LOOKING EVER FORWARD

As Western Australia's largest and most internationally engaged university, CURTIN UNIVERSITY CONTINUES TO BUILD INFLUENTIAL RESEARCH COLLABORATIONS that strike a balance between demand-driven and researcher-driven research

Founded in 1966 during Australia's third mining boom, the Western Australian Institute of Technology embodied the spirit of industry collaboration and real-world endeavour. Within three decades, its impact on education and research saw it become a university. Named after Australia's 14th Prime Minister, Curtin University has embraced John Curtin's wisdom that a great university should look ever forward.

Today, Curtin University is Western Australia's largest and most culturally diverse university, ranked in the top 1% in the world by the Academic Ranking of World Universities. It has recently achieved top-100 status in several fields, including mineral and mining engineering, for which it ranked second in the QS World University Rankings in 2017 and 2018. The university has a global reach through its campuses in Malaysia, Singapore, Mauritius and Dubai.

Striking the right balance

Since its inception, Curtin University has aimed to strike a balance between research that meets industry demand and curiosity-driven research, an approach that is an integral part of the university's DNA. Critical to achieving this balance is the forging of strong partnerships between academia and industry. Under the umbrella of the Western Australia Energy Research Alliance, for example, Curtin University is collaborating with global companies (including Woodside Energy, Chevron and Shell Australia) to develop efficient exploration and recovery methods that minimize environmental impact. And its research strengths in theoretical physics, computer science and mathematics have led to valuable partnerships with NASA, Cisco, Optus and the Royal Australian Navy.

EMERGING TECHNOLOGIES ARE ESSENTIAL FOR DELIVERING RESEARCH OUTCOMES

In agriculture, recognizing the ever-increasing need to balance productivity with natural resource management, Curtin University has joined the Food Agility Cooperative Research Centre, a collaboration between 54 private businesses and universities that is applying spatial sciences and big data to drive digital innovation across farming and agriculture. The university also has the single largest partnership with the federally funded Grains Research and Development Corporation through its Centre for Crop and Disease Management, which researches fungicide resistance, molecular genetics and bioinformatics.

Exploring the skies

In recent years, Curtin University has partnered to drive rapid growth in planetary science and astronomy, the latter owing to its strengths in spatial sciences, theoretical physics, astrophysics and electrical engineering. The International Centre for Radio Astronomy Research (a joint venture between Curtin University, the University of Western Australia, and the Western Australian government) is paving the way for the world's most powerful radio telescope, the Square Kilometre Array, through the construction and operation of the Murchison Widefield Array and other precursor projects. These projects have proven significant in their own right, contributing to discoveries in galaxy evolution, black hole formation, and the accretion of the first structures in the Universe.

Curtin University's planetary science research team is also on the international radar, with their Desert Fireball Network — a network of autonomous observatories in remote Australia producing a vast catalogue of fireball trajectories, which will help researchers pinpoint the location of meteorites and understand their origin in the Solar System. A recent partnership with NASA's Solar System Exploration Research Virtual Institute has expanded the network's role to tracking objects other than meteorites, including the OSIRIS-REx spacecraft, as it streaked across the southern sky to acquire samples from the asteroid Bennu. Commercial applications are being developed in collaboration with Lockheed Martin for space situational awareness.

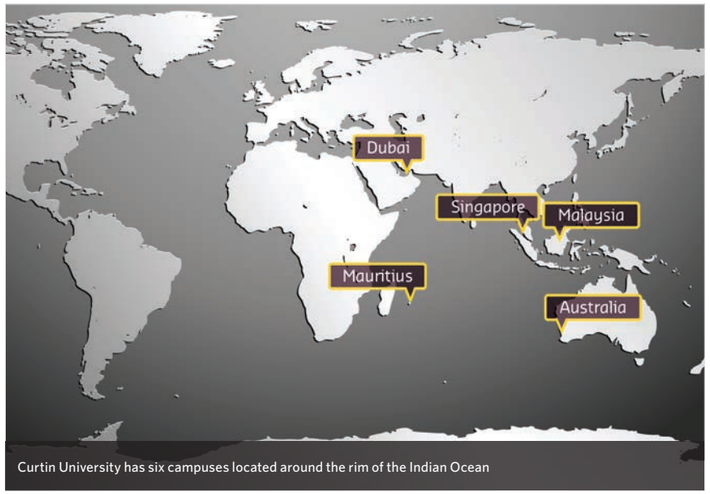
Employing emerging technologies

Emerging technologies are essential for delivering research outcomes. Curtin University is a world leader in geosciences, boasting one of the most advanced geological dating and characterization facilities in the world, the John de Laeter Centre. The Pawsey Supercomputing Centre supports the university's big-data projects, particularly those involving extensive simulation, data processing or data storage, while the Curtin Institute for Computation focuses on data analytics and new visualization and modeling methods. At Innovation Central Perth, Curtin University researchers collaborate with experts from Cisco, Woodside, Data61 and several government departments and small enterprises to find solutions for cloud platforms, adaptive networking, data analytics and the Internet of Things.

Technology and infrastructure availability is enabling fundamental research in biomedicine, applied research for new diagnostics and the development of tools to assist people with sensory processing challenges such as autism. Curtin University is participating in Western Australia's pioneering Data Linkage System and the national Population Health Research Network with the aim of bringing data-driven innovation to population health. The Curtin Health Innovation Research Institute focuses on the public health challenges of ageing populations and chronic conditions. Researchers are developing treatments for conditions including cardiovascular disease and neurological disorders, and are trialling interventions for age-associated cancers.

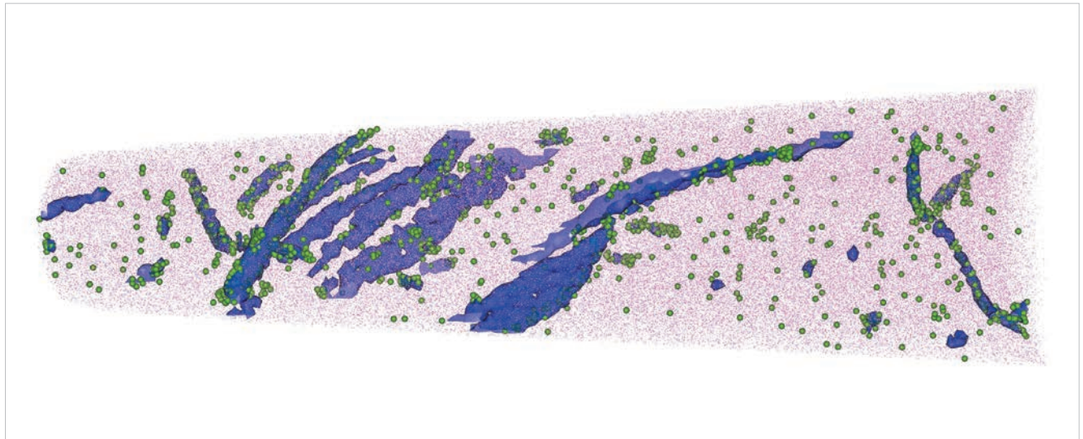
Looking forward

The university remains dedicated to its mantra, *make tomorrow better.* Initiatives to tackle future challenges include the Curtin Open Knowledge Initiative to explore the implications of open knowledge and access systems, and battery research to foster innovation and industry development in energy storage; the Future of Work Institute to prepare professionals for the careers of tomorrow; and the Western Australia Data Science Innovation Hub to coordinate and boost resource sector leadership in digital systems, processes and technologies. ■



Curtin University has six campuses located around the rim of the Indian Ocean

Using research to enhance agriculture is a major focus at Curtin University



Curtin's Geoscience Atom Probe is helping Earth and planetary scientists trace the geological history of our planet and the solar system. This nanoscale rendering shows elemental segregation in a meteorite.

Curtin University

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