



School of Applied Sciences and Engineering

www.gippsland.monash.edu.au/science



MONASH University
Science

 GROUP OF EIGHT

About the school

The **School of Applied Sciences and Engineering (SASE)** is multi-disciplinary in its approach, with wide-ranging research and teaching expertise in chemistry, biochemistry, microbiology, mathematics and modelling, statistics, ecology, physiology, molecular biology, resource and environmental management, bioremediation, civil and environmental engineering and maintenance and reliability engineering.



The SASE was established in its current form in 2004 from a merger between the School of Applied Sciences and the School of Engineering at Gippsland campus; further extending the potential for collaborative research. The School currently has 20 full-time academic staff, two postdoctoral fellows, five honorary research fellows and 11 technical, and six general staff. The School has a cohort of approximately 25 postgraduate students and an honours group.

Key research strengths

The School has four research strengths:

- Nanoscience and Sensor Technology
- Water Engineering
- Biodiversity in Production Landscapes
- Engineering Automation and Robotics

It also has major research activities in water quality assessment/monitoring, green chemistry

and sustainable energy using nanotechnology and nanomaterials, environmental monitoring and waste management, microbiological treatment of industrial waste, air quality and viral genetics. It hosts the Gippsland Regional Automation Centre (GRACe) and is actively involved in key industrial research activities with the Australian Sustainable Industry Research Centre (ASIRC) in water, wastewater and waste management.

Research facilities

The School has a range of facilities available for both internal and external research activities including, ICP-OES, AAS, HPLC, GC-MS, IC, FTIR, FIA, UV-Vis, potentiostats, galvanostats, and quadstats. In addition, the school has access through ASIRC to GC-MS/MS, TOC equipment, TGA, ICP-OES coupled with a VGA and TCLP. Access to SEM, TEM, AFM and NMR is available at our Clayton campus. There is a PC2 facility equipped for cell culture and molecular analysis.

Academic staff and their research interests

Professor Samuel Adeloju (Head of School)

Electrofabrication of composite and nanocomposite biosensors for clinical, environmental and industrial monitoring. Development of novel strategies for water quality assessment/monitoring and waste management. Trace electroanalysis and atomic spectroscopic analysis of heavy metals and metalloids.

Dr John Arkinstall

Geometric problem solving using algorithmic methods. Discrete mathematical methods. Combinatorics.

Mr Ray Beebe

Applications of condition monitoring, as related to business results in optimising maintenance, and with a particular interest in performance analysis and its benefits in improving energy efficiency.

Dr Phillip Brook-Carter

Molecular investigation into population dynamics of microbial biomass in environmental and industrial systems.

Dr Alistair Carr

Influences on the growth of cyanobacteria in the Gippsland Lakes. Undergraduate mathematics education.

Dr Walid Daoud

Applications of nanotechnology and nanomaterials in green chemistry and sustainable energy. Renewable membranes for filters, sensors, and energy generation and storage. Conductive polymers and ceramic oxides for photovoltaic devices. Surface functionalization of organic fibers. Development of biodegradable industrial polymers.

Dr Dushmanta Dutta

Hydrology, water resources engineering and management with the main focus on process-based distributed: hydrological modelling, urban water and waste water, water quality modelling, sediment dynamics, flood disaster risk management, climate change impacts on water resources, and applications of Remote Sensing and GIS in water resources.

Mr Peter Freeman

Exercise and health in the workplace. Teaching and learning of physiology.

Dr Alison Green

Water quality and physio-chemical remediation of water and wastewaters.

Dr Alan Howgrave-Graham

Science in business; applications and strategies for sustainable and regional development. Pathogens in water.

Associate Professor Yousef Ibrahim

Industrial Automation. Robotics and Mechatronics. Life cycle costs and maintenance engineering.

Associate Professor Mustafa Isreb

Workplace education, adaptive finite elements, automated synthesis, strategic modeling, simulation and risk assessment and management as applied to civil, mechanical, environmental and multidisciplinary research across disciplines and boundaries.

Mr Wayne Kirstine

Biogenic volatile organic compounds in the Environment.

Ms Jenny Mosse

Molecular virology; in particular studying the expression of negative sense genes in HIV-1, and investigating mechanisms of drug resistance in influenza viruses.

Mr Dilip Nag

Geo-environmental engineering studies related to engineering and mining industries.

Dr Barbie Panther

Indoor air quality of urban environments. Techniques of environmental analysis for environmental samples.

Associate Professor Antonio Patti

Structure, reactivity and uses of Natural Organic Matter (NOM), from soils, lignites, composts and other like sources. Applications of "green" catalytic processes that transform NOM and assist carbon sequestration in soil. Utilisation and transformation of biomass for producing chemical feed-stocks, fuel additives and soil amendments.

Dr Andrew Percy

Algebraic topology and the structure of primary cohomology operations, Algebraic modelling.

Dr Kirsten Schliephake

Degradation and decolourisation of industrial wastewaters using white-rot fungi and their extracellular enzyme systems. Enzyme technology and downstream processes. Solid waste management – composting.

Dr Wendy Wright

Restoration ecology and conservation of biodiversity, primarily in production environments (agricultural and silvicultural).

Find out more about the School of Applied Sciences and Engineering

Visit us on the web at

www.gippsland.monash.edu.au/science

Ask us a question

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Drop in and see us

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