oral Presentation: "Are IUPAC conventions important in first year thermochemistry/thermodynamics?"
11. 71st Canadian Association of Medical Radiation Technologists Annual General Conference, St. John's, NL, May 22, 2013.
Oral Presentation: "Using Technology to improve teaching methodology"

10. Strategies for Success, Toronto, Ontario, May 4, 2013.
Oral Presentation: "Teaching Science to Canadian Students" Travis D. Fridgen and Lawton Shaw.
9. 95th Annual Canadian Chemistry Conference and Exhibition, Calgary, Alberta, May 26 - 30, 2012.
Oral Presentation: "The Importance of IUPAC Conventions when Teaching Thermochemistry/Thermodynamics in First Year Chemistry!"
8. Edge Conference on E-Learning, St. John's, NL, October 13, 2010.
"Teaching (Chemistry) Using Lecture Capture and Clickers"
7. Strategies for Success, Toronto, Ontario, May14, 2010.
Panel Discussion: Best Practices for Integrating Online Technology to Assess and Enhance Student Learning"
6. Strategies for Success, Toronto, Ontario, May 2, 2009.
Oral Presentation: *"Clickers 201"*
5. Clicker Talk: Engaging Students, Saint Mary's University, Nova Scotia, April 29, 2008.
Oral Presentation: *"The Practice of Clickers in Science (Chemistry)"*
4. Instructional Workshop, Memorial University of Newfoundland, March 27, 2007.
Oral Presentation and Workshop: *"Polling Technology (Clickers) In the Classroom"*
3. Clickers: Pedagogy and Technology, A Mini Symposium, Memorial University of Newfoundland, May 8, 2006.
Oral Presentation: *"Clickers in Chemistry"*
2. Web Days, Memorial University of Newfoundland, April 25 - 27, 2006.
Oral Presentation: *"The Use of Personal Response Systems in First-Year Chemistry Classes"*
1. Symposium to Promote Clicker Use at Laurier, Wilfrid Laurier University, June 14, 2005.
Oral Presentation: *"Personal Response Systems in Large Chemistry Classes"*

Training of High-Quality Personnel

Graduate Students

27. Elham Ghorbani – PhD Candidate (begins Sept. 2026)
26. Kianna Vaughan – MSc Candidate (Sept. 2020 – Present)
25. Kelsey Menard – MSc Candidate (May 2018 – Dec. 2020)
24. Abanoub Mikhael – PhD Candidate (Sept 2017 – October 2021)
Cosupervised with Dr. Joe Banoub
23. Mahsa Sharifi – MSc Candidate, (Jan. 2018 – 2024)
22. Samuel Atkinson – PhD Candidate, (May 2016 – Present) "DNA Base/Amino Acid Mixed Metal Cationized Complexes"
21. Yanyang Chen – PhD Candidate, Chemistry (Sept. 2017 – April 2025) "Metal Cation-Organic Complexes"
20. Ruodi Cheng – PhD Candidate, Chemistry (Jan. 2015 – December 2019) - Completed "Spectroscopy of DNA base complexes with metal dications"
19. Bryan Linford – PhD Candidate, Chemistry, (May 2014 - Withdrawn)
"Structures and Reactivity of beta-Methylaminoalanine/Metal Cation Complexes"
18. Wael Latif Louise Demian – MSc Candidate, Biochemistry (Jan. 2014 – July. 2015) - Completed
"Structural Studies of Sporopollenin"
Co-supervised with Dr. Joe Banoub
17. Mervt Mohammed Almostafa – PhD Candidate (Sept. 2013 – May 2017) - Completed
"Tandem Mass Spectrometric Studies of Lipid A from Bacterial Sources" Co-supervised with Dr. Joe Banoub
16 Mina Narouz – PhD Candidate (May 2013 - April 2014: Withdrawn for PhD in Organic Synthesis, Queens)
"Mass spectrometric studies of lipids and carbohydrates"
Cosupervised with Dr. Joe Banoub
15. Yasaman Jami Alahmadi – PhD Candidate (May 2013 – Feb. 2018) - Completed
"FTMS and computational studies of protonated and metal cation dimeric proline complexes."
14. Bashaeer Allehyane – MSc Candidate (September 2012 - 2014) - Completed
"MALDI-MS and MS/MS Structural elucidation of the Lipid A of the bacterial lipopolysaccharide of Aeromonas Hydrophila Chemotype II"

Co-supervised with Dr. Joe Banoub

13. Faisal Alarabi – MSc Candidate (September 2012 – June 2015) - Completed
"Identification by methylation Analysis and GC-MS and ESI-MS/MS the site of attachments of the sugar residues of the bacterial O-antigen of Yesinia Ruckerri"
Co-supervised with Dr. Joe Banoub
12. Mohammad Azargun – PhD Candidate (September 2011 – November 2017) - Completed
"Studies of guanine complexes in the gas phase"
11. Maryam Moghaddam – PhD Candidate (September 2010 – November 2015) - Completed
"Structures of Solvated Protonated Peptides"
10. Barry Power – PhD Candidate (September 2009 – May 2017) - Completed
"IRMPD Spectroscopic Studies of Uracil/Metal Cation Complexes"
9. Ameneh Gholami – PhD Candidate (May 2009 - May 2013) - Completed
"Reactions and Kinetics of Unsaturated Ru^{2+} Ions in the Gas Phase"
8. Michael Burt – PhD Candidate (September 2008 - 2012) - Completed
"IRMPD Spectroscopy of Gas Phase Heavy Metal Dication/Amino Acid/Solvent Complexes"
7. Julie Collins – PhD candidate (January 2008 - January 2010 (withdrawn))
"Properties of Multi-Metallic Grid Ions in the Gas Phase"
6. Farid Jahouh – PhD Candidate (January 2008 - 2012) - Completed
Co-supervised with Dr. Joe Banoub
5. Salim Sioud – MSc Candidate (January 2008 - 2010) - Completed
Co-supervised with Dr. Joe Banoub
4. Osama Ali – PhD candidate (Sept. 2007 - 2012) - Completed
"Structures of metal-dication/Uracil complexes in the gas phase and matrix isolated-hydrogen bonded complexes"
3. Chad Atkins – MSc (Sept. 2007 - Sept. 2009) - Completed
"Probing the Structures of Protonated and Metalated Glycine Complexes using Infrared Multiple Photon Dissociation Spectroscopy"
2. Elizabeth Gilles – MSc (Sept. 2007 - 2011) NSERC CGS-M - Completed
"Structures and Energetics of Non-Covalently Bound Gaseous Ions by Infrared Photodissociation"
1. Kadijeh Rajabi – PhD candidate (Jan. 2006 - Jan. 2010) - Completed
"Infrared Spectroscopic Studies of Proton or Metal Ion Bound Amino Acids and DNA Bases in the Gas-Phase"

Undergraduate Students

39. Brandon Dove – Chemistry Honours Student (2025/26)
38. Liam Osmond – Chemistry Honours Student (2022/23)
37. Nusrat Zahan – Biochemistry Honours Student (2022/23)
36. Liam Osmond – NSERC USRA (Summer 2021 and 2022)
35. Kianna Vaughan – Honours Student (2019 – 2020)
34. Willow Squires - NSERC USRA (Summer 2019)
33. Kianna Vaughan - MUCEP Researcher (Winter 2019)
32. Kelsey Menard - Undergraduate Research Assistant/Honours Student (summer 2016/2017/18)
31. Samuel C. Atkinson - NSERC Undergraduate Research Assistant/Honours Student (summer 2015/2016/17)
30. Victoria Rose - Student Undergraduate Research Assistant (summer 2015, MUCEP 2015/16, 2016/17)
29. Steven Rowe - CSJ Summer Research Assistant (summer 2014)
28. Sonja Hanna-Quinn - NSERC Undergraduate Research Assistant (summer 2014)
27. Samuel C. Atkinson - NSERC Undergraduate Research Assistant (summer 2014)
26. Aswathi Asokan - Undergraduate Research Assistant (MUCEP Sept. 2013/14)
25. Andrew Hogan - NSERC Undergraduate Research Assistant (summer 2013)
24. Jessica Besaw - Research Student/MUCEP (2012/13)
23. Brandon Furlong - Undergraduate Research Assistant (summer 2012, MUCEP 2012/13)
22. Timothy Strange - Summer Research Assistant (2012)
21. Ashley Power - Honours B.Sc. Project (2011/2012)/NSERC USRA(2012)
"IRMPD spectroscopy and computational study of [M(Ura-H)]+ complexes (M=Ca, Sr, Ba)"
20. Jessica Besaw - MUCEP (2011/2012)
"Studies of hydrated nitrate anions in the gas-phase"
19. Sarah Decker - Honours B.Sc. Project (2010/2011)

"Energetic requirements of ion fragmentation by chemical ionization mass spectrometry"

18. Kevin Fowler - Research Assistant (Fall/Winter 2010/2011) "Structure and Energetics of Pb2+/amino acid complexes"
17. Ashley Norman - MUCEP (Fall/Winter 2010/2011) "Computational study of BMMA complexes with metal dications"
16. Nicholas Randall - NSERC USRA (summer 2010)
"Low-energy CID of electrosprayed [M(uracil-H]+ complexes"
15. Sarah Decker - NSERC USRA (summer 2010) "BIRD Studies of Solvated M2+/(AA-H)- Complexes"
14. Elyse Jewer - USRA (summer 2010)
"High energy CID of isotopically-substituted uracil radical cations and protonated uracil"
13. Joseph Noseworthy - Honours B.Sc. Project (2009/2010)
"Infrared spectroscopy of gaseous metal/carbohydrate ion complexes by infrared multiple photon dissociation spectroscopy"
12. Elyse Jewer - Honours B.Sc. Project (2009/2010)
"High energy collision induced dissociation studies of DNA base radical cations"
11. Ashley Norman - NSERC USRA (summer 2009) "CID Studies of Metal-Ligand Grids"
10. Sarah Decker - NSERC USRA (summer 2009)
"IRMPD Studies of Amino Acid-Heavy Metal Cation Complexes"
9. Mark Rowsell - Honours B.Sc. Project (2008-09) "IRMPD Study of the [PbGly-H]+H O Complex"
8. Barry Power Honours B.Sc. Project (2008-09)
"Compuational Study of the Relative Energies of Canonical and Zwitterionic Amino Acids Solvated with R-OH (R = H, CH3, CH2CH3 and C(CH3)3."
7. Elyse Jewer - NSERC USRA (summer 2007, 2008) "Matrix Isolation Infrared Spectroscopic
"Studies of Hydrogen Bonded Complexes of Ethanol and Propylene Oxide"
6. Michael Burt Honours B.Sc. Project (2007-08)
"Deuterium Isotope Matrix Isolation Spectroscopic Studies of beta-diketones"
5. Elyse Jewer - CSJ/SWASP (summer 2007) "Matrix Isolation Infrared Spectroscopic Studies of β-diketones"
4. Michael Burt - NSERC USRA (summer 2006), MUCEP (fall/winter 2006-07) "Computational Studies of Proton-Bound Dimers Containing High-Dipole Moment Monomers"
3. Matthew Flynn - Summer Career Placement (summer 2006) MUCEP (fall 2006) "Matrix Isolation Website/MIDI" Wilfrid Laurier University
2. Elysa Stefek (B.Sc. Honours Project, 2003-04), "Potential Energy Surfaces Governing Benzylium and Tropylium Cation Formation From Alkylbenzene Cations"
1. Matthew Furzcott (B.Sc. Honours Project, 2004-05), "Intramolecular Hydrogen Bonding in Ketone and Diketone Proton-Bound Dimers"

Graduate Student Committees

Graduate Supervisory Committees
Memorial University of Newfoundland

- Ms. Yi Liu (Kerton, 2012-2016)
- Mr. Lucas Stewart (Merschrod, 2014-2016)
- Mr. Andrey Gryshchenko (Bottaro, 2010-2014)
- Mr. Munmun Sarkar, (Merschrod, 2012-2014)
- Mr. Jiaqi Cheng (Poduska, 2012-2016)
- Mr. Mohammad A. Halim (Poirier, 2009-2011)
- Mr. Yousef Pourghaz (Zhou, 2009 - 2011)
- Mr. Nick Ryan (Pickup, 2008 - present)
- Mr. Kiran Sagar (Bodwell, 2009 - present)
- Mr. Xiarong Liu (Pickup, 2006 - 2010)
- Ms. Celine Vaillant (Banoub, 2006 - 2008)
- Mr. Josh Hollett (Poirier, 2006 - 2009)

University of Waterloo
- Mr. Ross McColloch, M.Sc (Karanossios, 2005)
- Mr. Bob McPhail, M.Sc.(Sloan, 2005)
- Ms. Wennan Zhao, Ph.D.(Pawliszyn, 2004-05)
- Ms. Yu Gho, Ph.D. (Pawliszyn, 2004-05)
- Mr. Rob Nieckarz, Ph.D. (McMahon, 2003/04/0505)

Ph.D. Comprehensive Exam Committees
Memorial University (oral exams)
- Mr. Abanoub Mikhael (Supervisor/Examiner, Physical/Analytical 2019)
- Ms. Mahsa Sharifi (Supervisor/Examiner, Physical 2019)
- Mr. Mohsen Shayan (Inorganic 2018)
- Ms. Kori Andrea (Examiner, Inorganic 2018)
- Mr. Brandon Furlong (Examiner, Inorganic 2017)
- Mr. Ernest Williams (Examiner, Physical 2016)
- Ms. Mervt Al Mostafa (Supervisor/Examiner, Physical 2015)
- Mr. John MacInnis (Examiner, Analytical 2015)
- Mr. Bryan Lindford (Supervisor/Examiner, Physical 2015)
- Mr. Kaijie Ni (Examiner, Inorganic 2014)
- Mr. Abhijit Chatterjee (Examiner, Physical 2014)
- Ms. Yasaman Jami-Alahmadi (Supervisor/Examiner, Physical 2014
- Ms. Dalal Alhashmialameer (Chair/Examiner, Inorganic 2013)
- Mr. Mohammad Azargun (Supervisor/Examiner, Physical 2012)
- Mr. Ahmad Al-Shra'ah (Examiner, Analytical 2012)
- Mr. Kabir Uddin (Chair/Examiner, Physical 2012)
- Mr. Andriy Gryshchenko (Examiner, Analytical 2012)
- Ms. Maryam Moghaddam (Supervisor/Examiner, Physical 2011)
- Ms. Fozia Wasim (Examiner, Physical 2011)
- Mr. Barry Power (Supervisor/Examiner, Physical 2010)
- Ms. Ameneh Gholami (Supervisor/Examiner, Physical, 2010)
- Mr. Michael Burt (Supervisor/Examiner, Physical, 2009)
- Mr. Khaled Omari (Examiner, Analytical, 2009)
- Mr. Farid Johouh (Co-supervisor/Examiner, Analytical, 2009)
- Mr. Ramesh Kumar (Chair/Examiner, Physical, 2009)
- Mr. Anas Abdel Rahman (Examiner, Analytical, 2009)
- Ms. Elizabeth Gillis (Supervisor/Examiner, Physical, 2008)
- Mr. Osama Ali (Supervisor/Examiner, Physical, 2008)

Memorial University of Newfoundland (written comprehensive exams)
- 2006, 4 students - physical chemistry
- 2007, 1 student - physical chemistry (set exam)

University of Waterloo (oral exams)
- Ms. Wennan Zhao (2004)
- Mr. Jasim Sultan (2004)
- Mr. Jie Li (2004)

Thesis Examination/Defense Committees (externals bolded)
- **Dr. Bethany Lowe, University of Ottawa, Mayer, 2023**
- Mr. Roshanak Amiri, Memorial University, Jobst, 2023
- **Dr. Josh Featherstone, University of Waterloo, McMahon, 2021**
- **Dr. Weiqiang Fu, University of Waterloo, Hopkins, 2020**
- Dr. Jennifer Murphy, Memorial University, Kerton, 2019
- Dr. Kaijie Ni, Memorial University, Kozak, 2018

- **Dr. Sydney Wellman, University of Toronto, Jockusch, 2017**
- **Dr. Xijun Wang, Concordia University, Peslherb, 2016**
- **Mr. Chad Orsini, MSc, Laurentian University, Joly, 2016**
- **Dr. Brandi West, Ottawa University, Mayer, 2014**
- Dr. Rakesh Thorat, Memorial University, Pansare, 2014
- Dr. Iyad Hailat, Memorial University, Helleur, 2014
- Dr. Pratreek Dongare, Memorial University, Thompson/Pickup, 2014
- Dr. Abdulrahman Al Betar, Memorial University of Newfoundland, Pickup, 2012
- **Dr. Laura Banoub, York University, Bohme 2012**
- Mr. Steven Smith, Memorial University, Thompson, 2011
- **Dr. Yawei Lin, University of Ottawa, Mayer, 2011**
- Dr. Abdelmenium El-Dali, Memorial University, Thompson, 2010
- Dr. Li Wang, Ph.D Memorial University, Thompson, 2009
- Dr. Ilias Md. Mahmud, Ph.D Memorial University, Zhao, 2009
- Dr. Mark Staveley, Ph.D Memorial University, Poirier, 2009
- Dr. Csaba Szakacs, Ph.D Memorial University, Mezey, 2009
- Dr. Geert Van Biesen, Ph.D. Memorial University, Bottaro, 2008
- Dr. Mohammad S. Islam, Ph.D. Memorial University, Poirier, 2008
- **Dr. Clement Poon, Ph.D., University of Ottawa, Mayer, 2008**
- Dr. Mansour Almatarneh, Ph.D., Memorial University, Poirier, 2007
- Dr. Samuel Muago, Ph.D., Memorial University, Bottaro, 2007
- Mr. Ross McColloch, M.Sc, University of Waterloo, Karanossios, 2005
- Mr. Bob McPhail, M.Sc., University of Waterloo, Sloan, 2005

Teaching Activities

Courses Taught

Department of Chemistry, Memorial University

- General Chemistry II (CHEM 1051)
  2000 students in 15 offerings from 2006-2024.

- General Chemistry I (CHEM 1050)
  More than 2700 students taught in 15 offerings of this course from 2005 to 2023.

- Introductory Chemistry (CHEM 1010) – Prepares students for university level chemistry
  Almost 700 students in three offerings from 2012 to 2014.

- Molecular Spectroscopy (CHEM 4350/6305)
  Winter 2012: 12 Students

- Physical Chemistry II (CHEM 3301)
  Winter 2010: 18 students

- Thermodynamics and Kinetics (CHEM 2301)
  Designed the course. More than 200 students in three offerings from Fall 2009 to 2012.

- Advanced Chemical Kinetics and Dynamics (CHEM 6399 and CHEM 4350)
  12 students in 4 offerings.

Department of Chemistry, Laurier University

- Introductory/Fundamentals of Chemistry (CH110/120) and Chemical Kinetics and Equilibrium (CH111/121),
  600 students in four offerings from 2003-2005.
  .

Department of Chemistry, University of Waterloo

- Mass Spectrometry/Gas Phase Ion Chemistry (CHEM 421)
  120 students in 6 offerings from 2001-2005.

- Chemical Reactions, Equilibria and Kinetics (CHEM 123)
  Winter 2000: 190 students

Department of Chemistry Trent University
- Introductory Chemistry and Biochemistry (CE 113a and 133b).
  Winter 1996: 230 students, Fall 1995: 200 Students

Other Activities

Program Reviews

- University of Ontario Institute of Technology, Review of Chemistry BSc Program, February 2019

Conference Organization

- General Physical and Theoretical Chemistry Session – CSC 2019, Quebec City, Quebec
- General Physical and Theoretical Chemistry Session – CSC 2018, Edmonton, Alberta
- Scientific Committee - Physical and Biophysical Session Organizer/Chair - International Mass Spectrometry Conference, 2015 in Toronto, Ontario
- Physical and Biophysical Mass Spectrometry Symposium – CSC 2012, Calgary, Alberta
- Annual Trent Conference In Mass Spectrometry (2003-2019), Co-Organizer (With Paul Mayer, University of Ottawa). Website: https://www.faculty.mun.ca/tfridgen/TCMS/TCMS.php
- Atlantic Theoretical Chemistry Symposium held in St. John's, NL, August 2-4, 2007. Website:

Service Contributions to Scientific Community

- **2018 Chemistry NSERC RTI Evaluation Group**
- **2017 Chemistry NSERC RTI Evaluation Group**
- **2016 Chemistry NSERC RTI Evaluation Group**
- **2014 Chemistry NSERC RTI Evaluation Group**
- **2007 - 2013. Editor of Matrix Isolation Digest by Electronic medium (MIDE)** and a website for matrix isolation spectroscopy. This was an international publication which is sent out monthly and has over 350 subscribers across the world.

Review Work for Scientific Community

- On average 10 papers reviewed per year
- Reviewed dozens of grants for NSERC DG, Petroleum Research fund and National Science foundation.

University/Departmental Service Work (prior to becoming associate dean in 2018)

Memorial University of Newfoundland

- Department Search Committee for Term Appointments (2015)
- Senate Committee on Undergraduate Studies (2014-2020)
- Senate (2014-2018)
- Analytical Chemistry Tenure-Track Search Committee (2011)

- Chair, Computational Theoretical Chemistry Tenure-Track Search Committee (2010/2011)
- Chemistry CIC Accreditation Committee (2010/2011)
- Chemistry Promotions and Tenure Committee (2010/2011)
- Chemistry Graduate Studies Committee (2009-2015)
- Departmental Search Committee (2009/2010)
- London International Youth Science Forum Award Selection Committee (2009, 2014)
- Coordinator Fourth-Year Research (CHEM 490 A/B) (2009 - 2012)
- Chair of the ACEnet local user's group (2008- 2011)
- Committee to Standardize Clickers at MUN (2008-2009)
- Clickers Pedagogy and Technology Committee (2006-2007)
- Classroom Instructional Support Advisory Committee (2006-2011)
- Dean's Advisory Committee to Select Associate Dean of Science, Undergraduate and Administration (2006)
- Dean's Advisory Committee to Select Associate Dean of Science, Research (2006)
- Chemistry Undergraduate Studies Committee (2006-2015)

Wilfrid Laurier University

- Graduate Officer/Advisor (2004-2005)
- Science and Technology Endowment Program Faculty Advisor (2004-2005)
- Faculty Advisor for the Canadian Chemical Society Student Chapter (2003-2005)
- Co-ordinator of Fourth-Year Research (Chem 490) (2003-2005)
- First-Year Chemistry Coordinator (2003-2005)

University of Waterloo

- Organization of the Departmental Chemical Physics Seminar Series (2000-03)

Trent University

- Special Appeals Committee (1996-98)
- Departmental Advisor to the Chemistry Undergraduate Society (1997-99)
- Trent University Chemistry Departmental Committee (1995-99)
  - Secretary/Treasurer of the Peterborough Local Section of the Chemical Institute of Canada (1997- 99)
- Organization of the Trent Chemistry Departmental Seminar Series (1997-98)
- Chemistry Chair Search Committee (1998)
- Chair Search Committee for Trent/Queen's Graduate Program (1997)
- Trent/Queen's Representative on Trent Graduate Association (1995-96)