ATSE

Australian Academy of
Technology & Engineering

New Fellows 2020

Elected by their peers, ATSE's 2020 new Fellows represent an extraordinary breadth of expertise across engineering, applied science and technology in Australia.

Richard Bolt PSM FTSE

Principal, Nous Group and Adjunct Professor of Energy Transformation, Swinburne University of Technology (VIC)

Richard Bolt is a climate policy expert who has helped devise major policies and programs for the energy industry.

He is a farsighted thinker with experience in a wide range of fields, including agriculture, earth resources, economic development, transport and education.

Mr Bolt has a vision of an emission-free world, and the technical know-how to get there. He has been a major supporter of the innovation of energy technologies that are affordable, reliable, and above all, compatible with a safe climate.

Mr Bolt's rich skills in clear communication, organisational leadership and policy analysis make him one of Australia's leading energy reformers.

Professor Vicki Chen FTSE

Executive Dean of Engineering, Architecture and IT, University of Queensland (QLD)

Professor Vicki Chen is a chemical engineer who is improving industrial processes and helping the fight against climate change by advancing membrane technology.

Her internationally-recognised research into membrane separation systems has led to new methods for purifying water and capturing carbon directly from the atmosphere.

A mentor, role model and leader in her field, Professor Chen has worked with industry, government and academia in areas ranging from environmental technologies to materials science.

Her prolific career of more than 25 years has culminated in her leadership role as Executive Dean at University of Queensland.

Professor Liang Cheng FTSE

Winthrop Professor, University of Western Australia (WA)

Professor Liang Cheng is a civil engineer whose research has significantly impacted industry practice, to ensure offshore pipelines and cables are designed and constructed with smaller environmental footprints.

He is an international authority on how water, seabeds and human-built structures interact. He has applied his expertise to help industry more effectively design and maintain a range of marine structures.

Professor Cheng has supported oil, gas and renewables companies to build key offshore infrastructure with less damage to the marine ecosystem.

He leads a productive research team on offshore fluid mechanics in Civil, Environmental and Mining Engineering at the University of Western Australia.

Adjunct Professor Trevor Danos AM FTSE

Chair, Northern Sydney Local Health District (NSW)

Trevor Danos is a lawyer, company director and strategic advisor supporting science and technology across society.

An effective science policy advocate, he has advanced STEM in industry, the government and the broader community.

Mr Danos is helping to create the world's largest radio telescope as a member of the Australia-New Zealand Coordination Committee for the Square Kilometre Array.

He is a director of Endeavour Energy, NSW Circular and Summer Housing, a former director of the Civil Aviation Safety Authority and TransGrid, and a former member of the Cooperative Research Centres Committee.

Mr Danos was made a Member of the Order of Australia in 2014 for his significant service to the community.

Professor Alice Clark FTSE

Deputy Director, Strategy Sustainable Minerals Institute, University of Queensland (NSW)

Professor Alice Clark is a geologist bringing strategic leadership to the minerals industry.

She is internationally known as a mining consultant for governments, universities and companies.

Professor Clark was the youngest and first woman chief geologist of Mount Isa Mines and led the company through a major expansion. She was also the first woman president of the industry's professional body, the AusIMM.

Her expertise and research spans exploration, geoscience, and mineral processing applications. She is passionate about developing new approaches to providing the minerals needed for a sustainable future.

Distinguished Professor Kingsley Dixon FTSE

John Curtin Distinguished Professor, Curtin University (WA)

Professor Kingsley Dixon is a biological scientist saving endangered native species and regenerating landscapes destroyed by bushfires and mining.

He is internationally acclaimed for his work in fire ecology, seed restoration, and threatened species research.

The holder of two patents, Professor Kingsley led the successful Kings Park Science team and was 2016 Western Australian Scientist of the Year.

He has also collaborated with traditional owners to turn former mine sites back into thriving habitats.

Professor Kingsley is a passionate advocate for protecting biodiversity and an effective science communicator through traditional and social media.

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Professor Renate Egan FTSE

Professor, University of New South Wales (NSW)

Professor Renate Egan is a photovoltaic engineer and innovator building a solar-powered Australia.

She has advanced the science, engineering and business of solar energy, materials and transfer for over 30 years. Professor Egan is also a successful entrepreneur and co-founded Solar Analytics, Australia's biggest independent energy monitoring provider.

Internationally recognised as a thought leader in her field, she holds senior leadership positions with companies and agencies around the world.

Professor Egan is passionate about accelerating the transition to renewable energy and mentoring the next generation of industry leaders.

Professor Elanor Huntington FTSE

Dean, College of Engineering and Computer Science, Australian National University (ACT)

Professor Elanor Huntington is a quantum physicist changing the way we think about engineering.

She has led historic breakthroughs in quantum computing, including proving that non-Gaussian light can be teleported: a light beam is teleported from one place to another through a process that destroys the light beam at one end and reassembles it perfectly at the other end. This technique can be applied to build the most powerful computers ever created.

Professor Huntington also has a radical vision of how engineering and computer science must change to meet the needs of the future, and is working to bring it about.

She is a passionate advocate for equality, and for integrating insights from the humanities into STEM fields to ensure they change society for the better.

A leading thinker in the field of quantum cybernetics, she has been appointed to many national boards and agencies.

Professor Sally Gras FTSE

Professor, University of Melbourne (VIC)

Professor Sally Gras is a biochemical engineer transforming the Australian dairy manufacturing industry.

An expert in translating laboratory research into industrial practice, she has helped pioneer the application of microscopy to industrial processes, improving product and process understanding and assisting companies to save millions of dollars

Professor Gras' internally-acclaimed research has developed and optimised industrial processes, reduced technical barriers and increased industry innovation and sustainability.

She is the Director of the ARC Dairy Innovation Hub and has influenced national science and technology policy.

Dr Steve Jefferies AO FTSE

Former Managing Director, Grains Research & Development Corporation and former CEO of Australian Grain Technologies Pty Ltd (ACT)

Dr Steve Jefferies is a grain-breeding expert who has contributed to transforming Australian grain production.

He has led cutting-edge research to bring revolutionary new varieties of wheat from the lab to the field to the oven.

The varieties of wheat developed and commercialised by Dr Jefferies and his team now dominate the Australian market, with more than 60% of Australian wheat production currently coming from varieties developed under his leadership. Since up to 70 per cent of Australian wheat is exported, Dr Jefferies' innovations are helping to feed the world.

Dr Jefferies was instrumental in establishing Australian Grain Technologies Pty Ltd, now Australia's largest and market-leading plant breeding and variety commercialisation company. Dr Jefferies was the inaugural CEO and led the company for its first 14 years.

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Stuart Khan FTSE

Professor, University of New South Wales (NSW)

Professor Stuart Khan is an environmental engineer and public health advocate improving water quality across Australia.

An outstanding innovator, he applies his leading water management expertise to help society in practical, creative ways.

Professor Khan's research on how water treatment processes deal with trace organic contaminants has led to better, safer water recycling.

He has worked with industry, government and academia in a wide range of influential projects and positions, and uses media to share scientific ideas with the wider public.

Professor Andre Luiten FTSE

Director, Institute for Photonics and Advanced Sensing, University of Adelaide (SA)

Professor Andre Luiten is a precision measurement expert and entrepreneur who invented the world's highest performing clock.

His breakthroughs in the fields of photonics and advanced sensors have delivered revolutionary applications for industries such as assisting in a major upgrade of the Jindalee Operational Radar Network, and improving the accuracy of global positioning systems, magnetic resonance imaging and optical fibre communications.

Professor Luiten has been recognised around the world for his skill and success in knowledge commercialisation. He is currently helping shape South Australia as a global hub for photonics, space and quantum innovation.

For his efforts, Professor Luiten has been awarded numerous awards and prizes over the years, including three prestigious Fellowships from the Australian Research Council.

Robert Klupacs FTSE

CEO, Bionics Institute (VIC)

Robert Klupacs is a health-tech industry leader whose commercialisation of biomedical research is saving and improving lives. The healthcare breakthroughs he has helped bring to patients include implantable medical devices, new pharmaceuticals, stem cell therapies and regenerative medicine.

Mr Klupacs has over 30 years of international experience in knowledge management and commercialisation strategy.

His understanding of the university, industry and not-for-profit research sectors has underpinned the development of multiple life-saving technological innovations.

Mr Klupacs is also a proud mentor and passionate advocate for STEM education, and has created programs to improve gender equality and entrepreneurship in the research sector.

Professor Darren Martin FTSE

Professor, University of Queensland (QLD)

Professor Darren Martin is a materials scientist inventing stronger, more flexible rubber for life-saving medical devices, construction, manufacturing and products like sporting equipment.

He is globally recognised for his breakthroughs in polymer and nanomaterial research.

Professor Martin has successfully applied his research in industry, including through a number of patents.

Professor Martin has also worked closely with remote Indigenous commercial partners to combine nanotechnology with traditional scientific knowledge and practices.

His landmark partnership between University of Queensland and the Dugalunji Aboriginal Corporation in North-West Queensland works to jointly commercialise the unique properties of spinifex grass to produce stronger cement, recycled paper, ultra-thin surgical gloves and other new biomaterials.

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Gordon Naylor FTSE

Retired President of Sequiris (VIC)

Gordon Naylor is an engineering technology investor who champions Australian innovation.

Mr Naylor's investment and mentoring have helped many Australian tech start-ups. He is passionate about combining bold ideas, public policy and material support to make Australia's manufacturing sector thrive.

He has also applied the principles of engineering and science to a sterling international business career.

His world-class operational innovations over 30 years have underpinned the success of CSL, Australia's international biotechnology company. More recently, he led the successful turnaround of Seqirus, CSL's global influenza business, preserving and developing critical vaccine capabilities for Australia and the world.

Mr Naylor has also made major contributions to supporting communities in Australia through his family charity.

Professor Simon Ringer FTSE

Academic Director, Core Research Facilities, University of Sydney (NSW)

Professor Simon Ringer is a materials engineer creating new relationships between the atomic-scale microstructure of materials and their engineering properties.

Working closely with industry, he is developing ultra-high strength light-weight steels, aluminium alloys and superalloys to enhance human mobility in next generation transport platforms.

Low-weight, third-generation high strength steels could make cars cleaner to run by reducing the weight of cars, which then cuts down on fuel consumption and reduces emissions.

Professor Ringer's leadership has helped forge Australia's world-class research infrastructure, enabling industrial R&D in a wide range of scientific and technological fields.

Dr Sarah Pearce FTSE

Deputy Director, CSIRO Astronomy & Space Science (NSW)

Dr Sarah Pearce is an astronomer and space technologist who is helping deepen humanity's understanding of the universe.

The cross-disciplinary trailblazer leads CSIRO's new space program and has contributed her expertise to computing for the Large Hadron Collider.

Dr Pearce has a leading role in Australia in the creation of the Square Kilometre Array — the world's largest radio telescope — and was our science representative on the four-part team who negotiated this historic international collaboration.

She has played a vital role in establishing the Australian Space Agency and is a passionate advocate for the Australian space industry.

Strongly committed to diversity, Dr Pearce is a committed campaigner for women in STEM.

Professor Shazia Sadiq FTSE

Professor and Director, University of Queensland (QLD)

Professor Shazia Sadiq is an influential data engineer whose international research and advocacy have led to greater responsibility in the management of sensitive data.

Her cutting-edge research has focussed on developing solutions for Business Information Systems to more effectively process information, significantly improving business process management, governance, and risk and compliance data.

A champion of trans-disciplinary collaboration, Professor Sadiq is currently leading an ARC Industry Transformation Training Centre on Information Resilience, which brings together experts from industry, government business, social science, computing and mathematics.

She has led and developed a range of programs to help thousands of young people pursue careers in information computer technology, including national competitions and women-in-computing initiatives.

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Professor Cordelia Selomulya FTSE

Professor, UNSW Sydney (NSW)

Professor Cordelia Selomulya is a chemical engineer who has invented new and better methods for drying powdered food ingredients and products.

She has led major advances in the field of particle engineering and successfully applied her research in the dairy and food industry.

Professor Selomulya's "smart-drying" approach enables more energy-efficient and precise methods for powder production, to preserve nutrition and improve dried food's functional properties.

A mentor and role model for young women, her many awards and appointments show the level of respect she enjoys across industry and academia.

Professor Mark Stewart FTSE

Professor, University of Newcastle (NSW)

Professor Mark Stewart is a risk assessment analyst working to protect infrastructure from extreme hazards like terrorism and climate change.

He is an international leader in probabilistic risk assessment, engineering systems and public policy decision making.

Professor Stewart has advised military experts in Australia and the US on terrorism, counter-terrorism and the rational use of public funds.

The author of five books and many academic papers, he has also used his media appearances to share important scientific ideas with the wider public.

Distinguished Professor Daichao Sheng FTSE

Head and Distinguished Professor, University of Technology Sydney (NSW)

Professor Daichao Sheng is a geotechnical engineer whose soil research has enabled more resilient infrastructure in difficult environments across the world.

His work has influenced the design of high-speed railway foundations on seasonally frozen grounds, airfield pavements in cold and dry regions, and revolutionary software for geotechnical analysis and design.

Professor Sheng is one of the world's most influential and cited experts in unsaturated soil mechanics, computational geomechanics and transport geotechnics.

His research has helped shape engineering practice in Australia and overseas.

Dr Vanessa Torres FTSE

Chief Technical Officer, South32 (WA)

Dr Vanessa Torres is a resource logistics expert who has successfully led multi-billion dollar mining operations.

She is internationally recognised for applying her technical, engineering and strategic experience to major projects, including BHP's 3500+ person WA iron ore mining operations.

As Chief Technical Officer of global mining company South32, Dr Torres is driving digital transformation, technological innovation, and efficiency in the industry.

She has won many global awards as an inspirational and influential woman in mining.

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Professor Anton van den Hengel FTSE

Co-Director, Australian Institute for Machine Learning, University of Adelaide (SA)

Professor Anton van den Hengel is a machine learning researcher who is improving the ability of computers to understand images and videos.

He is an expert in the complex ways in which information is encoded in images and has developed exciting new technologies for recovering it.

Professor van den Hengel built the 130-person Australian Institute of Machine Learning, which is widely recognised as one of the best computer vision institutes in the world.

He has a track record of translating research into practical applications and is a major advocate for investing in machine learning as a critical technology for the future.

Professor Hala Zreiqat AM FTSE

Professor and Director, University of Sydney (NSW)

Professor Hala Zreiqat is a biochemical engineer who 3D-prints replacement body parts for people suffering from injury and disease.

She invented a type of ceramic biomaterial that can be used as a scaffold to regrow bone, and developed the technology to tailor these prosthetics for individual patients.

Professor Zreiqat is also leading research into the creation of other artificial human tissue, including tendons, ligaments and — eventually — organs.

She is Director of the ARC Centre for Innovative BioEngineering, Founder and Chair of the International Alliance for Design and Application in Tissue Engineering and of BIOTech Futures; and the 2018 NSW Premier's Woman of the year.

Professor Willy Zwaenepoel FTSE

Dean of Engineering, University of Sydney (NSW)

Professor Willy Zwaenepoel is an experimental computer science researcher whose work underpins the cloud technology many of us use every day.

He has advanced both the theory and practice of distributed computing systems — software, memory and processes that operate across multiple physical machines — and has made major contributions to machine learning technology. His work underpins much of present cloud computing and data centres powering large-scale deep learning.

His research has led to two start-ups, iMimic and BugBuster, being acquired by Cisco.

Professor Zwaenepoel is also a leading educator. During his time as Dean, he supercharged the Information and Communications Technology faculty at the Swiss Federal Institute of Technology, Lausanne (EPFL). He is now building Sydney University's faculty of Engineering and Information Technology into an internationally recognised force.

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