

CHEMISTRY



CONTACT DETAILS

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INTRODUCTION

All staff in the Department of Chemistry are pleased to discuss their research interests. Prospective students should contact those lecturers who work in an area of interest.

Areas of research include:

- » Bioorganic chemistry
- » Biomaterials
- » Carbohydrate chemistry
- » Colloid chemistry
- » Electrochemistry
- » Environmental chemistry
- » Geochemistry
- » High-field NMR spectroscopy
- » Mass spectrometry
- » Natural products chemistry
- » Organometallic chemistry
- » Physical chemistry
- » Polymers in materials chemistry
- » Prodrug chemistry
- » Theoretical chemistry.

Sometimes staff may have student scholarships associated with grants obtained as part of their research and so it is worthwhile asking about these opportunities. Contact the chairperson of the department who will have an overall knowledge of such opportunities for students.

In the Tertiary Education Commission's 2006 Performance-Based Research Fund evaluations, Waikato University was ranked first in New Zealand for the quality of its research in chemistry.

ACADEMIC STAFF

Associate Professor Marilyn Manley-Harris – Chairperson

BSc(Hons) *James Cook*, PhD *Montana*

Email: manleyha@waikato.ac.nz

Research interests: Carbohydrate chemistry; kinetics of reactions occurring during thermal treatments of sucrose and inulin; compositions of caramels; influence of dietary oligosaccharides upon intestinal microflora; NMR spectroscopy and mass spectrometry of carbohydrates; carbohydrates in NZ honey and honeydew; flavonoids in honey; antioxidants in wine; polysaccharides in seeds of NZ native plants; bioactive steroid derivatives; sapogenins in NZ flora; and herbicide residues.

Professor Bill Henderson

BSc(Hons), PhD *Leicester*, FNZIC

Email: w.henderson@waikato.ac.nz

Research interests: Co-ordination and organometallic chemistry of platinum metals and gold; synthesis and applications of new organophosphorus compounds; and electrospray mass spectrometry.

Associate Professor Chris Hendy

MSc, PhD *Victoria*, MNZIC

Email: chendy@waikato.ac.nz

Research interests: Geochemistry and environmental chemistry of processes at the Earth's surface in New Zealand and Antarctica; palaeoclimate studies; geochronology; abundance of natural isotopes; palaeolimnology; and environmental chemistry.

Associate Professor Alan Langdon

BSc, MSc, PhD *Victoria*, FNZIC

Email: a.langdon@waikato.ac.nz

Research interests: Chemical, energy, environmental technology, and the management of technological innovation and treatment of water and wastes. Physical chemistry including aspects of colloid and surface chemistry, solid state chemistry and the physical chemistry of environmental and technological problems.

Dr Joseph Lane

BSc(Hons), PhD *Otago* MNZIC

Email: j.lane@waikato.ac.nz

Research interests: The application of computational chemistry methods to predict/interpret various aspects of chemistry. Primarily interested in modelling small atmospherically relevant molecules and nanoporous inorganic materials for carbon dioxide capture.

Dr Michael Mucalo

MSc, PhD *Auckland*, FNZIC

Email: m.mucalo@waikato.ac.nz

Research interests: Biomaterials; dairy chemistry; polymers in materials chemistry; drug delivery; preparation and properties of nanoparticles; and spectroelectrochemistry.

Professor Brian Nicholson

BSc(Hons), PhD *Otago*, FNZIC

Email: b.nicholson@waikato.ac.nz

Research interests: Organometallic and inorganic chemistry; metal carbonyl chemistry; X-ray crystallography; and electrospray mass spectrometry.

Dr Michèle R Prinsep

BSc(Hons), PhD *Canterbury*, MNZIC

Email: michele@waikato.ac.nz

Research interests: Natural products chemistry, especially that of bryozoans and cyanobacteria (blue-green algae); structural determination of novel biologically active compounds using high-field NMR spectroscopy and mass spectrometry; structure-activity relationships; and chemical ecology of marine organisms.

Dr Graham Saunders

BA(Hons), MA, DPhil *Oxon*, MNZIC

Email: g.saunder@waikato.ac.nz

Research interests: Using the properties of the carbon-fluorine bond in organometallic chemistry and for highly repellent surfaces. Fluorinated ligands, especially phosphines and N-heterocycle stabilised carbenes in transition metal chemistry; catalysis; utilising C-F bond fission in synthesis; and extremely hydrophobic surfaces.

Professor Alistair Wilkins

BSc(Hons), PhD *Otago*, FNZIC

Email: a.wilkins@waikato.ac.nz

Research interests: The isolation and structural elucidation of natural products and mycotoxins, using high resolution IR, NMR, GC and GC/MS studies; organic environmental chemistry; honey chemistry; and saponin metabolism in some animal diseases.

PAPERS

CHEM511-12A (HAM) – Advanced Biological Organic Chemistry

15 Points

An advanced study of mechanisms and synthesis in carbohydrate chemistry. Protein structure and function with a particular emphasis on enzymes and enzyme catalysis.

Convenor(s): Associate Professor Marilyn Manley-Harris
Prerequisite(s): CHEM301
Restriction(s): CHEM501
Assessment: Internal assessment/examination ratio: 0 : 1

CHEM512-12A (HAM) – Surface and Nano Systems

15 Points

An advanced study of surface and nano systems, their applications and the physical methods used to study them.

Convenor(s): Associate Professor Alan Langdon
Prerequisite(s): CHEM302 or equivalent
Restriction(s): CHEM502
Assessment: Internal assessment/examination ratio: 1 : 4

CHEM513-12A (HAM) – Organometallic Chemistry and Catalysis

15 Points

An advanced study of organometallic chemistry.

Convenor(s): Professor Brian Nicholson
Prerequisite(s): CHEM303
Restriction(s): CHEM503
Assessment: Internal assessment/examination ratio: 0 : 1

CHEM514-12A (HAM) – Special Topics in Chemistry A

15 Points

An advanced study of topics relating to staff members' areas of research expertise, which may include organic, inorganic, physical, analytical or environmental themes.

Convenor(s): Dr Graham Saunders
Prerequisite(s): Normally any 3 of CHEM301, CHEM302, CHEM303 and CHEM306
Restriction(s): CHEM504
Assessment: Internal assessment/examination ratio: 0 : 1

CHEM516-12A (HAM) – Isotope Geochemistry*15 Points*

An advanced study of the theory, applications and practice of isotope geochemistry.

Convenor(s): Associate Professor Chris Hendy
 Prerequisite(s): CHEM261
 Restriction(s): CHEM561
 Assessment: Internal assessment/examination ratio: 3 : 7

CHEM517-12A (HAM) – Applied and Environmental Analytical Chemistry A*15 Points*

With special reference to the commercial context, a critical examination of analytical methodologies for organic substances, eg pesticides.

Convenor(s): Dr Michèle Prinsep
 Prerequisite(s): CHEM204, CHEM306
 Restriction(s): CHEM507
 Assessment: Internal assessment/examination ratio: 0 : 1

CHEM521-12B (HAM) – Advanced Organic Chemistry*15 Points*

An advanced study of selected topics in organic chemistry. These topics may include mechanism, synthesis and natural product chemistry.

Convenor(s): Dr Michèle Prinsep
 Prerequisite(s): CHEM301
 Restriction(s): CHEM501
 Assessment: Internal assessment/examination ratio: 0 : 1

CHEM522-12B (HAM) – Computational Chemistry*15 Points*

A practical introduction to modern computational chemistry.

Convenor(s): Dr Joseph Lane
 Prerequisite(s): CHEM101 and CHEM102. CHEM302 is recommended but not essential.
 Restriction(s): CHEM502
 Assessment: Internal assessment/examination ratio: 1 : 0

PAPERS

CHEM523-12B (HAM) – Inorganic Materials Chemistry

15 Points

A study of inorganic materials.

Convenor(s): Professor Bill Henderson

Prerequisite(s): CHEM303

Restriction(s): CHEM503

Assessment: Internal assessment/examination ratio: 0 : 1

CHEM524-12B (HAM) – Special Topics in Chemistry B

15 Points

An advanced study of topics relating to staff members' areas of research expertise, which may include organic, inorganic, physical, analytical or environmental themes.

Convenor(s): Professor Alistair Wilkins

Prerequisite(s): Normally any 3 of CHEM301, CHEM302, CHEM303 and CHEM306

Restriction(s): CHEM504

Assessment: Internal assessment/examination ratio: 0 : 1

CHEM527-12B (HAM) – Applied and Environmental Analytical Chemistry B

15 Points

An advanced study of instrumental analytical techniques for organic and inorganic compounds and comparison of their efficacies.

Convenor(s): Professor Alistair Wilkins

Prerequisite(s): CHEM204, CHEM306, or an equivalent external course

Restriction(s): CHEM507

Assessment: Internal assessment/examination ratio: 0 : 1

CHEM590-12C/D (HAM) – Directed Study

30 Points

Convenor(s): To be advised

Assessment: Internal assessment/examination ratio: 1 : 0

Dissertations and Theses for MSc and MSc(Tech)

POINTS	CODE	TITLE
30	CHEM591-12C (HAM)	Dissertation (1 paper)
60	CHEM592-12C (HAM)	Dissertation (2 papers)
90	CHEM593-12C (HAM)	Chemistry Thesis (3 papers)
120	CHEM594-12C (HAM)	Chemistry Thesis (4 papers)
150	CHEM595-12C (HAM)	Chemistry Thesis (5 papers)