UNB
EST. 1785
UNIVERSITY OF NEW BRUNSWICK
Research

Faculty of Science

OVERVIEW

Established in 1785, the University of New Brunswick's (UNB) Faculty of Science is the most comprehensive science faculty in New Brunswick. Its faculty members enjoy solid links with the community, government, public and private sector organizations and national/international institutions.

RESEARCH CAPABILITIES

Biology

- Aquatic Ecosystem Science
- Aquaculture Science and Biotechnology
- Biodiversity
- Conservation Science
- Evolutionary Biology
- Molecular, Cell and Developmental Biology, Biochemistry

Chemistry

- Medicinal Chemistry
- Material Science
- Theoretical and Computational Chemistry
- Natural Products Isolation and Synthesis
- Molecular Spectroscopy
- Rechargeable Organic Batteries
- Molecular Switches

Mathematics and Statistics

- Algebraic Combinatorics and Geometry
- Applied Statistics
- Dynamical Systems and Mathematical Biology
- Mathematical Physics
- Operator Theory and Non-commutative Geometry

Physics

- Atomic and Molecular Laser Spectroscopy
- Quantum Mechanics of Atoms and Molecules
- Experimental Spectroscopy
- Magnetic Resonance Imaging (MRI)
- MRI Methods Development
- Application of Magnetic Resonance to Problems in Materials Science
- Atmospheric and Space Physics
- Plasma Behaviour
- Polar Network of GPS and Ionosondes
- Observation and Modeling of the Middle Atmosphere

Earth Sciences

- Hydrogeology and Environmental Geochemistry
- Sedimentology and Petroleum Geology
- Geology and Geochemistry of Ore Deposits
- Uranium-lead Geochronology
- Volcanology
- Planetary Geology
- Rock Physics

MAJOR PROJECTS

New Generation Organic Batteries

Researcher(s): Dr. C. Adam Dyker

Solving key challenges in the area of developing new organic batteries that can be used as an alternate energy storage or supply source.

Space and Atmospheric Physics

Researcher(s): Dr. William Ward

Observing and interpreting dynamical features in planetary atmospheres with an emphasis on the terrestrial middle and upper atmosphere.

Insect Pest Management Using Green Technologies
Researcher(s): Dr. David MaGee
Developing the correct pheromone blend that can be used to monitor the presence of invasive insects.

Evaluation of Impact-resistant Materials for Aerospace and Defence Applications
Researcher(s): Dr. John Spray
Analyzing how certain materials used in aerospace and defence behave when subjected to shock waves and extreme deformation from high speed impacts.

Tools to Detect Hydrocarbons
Researcher(s): Dr. Bruce Balcom
Developing hardware, software and MRI measurement tools to enhance the detection and extraction of hydrocarbons, including oil, gas, shale oil and gas from unconventional and marginal reservoirs.

FACILITIES

MRI Research Centre
Inventing and successfully applying new magnetic resonance imaging methods.

Planetary and Space Science Centre
One of 17 worldwide NASA-designated facilities providing imagery, maps and data from NASA-led space missions. Studying impact cratering, planetary materials and landforms, frictional melting, shock metamorphism and sub/super/hyper-sonic impact damage and mitigation.

Canadian Rivers Institute
Developing the aquatic science required to understand, protect and sustain water sources for the region, nation and the planet.

Centre for Environmental and Molecular Algal Research
Investigating macroalgal and microalgal species.

Microscopy and Microanalysis Facility
Providing imaging and analytical services and training related to microscopy, microanalysis and x-ray analysis to universities, government and industry.

Centre for Laser, Atomic and Molecular Sciences
Combining the expertise and facilities of all the theoretical and experimental spectroscopy groups in the Physics and Chemistry departments.

Applied Statistics Centre
Assisting with data analysis, experimental design and other uses of statistical methodology.

For more information please visit: www.unb.ca/fredericton/science/