

Chemistry

Provide solutions to today's problems



CHEMISTRY AT WAIKATO

Chemistry is the central science and is an integral part of the study required for biochemistry, environmental sciences, Earth sciences, biological sciences and more.

At the University of Waikato we pride ourselves on the quality and extent of the practical experience that our students receive while studying. As a result our graduates are sought after for both their hands-on bench and modern instrumentation skills and their theoretical excellence. Waikato chemistry graduates can expect to find employment in fields ranging from forensics to environmental monitoring.

Knowledge of basic chemical principles is important in all branches of science and for a wide range of industries. Better building materials and textiles, improved medical aids, new alloys, more productive agriculture, better environmental control – all rely on chemical expertise. The basic understanding of how substances are interrelated and transformed provides the framework upon which the other observational sciences are built.

The Faculty of Science & Engineering covers a wide range of specialist areas including the interface between chemistry and the other sciences, such as analytical chemistry, geochemistry, environmental chemistry, forensic science, industrial chemistry, materials chemistry and biochemistry. Chemistry forms a major growth area in modern science for both research and employment.



Chemistry students test the absorption of fast red dye on different fabrics during a second-year organic chemistry laboratory session.

AREAS OF STUDY

Analytical chemistry

A knowledge of analytical chemistry is essential in a variety of industries such as forensic and drug testing and quality assurance in the food and pharmaceuticals industries. The elevation of shot putter Valerie Adams from a silver medal to a gold medal in the London 2012 Olympic Games resulted from the work of a team of analytical chemists.

Environmental chemistry

Natural and human activities have a profound effect upon the environment, yet these effects can often only be detected by chemical methods. Environmental chemistry uses stringent analytical tests to obtain high quality data on which to base remediation efforts and prevention measures. Results are frequently used to inform public debate on topics such as nitrogen fluxes into inland waterways and air quality around coal shipment yards.

Inorganic chemistry

Inorganic chemistry is the chemistry of life and concerns the chemistry of all elements of the periodic table. The basic processes of life such as photosynthesis, respiration and an abundance of enzyme-catalysed reactions are underpinned by inorganic chemistry. It also provides the basis for solid state materials from soil to credit cards, for a range of medicinal compounds, and for industrially important catalysts, such as those used in the pharmaceutical industries.

Organic chemistry

Organic chemicals are the basis of all living organisms. The study of organic chemistry is vital to the understanding of living processes such as photosynthesis and respiration. In addition to molecules found in living organisms, a multitude of synthetic organic chemicals exist such as drugs, pharmaceuticals, detergents, plastics and other petroleum-derived products. Students will learn how these synthetic organic chemicals interact with the physical environment and living organisms and how their properties affect their function.

Physical chemistry

The theoretical and experimental concepts of physical chemistry underpin all areas of pure and applied chemistry. Physical chemistry develops rigorous and detailed explanations of the central, unifying concepts in chemistry and seeks to answer why molecules behave in a particular way and makes quantitative predictions using mathematical models.

CONTACT US

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Post-doctoral researcher Dr Hilary Nath and Associate Professor Alan Langdon have discovered an innovative method for treating bore water on Waikato farms. The low-cost solution has the potential to be used in developing countries where many people have limited access to clean and affordable water.

CAREER PATHS



Chemistry graduate Stefan Smith is a carbon capture chemist at Abershaw Power Station in Wales.

Careers

- Agriculture
- Biochemistry
- Biosecurity
- Biotechnology
- Brewing
- Chemical technology
- Conservation
- Dentistry
- Engineering
- Environmental science
- Food and dairy
- Food technology
- Forensic science
- Forestry
- Marine studies
- Material science
- Medicine
- Microbiology
- Pharmaceuticals
- Pharmacy
- Pyrotechnics



THE UNIVERSITY OF
WAIKATO
Te Whare Wānanga o Waikato

BOLD IDEAS. SMART PEOPLE.
UNLIMITED AMBITION.

WHAKAARO PŪKENGĀ. HINENGARO KOI.
PITO MATA MUTUNGA KORE.

The University of Waikato has agreed to observe and be bound by the Code of Practice for the Pastoral Care of International Students. Copies of the Code are available from the New Zealand Ministry of Education website at www.minedu.govt.nz/international. For further information on studying at Waikato as an international student, please refer to: <http://www.waikato.ac.nz/students/international/>

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