FACILITIES

Core Research Equipment and Instrument Training Network (CREAIT)

www.mun.ca/creait/home/
A Pan-university Core Research Equipment and Instrument Training Network is designed to enhance access to and utilization of major research equipment.
Computational Facilities are provided through The Atlantic Computational Excellence Network (ACEnet; www.cvc.mun.ca/) and Memorial's Computing, Simulation and Landmark Visualization Facility www.mun.ca/creait/CSLV/

Chemical Dynamics Laboratory for Fast Kinetics Research. The facility includes a Photon Technology International (PTI) Quantamaster 6000 emission spectrometer for steady state emission and excitation measurements as well as a PTI laser subsystem capable of measuring sub-nanosecond emission lifetimes.
Nuclear Magnetic Resonance. 600MHz and 500MHz Bruker Avance instruments are user run with training provided by research assistants.
Separation Science and Mass Spectrometry. Students have full access to gas (GC), liquid (LC), and ion chromatograpy, capillary zone electrophoresis, as well as the GC-MS, LC-MS, MALDI-TOF and tandem mass spectrometry facilities of the Centre for Chemical Analysis (www.mun.ca/creait/c-cart).
X-Ray Crystallography. The XRD facility is equipped with a AFC8-Saturn 70 single crystal x-ray diffractometer from Rigaku/MSC, equipped with a low temperature system, and Crystalclear software for data collection and processing. www.mun.ca/creait/c-cart/x-ray.php
Magnetic Studies. A room temperature Faraday magnetometer and a Quantum Design MPMS5S DC/AC SQUID magnetometer (1.8-400 K), with continuous low temperature attachment, are available for use by graduate students.
Materials Characterization. The MicroAnalysis Facility (www.mun.ca/creait/maf/) includes mass spectrometers, electron microscopes, and electron and laser microprobes.

FINANCIAL SUPPORT AND FEES

Stipends are maintained at competitive levels (e.g. $21,000 pa. for qualified PhD students), while tuition fees are among the lowest in Canada. There are no application forms for financial support; all students are automatically considered. Eligible students are encouraged to apply for other appropriate awards, such as those listed below. Memorial University provides a $3,000 annual supplement to chemistry students holding NSERC or other major external awards, and students can further supplement these awards with a graduate assistantship.
Natural Science and Engineering Research Council of Canada Awards. Students who are Canadian citizens or permanent residents with one year residency may apply for NSERC scholarships while studying in the department.
A.G. Hatcher Scholarships. A.G. Hatcher scholarships are awarded to Graduate students each year on a competitive basis. Eligible students are nominated by their supervisors.
Career Development Awards. Graduate students are eligible to apply for financial support from the Department of Career Development and Advanced Studies to pursue specific offshore-related projects.

APPLICATION PROCEDURES

Applications are accepted at any time and may be submitted via the internet at: www.mun.ca/sgs

Application forms may also be obtained by contacting:

Graduate Officer
Department of Chemistry
Memorial University of Newfoundland
St. John's, Newfoundland
CANADA A1B 3X7
Phone: (709) 737 8773
Fax: (709) 737 3702
gradchem@mun.ca
www.chem.mun.ca/
www.mun.ca/sgs

Applicants are encouraged to correspond directly with prospective supervisors.

School of Graduate Studies

MEMORIAL UNIVERSITY

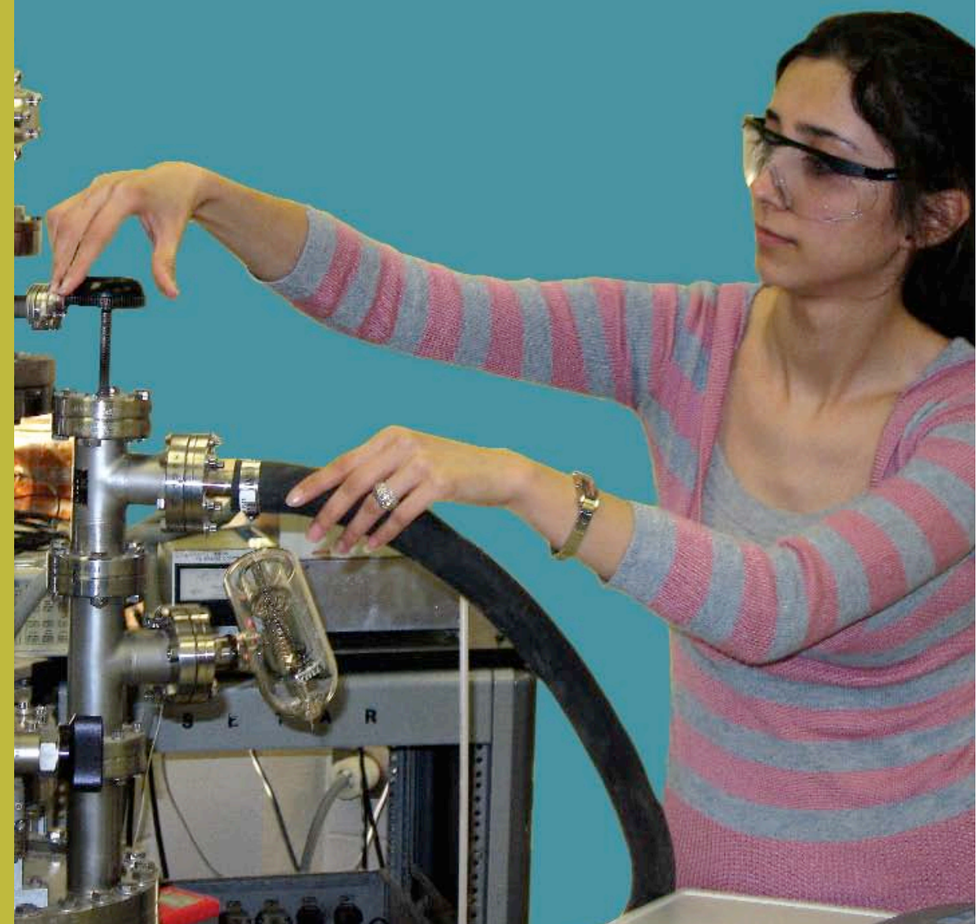
GRADUATE STUDIES AND RESEARCH IN CHEMISTRY

MEMORIAL UNIVERSITY

School of Graduate Studies

Memorial University provides outstanding opportunities for postgraduate study in pure and applied chemistry. Join a cutting-edge research program in:

- Advanced materials for emerging high technology applications
- Analytical, Marine and Environmental Chemistry
- Green Chemistry
- Inorganic and Organic Synthesis
- Physical, Theoretical and Computational Chemistry



GRADUATE PROGRAMS IN CHEMISTRY

The degrees of master of science (M.Sc.) and doctor of philosophy (PhD) are offered on a full-time or part-time basis. The department also participates in interdisciplinary master's programs in environmental science and computational science. The M.Sc. and PhD programs of study consist of courses and research work, and require the submission of a thesis describing the results of original research.

RESEARCH GROUPS

Theoretical and Computational Chemistry

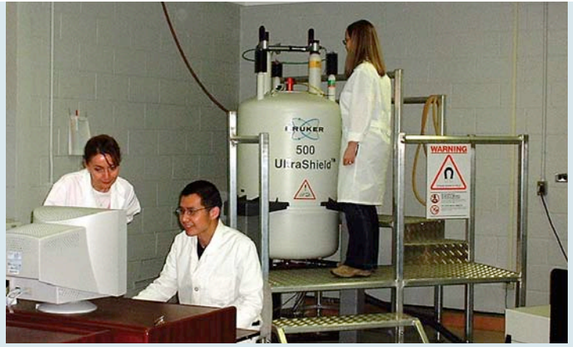
Paul G. Mezey (Canada Research Chair), pmezey@mun.ca
Molecular modelling and simulation; a "Computational Window on the Molecular World", macromolecular and supramolecular quantum chemistry, ab initio quality simulation of protein folding, molecular shape analysis, molecular art.
www.chem.mun.ca/zfac/pm.php

Raymond A. Poirier rpoirier@mun.ca
Theoretical and computational chemistry / computational science. Selectivity/reactivity; reaction mechanism; algorithm design; software design; high performance computing; databases.
www.chem.mun.ca/zfac/rap.php

Analytical, Marine and Environmental Chemistry

Christina S. Bottaro cbottaro@mun.ca
Analytical chemistry; environmental chemistry; instrumental analysis, aquatic pollutants. Current research involves the identification of novel compounds in aquatic environments and development of new analytical methods for trace analysis, with a focus which use capillary electrophoresis and micellar electrokinetic chromatography (MEKC).
www.chem.mun.ca/zfac/cb.php

Robert J. Helleur rhelleur@mun.ca
Environmental and marine chemistry. Mass spectrometry instrumentation. Development of rapid chemical profiling techniques in complex biomaterials. Green chemistry: Utilization of marine biopolymers and lipids. www.chem.mun.ca/zfac/rjh.php



Niall J. Gogan ngogan@mun.ca
Environmental and marine chemistry; analytical chemistry.
Research interests include: chemical speciation of trace metals in the aquatic environment, development and improvement of analytical methods, and origins and fate of trace metals in the environment.
http://www.chem.mun.ca/zfac/njg.php

Christopher C. Parrish cparrish@mun.ca
Marine lipid chemistry.
Current projects include: production, transport, fate and effects of hydrophobic organic matter in food webs; molecular signatures (biomarkers) of bacteria, algae, terrestrial plants and pollution; essential fatty acids and environmental impacts of aquaculture; analytical chromatography and continuous flow colorimetry.
http://www.ucs.mun.ca/~cparrish/

Inorganic and Materials Chemistry.

Francesca M. Kerton fkerton@mun.ca
Green Chemistry, Catalysis, Inorganic Chemistry. Research focuses on solvent replacement and renewable feedstocks. High-throughput methods, that allow several experiments to be run simultaneously, are used where possible for syntheses and catalytic screening.
www.chem.mun.ca/zfac/fmk.php

Christopher M. Kozak ckozak@mun.ca
Inorganic, Organic, Organometallics, Green Chemistry.
Research focuses on the synthesis of organometallic complexes and new catalysts, and the exploration of new, "green" routes to synthesis. The processes being studied include aerobic oxidation, C-C bond formation, C-X and C-H bond activation, and small molecule activation (including carbon dioxide and dinitrogen).
www.chem.mun.ca/zfac/cmk.php

Erika Merschrod erika@mun.ca
Biomaterials, Biophysical Chemistry. Research focuses on composite, bio-inorganic materials: their formation, their structure on the nano-to-mesoscale, and their bioactivity. In addition to materials preparation and characterization, we are also active in developing functional biomedical and analytical devices or platforms based on our materials.
www.chem.mun.ca/zfac/em.php

Peter G. Pickup ppickup@mun.ca
Materials chemistry; electrochemistry; fuel cells. Current research involves the development of novel materials for applications in electrocatalysis, microelectronics and energy technology, and fundamental studies of the properties of these materials.
www.chem.mun.ca/zfac/pgp.php

David W. Thompson dthompso@mun.ca
Chemistry of excited states.
Current research is focused on photoinduced energy, electron transfer, proton-coupled electron transfer, and proton transfer processes in transition metal complexes, supramolecular assemblies, bichromophoric donor-acceptor assemblies and photoinduced interfacial electron transfer in nanoscale semi-conductor assemblies.
www.chem.mun.ca/zfac/dwt.php

Laurence K. Thompson lthomp@mun.ca
Supramolecular co-ordination complexes, molecular magnets, self-assembled high nuclearity grids and clusters. Novel polynuclear complexes are being developed using self-assembly strategies, where pre-programmed coordination elements are built into the ligands. These systems are being applied to surfaces as potential molecular devices for switching and information storage.
www.chem.mun.ca/zfac/lkt.php

Organic Synthesis.

Graham J. Bodwell gbodwell@mun.ca
Organic synthesis, methodology and structure. The synthesis and study of cyclophanes and nonplanar polycyclic aromatic compounds. New methods for cyclophane synthesis. Cyclophanes in natural products synthesis. Inverse electron demand Diels-Alder reactions and their application in the synthesis of natural products. The synthesis of designed molecules with novel electronic and photophysical properties.
www.chem.mun.ca/zfac/gjb.php

Paris E. Georghiou parisg@mun.ca
Calixnaphthalenes.
Research is currently focussed on developing general synthetically useful routes to calix[4]naphthalenes and other related cyclic molecules, for their supramolecular properties. Synthetic studies on bisbenzyltetrahydro isoquinoline alkaloids.
www.chem.mun.ca/zfac/peg.php

Sunil V. Pansare spansare@mun.ca
Asymmetric organic synthesis, asymmetric catalysis, multicomponent reactions and combinatorial chemistry. Research focuses on the development of new organocatalysts, enantioselective synthesis of peptide isosteres, hydroxy acids and hydroxy butyrolactones, asymmetric diazocarbonyl insertion reactions, multicomponent reactions and the design of novel scaffolds for diversity oriented synthesis.
http://www.chem.mun.ca/zfac/svp.php

Yuming Zhao yuming@mun.ca
Fullerenes, nanotubes and polymer chemistry.
Rational designs and iterative syntheses of electro- and photoactive conjugated polymers. Development of efficient synthetic methodologies for carbon-rich macromolecules. Investigations of photophysical, optoelectronic and nonlinear optical properties of these novel organic materials, and exploration of their application in nanotechnology.
www.chem.mun.ca/zfac/yz.php

Experimental Physical Chemistry.

Travis D. Fridgen tfridgen@mun.ca
Kinetics, Thermochemistry and Spectroscopy of Ions. We are interested in determining the structures of ionic clusters such as proton- or metal cation-bound dimers of amino acids and DNA bases. We aim to characterize the effects of intermolecular hydrogen bonding on ion structure. We are also working towards an understanding of the effect of solvent on the structures and chemistry of biologically relevant ions. We use a combination of FTICR mass spectrometry, tunable infrared lasers, cryogenic matrix isolation spectroscopy and computational methods.
www.chem.mun.ca/zfac/tdf.php