

MONASH ENGINEERING

August 2019

Welcome to Monash Engineering eNews, a new way to keep up to date with the change-making impact of our education, research and partnerships. As part of our community, we hope this newsletter allows you to stay connected to our work and consider ways to contribute to our common goals. We need a diversity of people, ideas and experiences to deliver the best engineering education and research, and we value the contributions you make to our efforts now and into the future.

Our people have had a busy and successful 2019 so far, and we're delighted to share some of our many achievements with you. If you'd like to continue receiving future editions of our eNews, please sign up [here](#).

STUDENT EXPERIENCE

Co-operative Education Program

Equip your future workforce by offering our talented and motivated undergraduate students a 3, 6 or 12 month paid work opportunity, and play an active and influential role in shaping the future of engineering.



Nova Rover challenge success



The Nova Rover team achieved an incredible Top 10 placing in the 2019 University Rover Challenge, held at the Mars Desert Research Station in Utah. Watch the 9 News story capturing the team's progress throughout the challenge.

The future is driverless

Monash Motorsport has successfully designed, built and debuted Australia's first student-built, fully autonomous race car – the M19-D. More than three years in the making, the M19-D is competition-ready for the Formula Student driverless competition in Germany coming up in 2020. Watch the team testing it out on the demo track.



High Powered Rocketry

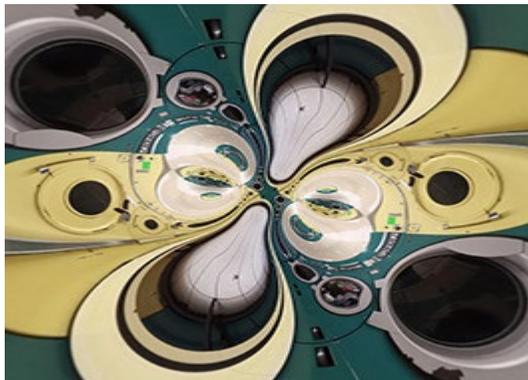
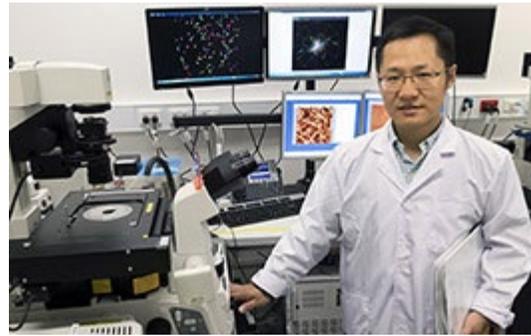
Our new student team Monash High Powered Rocketry capped off their inaugural season with an impressive second placing in the 30,000ft flight division at the Australian University Rocketry Competition.

RESEARCH IMPACT

Better disease sensors

Associate Professor Qiaoliang Bao's research into sensors that use new, more sensitive 2D materials to discover disease markers in the body led to an increase in detection of cancer-related molecules by up to 10,000 times, as published in *Nature*

Communications.



Flexible spintronic devices

Professor Chris McNeill and team's *Nature Physics* paper revealed a fundamental physics breakthrough that will further progress the development of next-generation flexible, wearable devices made with semiconducting polymers and powered by spintronics.

Clean water breakthrough

Professor Huanting Wang, Associate Professor Matthew Hill, Dr Huacheng Zhang and their international research collaborators established an unprecedented new method to filter contaminants from groundwater and industrial wastewater using Metal-Organic Frameworks, as published in *Nature Communications*.



New aluminium alloy method

Professor Christopher Hutchinson's *Science* paper determined an improved way to manufacture aluminium alloys, overturning 100 years of established practice and opening up new options for industry to test and develop new alloy manufacturing processes.

Sub-human cyclists

Dr Alexa Delbosc's research into driver perceptions of cyclists gained widespread international news coverage for its findings, including an article in the *New York Post*. Read more about the link between drivers' dehumanised perceptions of cyclists and their deliberate acts of aggression towards them on the road.



Solar-powered desalination

Professor Xiwan Zhang's team has developed energy-passive technology capable of delivering clean, potable water to thousands of communities, simply by using photothermal materials and the power of the sun.

ACL failure cause found

Sports fans take note - repetitive knee stress and lack of rest are major causes of anterior cruciate ligament failure, according to new research by Professor Mark Banaszak Holl and colleagues from the University of Michigan.



Lighter magnesium alloys

Published in *Nature Communications*, Professor Jianfeng Nie and colleagues discovered a technique and phenomenon that can be used for creating stronger, lightweight magnesium alloys that could improve structural integrity in the automobile and aerospace industries.

OUR PARTNERSHIPS

Woodside-Monash partnership

Woodside Energy and Monash University have joined forces to develop a state-of-the-art 'living laboratory' and a long-term research partnership to support Australia's low-carbon energy transition.



Cortical Frontiers funding

Professor Arthur Lowery, Director of the Monash Vision Group, and his team received \$1million in federal funding to develop wireless-connected electronic implants that sit on the surface of the brain, creating long-lasting brain-machine interfaces that help improve neural functioning.

SPARC Hub launch

Professor Jayantha Kodikara leads the new Smart Pavements Australia Research Collaboration (SPARC) Hub, a research platform for over 30 international investigators and 20 industry partners. SPARC Hub aims to make road, airport and dockyard pavements smart, low-cost, long-lasting, safe, green and adaptable to future transport demands.



Railway innovation MOU

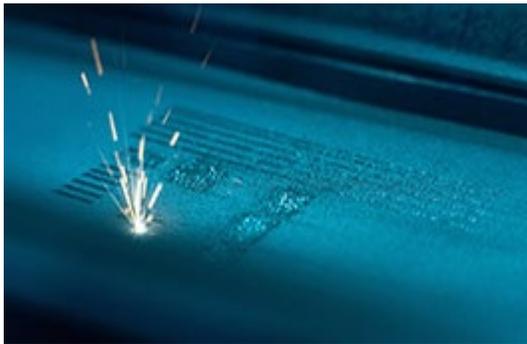
The International Union of Railways has signed a Memorandum of Understanding with the Institute of Railway Technology. The MOU will focus on collaboration in research and technology development, railway construction, operation and management, and education and skills development relevant to railways, bringing an Australian context to global railway advancement.

Building 4.0 bid

Monash University, Lendlease, The University of Melbourne and Donovan Group are leading a \$28 million funding bid for an initiative set to transform how buildings are manufactured in Australia.



DEAN'S UPDATE



New strategic plan

Read [Engineering Change](#), our new strategic plan outlining our ambition, commitments, goals and actions for the next five years. The plan was developed in close consultation with students, staff, alumni and industry.

Dean's Advisory Council

Meet the new Dean's Advisory Council, featuring distinguished alumni and esteemed members from across academia and industry. Sharing independent strategic guidance, the Council will strengthen our ability to deliver world-leading research, education and innovation in engineering.



ShanghaiRankings success

We're proud to rank #1 in Australia for Chemical Engineering, Materials Science and Engineering, Nanoscience and Nanotechnology, Energy Science and Engineering and Metallurgical



Engineering, according to the Academic Ranking of World Universities' (ARWU) ShanghaiRankings Global Ranking of Academic Subjects 2019.

Well above world standard

We're delighted to share that we've maintained our '5' ranking in the Australian Research Council's Excellence in Research in Australia (ERA) 2018 report, confirming the well above world standard performance of our researchers.



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