2019

GRADUATION CEREMONIES

THE UNIVERSITY OF ADELAIDE

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of ADELAIDE

CHANCELLOR'S *Welcome*

On behalf of the University of Adelaide may I offer sincere congratulations to you, our new graduates.

You have joined a distinguished community of University of Adelaide alumni that spans the globe.

As a graduate of the University of Adelaide you hold a degree that is recognised and valued around the world. Our graduates have gone on to be pioneers and leaders in many fields – from science, medicine and engineering, to law, the social sciences and the performing arts. They have won Nobel Prizes, distinguished themselves in politics and the arts, and helped to improve the lives and wellbeing of countless communities.

The University of Adelaide is committed to providing an inspiring university experience and producing talented and skilled graduates. I hope that your skills and the friendships that you have made will endure throughout your life.

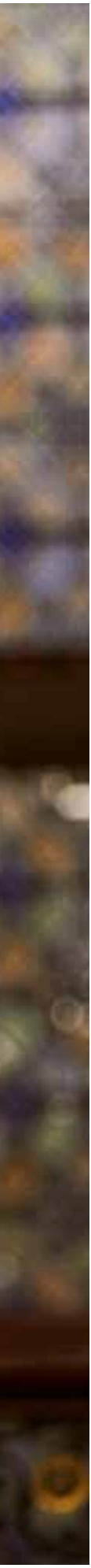
You should be proud today of your achievement in completing your studies, which is the first step on what I trust will be a satisfying and exciting career.

I would also take this opportunity, on behalf of the University, to thank those who have supported you and, in many cases, have made it possible for you to be here today.

You will always remember the University of Adelaide, and I hope you will consider it a significant part of your life, not just the past few years while studying, and not just today but forever. I encourage you to join our network of alumni and enjoy the benefits of a long association with your University.

My congratulations to you all.

Rear Admiral the Honourable Kevin Scarce
AC CSC RAN (Rtd)
Chancellor



Message from the VICE-CHANCELLOR AND PRESIDENT

Congratulations on graduating from one of Australia's leading universities.

This ceremony marks the culmination of years of study that now place you into lifelong membership of the University of Adelaide alumni – a group spread across all corners of the globe.

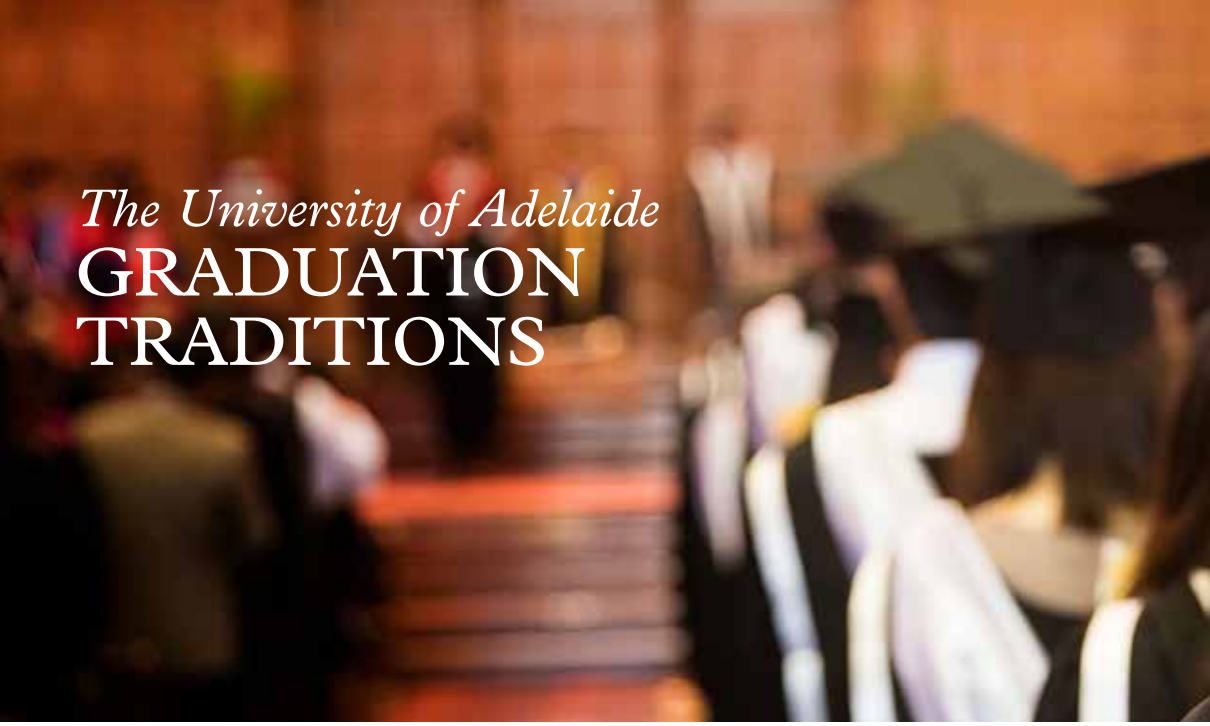
And you follow in the footsteps of extraordinary individuals, including some who have redefined the world as we know it, and many others who are changing their communities for the better each day. Your University of Adelaide degree will open doors to new, transformational opportunities.

Today is about celebrating your achievements with family, friends, members of staff and fellow graduates. I strongly encourage you to maintain those professional connections you have made here: many of them will stay with you for life.

Use your knowledge wisely, be bold and generous in the way you share ideas with others, and always be open to learning.

Well done: you go forward today with the warmest wishes of the University of Adelaide community.

Professor Peter Rathjen
AO, BSc (Hons) (Adel), DPhil (Oxon), Hon DLitt (Tas)
Vice-Chancellor and President



The University of Adelaide GRADUATION TRADITIONS

ACKNOWLEDGEMENT OF COUNTRY

Ngadlurlu Kaurna miyurna tampinthi. Parna yarta mathanya Wama Tarntanyaku.

University of Adelaide Kaurna yartangka yuwanthi – Tarntanyangga (North Terrace), Waitengga, Thebartonilla, Roseworthyngga kuma. (Lit. the University of Adelaide stands on Kaurna land in Adelaide (North Terrace, Waite, Thebarton and Roseworthy.)

We acknowledge the Kaurna people past and present, the original custodians of the Adelaide plains and the land on which the University of Adelaide campuses are built.

The University's two Reconciliation Statements, along with the Reconciliation Action Plan support the objectives and strategic directions of the renewed 2019 Tarrkarri Tirrka Aboriginal and Torres Strait Islander Strategy. Together, these statements document the University's ongoing commitment to Aboriginal and Torres Strait Islander empowerment and self-determination.

The University campuses are located on inscribed country and the land holds many stories, every feature in this landscape is imprinted with meaning and lore. North Terrace has always been a place of learning where ceremony and conference were hosted annually.

COAT OF ARMS

The University of Adelaide's coat of arms was granted to the University by the College of Arms, London, in 1925. It is the official symbol of the University and the stamp which ratifies every degree parchment bestowed by the University.

The crest or shield displays an open book and five stars; one of eight, two of seven, one of six and one of five points – representing the Southern Cross. A scroll containing the University's Latin motto sits directly below the shield; Sub Cruce Lumen, meaning 'The light (of learning) under the (Southern) Cross'.

BONYTHON HALL

Bonython Hall is the University of Adelaide's "great hall". It was built in the years of 1933-1936 using a generous donation of over £50,000 from renowned public benefactor Sir John Langdon Bonython.

Planned construction of Bonython Hall was surrounded in controversy. Colonel William Light, Surveyor-General for the City of Adelaide, had an original vision to extend Pulteney Street north towards North Adelaide. The Adelaide City Council was keen to see his plans carried out.

Following much debate, it was City Alderman and lawyer George McEwin who was able to convince the City Council of the University's master plan and evolving architectural beauty. Further, he pointed out that the City Council had no legal prerogative to construct roads on the private property of the University.

Consequently construction of the great hall began. This proved a critical juncture in the University's history - resulting in the University of Adelaide expanding to become one of the most picturesque campuses in the country today Today, Bonython Hall is home to all onshore graduation ceremonies and a number of official University events, including the annual Carols on Campus event in December.

ABOUT THE ORGAN

The organ in Bonython Hall was installed in 2002. Made in England to a tonal design by the leading Dutch firm Johannus Orgelbouw, it uses custom-built speakers to reproduce digital recordings of individual organ pipes with the acoustic qualities of a piped instrument. The four manual instrument is the largest of its type in Australia.

UNIVERSITY MACE

Thousands of years ago the Mace, a heavy club weighted at one end, was used as a blunt weapon in battle. In the sixteenth century the Mace came to be used more ceremonially – representing a symbol of protection of the King. Today, the Mace is celebrated as a symbol and warrant of office, particularly of royal or ecclesiastical office, and of institutions deriving authority from the Crown or Church.

The University of Adelaide Mace was designed by Mr I. Milward Grey of the School of Fine Arts, North Adelaide, and was made under his personal supervision by an Adelaide firm of silversmiths.

The Mace is 24 inches in length and is made of silver gilt throughout. Seventy-three ounces, just over 2kg, of metal was used in its manufacture. The Mace head forms an orb, representing the world, and features a book, a symbol of learning, and a design of gum leaves on matted ground. On either side of the orb, the University's Coat of Arms is featured along with the motto: *Sub Cruce Lumen*.

The University Mace was first carried by President of the Students Council, K H Boykett, at a Jubilee procession at St Peter's Cathedral in 1926, marking the 50th anniversary since classes first commenced.

The traditional role of the Mace Bearer in the University of Adelaide graduation ceremony is to protect the Chancellor, meaning the bearer of the Mace always precedes the Chancellor in the academic procession.

ACADEMIC DRESS

Academic dress, including the full-length robe, hood and classical headwear, dates back to the medieval 12th and 13th centuries in Europe when universities, as we know them today, were developing.

The regalia were originally worn daily by university scholars for reasons of warmth and to reflect their status in society. The sense of purpose and propriety evoked by formal academic dress has ensured the tradition has been preserved over the centuries.

In contemporary times, academic dress is largely reserved for graduation ceremonies and formal university events.

Gown

University of Adelaide graduates wear black gowns in the Cambridge style, with the exception of:

- Professional Doctorate and PhD candidates whose gowns are black and faced with scarlet
- Higher Doctorate and Doctor of the University candidates who wear scarlet gowns faced respectively with the colour of their discipline or ultramarine blue.

Hood

Professional Certificate and Sub-bachelor graduates do not wear a hood.

Other graduates wear a black hood that displays a colour representative of their discipline area, except that:

- Postgraduate coursework candidates wear a black hood lined in white
- Research masters wear a black hood lined in scarlet
- PhD, Higher Doctorate and Doctor of the University candidates wear a scarlet hood lined in scarlet.

Headwear

Graduates receiving a Professional Certificate, Sub-bachelor Certificate or Diploma, Bachelor, Honours, Graduate Certificate or Diploma or Masters qualification wear a black trencher cap or mortarboard.

Graduates receiving a Professional Doctorate, PhD, Higher Doctorate, Doctor of Medicine or a Doctor of the University wear a bonnet of black velvet.

Creative Arts and Architecture
Cendre Green

Business
Helvetia Blue

Engineering and related technologies
True Purple

Health Sciences
Eosin Pink

Natural and Physical Sciences
Primuline Yellow

Society, Culture and Education
Pale Violet Grey

Information for GUESTS

The following information is provided to ensure the comfort, safety and enjoyment of everyone attending the ceremony. Please take a moment to read before the ceremony commences.

GENERAL

Toilets are located at the entrance to the hall, downstairs from the foyer.

A water cooler for your use can also be found in the foyer.

Please supervise babies and young children at all times. If they are disturbing other guests, please take the opportunity to relocate to the foyer.

Please switch off or silence mobile phones for the duration of the ceremony.

APPLAUSE

Guests are invited to applaud each graduate as they are presented on stage.

PHOTOGRAPHY

Guests are welcome to take photographs during the ceremony. However, you are requested not to disrupt the ceremony by leaving your seat or using flash photography.

Professional photographers will take a photograph of each graduate as they are presented on stage. These photographs will be available immediately after the ceremony from GFP Graduations, who will be temporarily located on the Goodman Lawns.

Alternatively graduates can order their stage photos online after the ceremony.

SAFETY AND EMERGENCY

For safety reasons guests may not enter the galleries upstairs or sit on the steps in the balcony area.

Emergency exits are marked on the plan below. Please note your nearest exit.

The emergency assembly point is on Goodman Lawns, west of the hall.

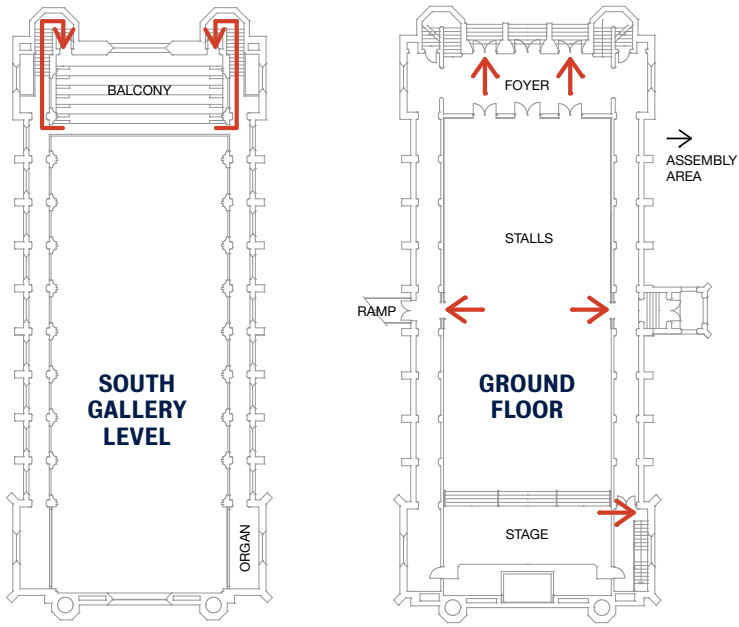
If it becomes necessary to evacuate Bonython Hall, an announcement will be made. Follow the directions of the Ushers, exit the hall and move to the assembly point. Guests in wheelchairs should exit the hall via the eastern entrance.

ADDITIONAL INFORMATION

Student Ushers in white shirts can provide further information and assistance.

The ceremony will last around 70 minutes.

Bonython Hall emergency exits



Order of PROCEEDINGS

Before the ceremony, music will be played on the Bonython Hall Organ by Haowei Yang (Student in the Elder Conservatorium of Music).

JS Bach: *Schmücke dich, o liebe Seele* and L Vierne: *Carillon de Westminster*

THE ACADEMIC PROCESSION *(please stand)* will enter Bonython Hall

Trumpet Tune and Air by Henry Purcell, arr. Howarth,
performed by the Elder Conservatorium Brass Ensemble.

- Marshals
- Doctorates in all Faculties/Schools
- Heads of Affiliated Colleges
- Academic and Graduate Staff
- Executive Deans and Heads of Schools
- Senior University Officials
- The Valedictorian
- The Orator
- The Pro Vice-Chancellor - Student Learning
- The Mace Bearer
- The Chancellor

THE NATIONAL ANTHEM
to be sung by Charlotte Kelso DipA, BA/BMus(Clas)

Australians all let us rejoice, For we are young and free;
We've golden soil and wealth for toil, Our home is girt by sea;
Our land abounds in nature's gifts Of beauty rich and rare;
In history's page, let every stage Advance Australia Fair.
In joyful strains then let us sing, Advance Australia Fair.

Guests to be seated

WELCOME BY THE CHANCELLOR
Rear Admiral the Honourable Kevin Scarce AC CSC RAN (Rtd)

THE OCCASIONAL ADDRESS to be given Mr Andrew Cole

THE MACE BEARER THANKS THE ORATOR
Dr Linh Anh Le will thank the orator

CERTIFICATION STATEMENT
by the Pro Vice-Chancellor - Student Learning Professor Philippa Levy BA (Hons) (Birmingham), MA (Warwick), MA (Sheffield), PhD (Sheffield), FHEA

PRESENTATION OF AWARDS by Faculty/School

VALEDICTORY ADDRESS given by Dr Dominic Michael Walldorf Davis

CLOSING REMARKS given by the Rear Admiral the Honourable Kevin Scarce AC CSC RAN (Rtd)

THE ACADEMIC RECESSION *(please stand)* The academy will leave Bonython Hall in reverse order to that of entry, followed by the new graduates. During the recession, the organist will play CM Widor: *Toccata from Symphony No. 9*

Guests are requested to remain standing while the procession is leaving Bonython Hall.

Presentation of AWARDS

Faculty of

ENGINEERING, COMPUTER AND MATHEMATICAL SCIENCES

Presented by the Executive Dean of the Faculty of Engineering, Computer and Mathematical Sciences, Professor Anton Middelberg BE (Hons), PhD, MA, FIChemE, FIEAust, FTSE

Degree of Bachelor of Mathematical and Computer Sciences

Rachael Louise Crozier ..... Computer Science

Samuel George Lawrence Darling Computer Science

Matthew Kozirev

Taj Remington Pereira

Michael Scott Pointon ..... Computer Science

Sean Malcolm Whitear ..... Applied Mathematics and Statistics

Zhi Xu

Honours Degree of Bachelor of Engineering

Nurhidayah Abdol Kalary ..... Chemical Engineering

Muhammad Azri Abdul Razak ..... Mechanical Engineering

Alia Nuraina Ahmad Fazla ..... Civil and Architectural Engineering

Arif Fikri Ahmad Nizam..... Chemical Engineering

Mohamad Amirul Iqwan Alias..... Mechanical Engineering

Lauren Amato..... Civil and Structural Engineering

Joshua Noel Angeles ..... Mechanical and Aerospace Engineering

Joseph Giulio Arman ..... Civil and Structural and Civil and Environmental Engineering

Albert George Atkins..... Mechatronic Engineering

Anthony Babb..... Civil and Structural Engineering

Theodore George Balomenos..... Civil and Structural Engineering

Fergal Richard Banks..... Mechanical Engineering

Paul Bayron .. Mechanical and Aerospace Engineering

Mark Anthony Owen Bilton .... Chemical Engineering

Ameen Bou Diab..... Mechanical and Aerospace Engineering

Weitong Cai..... Civil and Structural Engineering

Yeonsoo Chang..... Chemical Engineering

Yat Lam Cheung ..... Mechanical and Aerospace Engineering

Nur Syazwanie Izzati Chik ..... Chemical - Minerals Processing

Mitchell Clifford ..... Civil and Architectural Engineering

Rachael Louise Crozier ..... Mechatronic Engineering

Tommas Dama ... Civil and Architectural Engineering

Samuel George Lawrence Darling ..... Mechatronic Engineering

Abigail Laura Davey..... Chemical and Pharmaceutical Engineering

Sara Mizuho Diggins..... Chemical Engineering

Fengyi Ding..... Civil and Structural Engineering

Alexander James Donald ..... Mechanical Engineering

Calvin Feng ..... Petroleum and Mining Engineering

Xin Feng..... Civil and Structural Engineering

Gemma Annette Frost ..... Civil and Environmental Engineering

Hongyu Fu ..... Civil and Environmental Engineering

Mitchell James Geci..... Mechatronic Engineering

Zachary Ryan Giles..... Mechatronic Engineering

Stephen Anthony Gimenez..... Mechatronic Engineering

Tyler James Glanville ..... Civil and Structural Engineering

Cowan McCallum Groth Godfrey ..... Mechanical Engineering

Matteo Zeon Godi..... Mechanical and Aerospace Engineering

Dion Guerrera..... Mechanical Engineering

Jiahe Han ..... Civil and Structural Engineering

Connor John Holdback..... Mechatronic Engineering

Zhihao Huangfu ..... Civil and Structural Engineering

Samuel James Hutton ..... Civil and Structural Engineering

Siti Aishah Ismail..... Chemical Engineering

Minxuan Jiang ..... Civil and Structural Engineering

Yifei Jiao ..... Mechanical Engineering

Yinan Jin..... Mechanical and Aerospace Engineering

Thomas Raymond Jolley .... Mechatronic Engineering

Harrison Alexander Kadis ..... Mining Engineering

James David Kartika..... Civil and Architectural Engineering

Shaughn Robert King ..... Civil and Structural Engineering

Matthew Robert Klinck ..... Civil and Structural Engineering

Matthew Kozirev ..... Mechatronic Engineering

Carlo Labbozzetta ... Civil and Structural Engineering

Max Darcy Lang ..... Civil and Environmental Engineering

Nicholas Patrick Larsson ..... Civil and Structural Engineering

James Stuart Lean ..... Mining Engineering

Rachel Siu Wa Leung ..... Mechanical and Sustainable Energy Engineering

Dongfang Li ..... Civil and Structural Engineering

Jihui Li ..... Civil and Structural Engineering

Zhen Li ..... Mechanical Engineering

Haolin Liao ..... Civil and Structural Engineering

Yuecheng Lin ..... Mechanical Engineering

Siyuan Liu ..... Mechanical Engineering

Zixian Liu ..... Mechanical Engineering

Jialin Lu ..... Civil and Architectural Engineering

Vanda Esperanca Lucas ..... Civil and Structural and Civil and Environmental Engineering

Penghao Luo ..... Mechatronic Engineering

Gia Bao Ma ..... Petroleum Engineering

Amanda Aravindi Madduma Hewage ..... Civil and Structural Engineering

Ned Cenin Magarey ..... Civil and Architectural Engineering

Denver May ..... Petroleum Engineering and Mechanical Engineering

Muhammad Arif Zakwan Mazlan ..... Mechanical Engineering

Trenten Mills ..... Chemical Engineering

Nurul Aida Asyiqin Mohamad A'Azizan ..... Chemical Engineering

Muhamad Zulfadhli Mohamad Hasnan .... Mechatronic Engineering

Aminul Haqim Mohamad Zainurin ..... Chemical Engineering

Ben Mullin ..... Civil and Structural Engineering

Nguyet Ky Ngo ..... Chemical Engineering

Albert Huan Nguyen ..... Mechanical and Aerospace Engineering

Nguyen Le Hong An ..... Chemical and Pharmaceutical Engineering

Phuc Tri Nguyen ..... Chemical Engineering

Son Long Nguyen ..... Petroleum Engineering

Nguyen Thi Ngoc Tam ..... Chemical Engineering

Alex Joseph Niemann ..... Civil and Architectural Engineering

Haonan Ning ..... Civil and Structural Engineering

Andrew Jack Olsen .... Civil and Structural Engineering

Georja Lauren Sugars Osborne ..... Civil and Environmental Engineering

Taj Remington Pereira ..... Chemical Engineering

Geeth Ravishan Subasinghe Pinnawala Appuhamilage ..... Chemical Engineering

Michael Scott Pointon ..... Mechatronic Engineering

Zihao Qiu ..... Mechanical Engineering

Manan Rafiq ..... Mechanical Engineering

Muhammad Irwan Rosli ..... Mechanical Engineering

Eric Sansome ..... Civil and Structural Engineering

Gianni Federico Severino ..... Mechanical and Aerospace Engineering

Muhammad Adzim Shamsul Anuar ..... Chemical Engineering

Samuel Robert Shepherdson ... Chemical Engineering

Vinz Raphaelo Solano .... Chemical and Pharmaceutical Engineering

Guoyang Sun ..... Civil and Structural Engineering

Hongyi Sun ..... Mechatronic Engineering

Qianyue Sun ..... Mechanical and Sustainable Energy Engineering

Amanda Khai Wei Tan ..... Mechanical Engineering

Kevin Tan ..... Chemical Engineering

Sam Thomas ..... Civil and Structural Engineering

Thy Thong Tran ..... Chemical and Pharmaceutical Engineering

Ching Ing Tsai ..... Civil and Environmental Engineering

Zackary William Turnbull ..... Civil and Structural Engineering

Thomas Jacob Verco ..... Mechanical and Aerospace Engineering

Hieu Chi Vu ..... Civil and Structural Engineering

Fushen Wang ..... Civil and Architectural Engineering

Mingzhen Wang ..... Mechanical and Aerospace Engineering

Lily Beth Warrick ..... Chemical Engineering

Jack Andrew Whaley ..... Civil and Structural Engineering

Sean Malcolm Whitear ..... Civil and Structural Engineering

Heng Wu ..... Civil and Structural Engineering

Yanming Wu ..... Mechanical Engineering

Bonan Xia ..... Civil and Structural Engineering

Rachael Xu ..... Chemical Engineering

Zhi Xu ..... Mechanical Engineering

Xiwen Yan ..... Civil and Structural Engineering

Ik Jung Yang ..... Civil and Structural Engineering

Zeran Yang ..... Civil and Structural Engineering

Qinxin Yu ..... Civil and Structural Engineering

Mohamad Zaher Aiman Zakaria ..... Mechanical Engineering

Jiawen Zhang ..... Civil and Structural Engineering

Matthew William Zuill ..... Mechanical Engineering

Mohamad Khairul Ikhwan Zulkarnain .... Chemical Engineering

Degree of Master of Engineering (Civil and Environmental)

Joe Mario Jacob

Xiang Lyu

Le Ma

Xiuling Su

Wu Shaokun

Ruiyan Zhang

Degree of Master of Engineering (Mining)

Naomi Rosita Sagisollo

Degree of Master of Engineering (Mechanical)

Adnan Abdullah T Abadi

Shuai Jia

Reajen Kattukaran

Mohsin Khalid

Amit Kumar

Fei Pan

Xin Shu

Vivek Hitendra Thaker

Bo Yang

Zihui Zhao

Shuang Zheng

Degree of Master of Engineering (Civil and Structural)

Junfei Bian

Yanzhang Chen

Wen Dong

Zijing Du

Wei Guo

Zhifeng Hang

Le Tran Duc Loc

Xiaodan Yang

Siyuan Yu

Degree of Master of Engineering (Chemical)

Lujia Dong

Raghuraman Kalyanakrishnan

Shu Liang

Ting Tang

Quy Don Tran

Sihao Wang

Zihao Xiao

Degree of Master of Engineering (Aerospace)

Mragank Pratap Singh

Degree of Master of Philosophy

Peter James Hawke

thesis: An evaluation of petroleum systems within the Billiluna Sub-basin and adjacent structural regions, Northeastern Canning Basin

thesis abstract: This research project utilised newly reprocessed 2D seismic, an enhanced stratigraphic framework, paleogeographic reconstructions, a geochemical source rock assessment, and 1D and 2D petroleum systems models to assess the petroleum prospectivity of the NE Canning Basin (the Betty Terrace, Balgo Terrace and Billiluna Sub-basin). It was determined that although good quality reservoirs and structural trapping configurations are present, the pre-Carboniferous stratigraphy is organically lean and the post-Carboniferous stratigraphy is immature for hydrocarbon generation. The study concluded that future petroleum exploration is high-risk, but that highest prospectivity occurs within Devonian - early Carboniferous aged petroleum systems nearest the Gregory Sub-basin.

Tuan Gia Hoang

thesis: Hydraulic Flow Zones and Reservoir Characterisation

thesis abstract: The research focuses on the use of Hydraulic Flow Zone Units, reservoir quality relationships derived from Routine Core Analysis (RCA) data. Such relationships are typically incorporated into defining optimal functions for dynamic reservoir simulation based on Special Core Analysis (SCAL), where the overall purpose is the detailed study of reservoir performance. The thesis proposes optimal methods for correcting RCA laboratory measurements, zonating geological formations and analysing SCAL data. Comparisons between the proposed approaches and other methodologies are included in this thesis. In terms of practical application, the research includes conceptual reservoir simulation studies, showing the difference in results from traditional methodologies.

Mohammad Momeen Ul Islam

thesis: Investigation of tensile creep and tension stiffening behaviour for Ultra-High-Performance Fiber Reinforced Concrete (UHPFRC)

thesis abstract: The research presented in this study is concerned with the time-dependent tensile behaviour of UHPFRC. The experimental results demonstrate that the tensile creep strain and tension stiffening mechanisms are greatly influenced by the shrinkage strain. A significant portion of the measured total shrinkage was caused by autogenous shrinkage rather than drying shrinkage. The results demonstrate that higher sustained stress leads to higher tensile creep strain for the first 13 days whilst later the shrinkage strain was dominating leading to lower tensile creep value. The extent of crack propagation in concrete matrix are also significantly affected by the sustained tensile loads.

Degree of Doctor of Philosophy

Dr Emmanuel Addo Junior

thesis: Multivariate Modelling of Geological and Geometallurgical Variables

thesis abstract: Low metal grades, complex orebodies and fluctuating commodity prices have increasingly high impact on the mining and minerals industry potentially reducing profit margins. It follows that accurate modelling of geological and geometallurgical variables is needed to reduce risks associated with most mineral prospects. The modelling needs to include uncertainty in predictions, as well as outcomes, so that mining companies can calculate the value at risk and make informed business decision. This work employs a copula based geostatistical technique to model geological and geometallurgical variables. The model offers a more detailed solution (i.e., risk uncertainty) to modelling geological and geometallurgical variables.

Dr Selahattin Akdag

thesis: Experimental investigation of damage evolution during strain burst in brittle rocks for deep mines

thesis abstract: The increasing demand for resources and depletion of near ground mineral resources caused deeper mining operations under high-stess and temperature rock mass conditions. Strain burst, the sudden and violent release of stored strain energy during dynamic brittle of rocks, has become more prevalent and created considerable safety risks damaging underground infrastructures. This research focuses on the development of experimental methodologies to better understand the fundamental knowledge concerning the failure mechanism of strain burst and the influence of thermal damage, high confininement and various loading rate on the overall mechanical behaviour of brittle granitic rocks leading to strain burst.

Dr Tammy Amirian

thesis: Pore-Scale Visualisation and Geochemical Modelling of Low Salinity Water Flooding as an Enhanced Oil Recovery Method

thesis abstract: This thesis aims to investigate the mechanisms behind low salinity water flooding as an enhanced oil recovery method using microfluidic visualization and geochemical modelling. It is shown that kaolinite due to its chemical structure responded well to low salinity water injection by wettability alteration while illite does not. The impact of divalent cations is insignificant. If the chemical composition of connate water and the content of clay minerals in a particular reservoir is known, the findings of this study will determine the concentration of ions and pH of the injecting water that maximise wettability alteration and the resulting oil recovery.

Dr Arash Asadi Khansari

thesis: An Efficient Modelling Technique for Analysis of Thin-Walled Laminated Composite Beams having Open and Closed Cross Sections

thesis abstract: In this thesis, the incorporation of shear deformation within a finite element formulation for thin-walled composite beams is successfully achieved in a novel way. The proposed model is further developed for Vibration, Vibration with preloading, Buckling, Preloaded Buckling and Dynamic Stability of thin-walled laminated composite beams considering preloading in the form of axial load and end moment and their combined action. Numerical examples of open sections I beams and closed section box beams are solved by the proposed approach. A large number of results obtained in this study are compared with those in literature for validation.

Dr Umar Azhar

thesis: Spectroscopic Imaging of Multiplex Bioassays Encoded by Raman and SERS Tags

thesis abstract: Suspension microsphere multiplex immunoassays are gaining more attention in spontaneously complicated bioanalysis. Detection of multiple analytes from a single measurement is critical in modern bioanalytical technique, but requires complex encoding. In this thesis, focus was laid on the fabrication of different SERS nanotags and Raman/SERS spectroscopic-encoded polymer microbeads for specific and selective IgG detection in immunoassay systems by introducing gold nanoparticles as the "hotspots" of SERS. Such Raman and SERS dual encoded systems overpass limitations of traditional fluorescence labels, and Raman imaging has been developed for qualitative readout of these complicated multiplex immunoassays.

Dr Erica Beaucage-Gauvreau

thesis: Brace for it: assessing lumbar spinal loads for a braced arm-to-thigh lifting and bending technique using a musculoskeletal modelling approach

thesis abstract: Biomechanical loading of the spine during lifting and bending is a risk factor associated with low back pain, which is a significant health and economic burden worldwide. A one-handed braced arm-to-thigh bending and lifting technique in which the trunk is supported by the free hand on the ipsilateral thigh was investigated, using an OpenSim full-body musculoskeletal model developed for this project. Lumbar spinal loads were substantially reduced by the bracing force on the thigh, compared to lifts and other activities of daily living performed using an unsupported technique, for healthy participants and participants suffering from low back pain.

Dr Francesca Marie Dance

thesis: Geological Characterisation of Australia's First Carbon Dioxide Storage Site

thesis abstract: This research in characterisation of Australia's first ever CO2 storage site is important to the critical area of addressing climate change through demonstrating the role that carbon capture and storage of C02 can safely play, and in particular how inter-disciplinary studies are required from site selection through to monitoring. The work is of national and international significance, with implications for how geologically realistic C02 injection and storage models are built and tested. The tools, processes, and methodologies examined will be critical in the future as commercial deployment of carbon storage continues to be used to reduce greenhouse gas emissions.

Dr Dominic Michael Walldorf Davis

thesis: Characterising the Performance of Vortex-Based Solar Thermal Particle Receiver-Reactors

thesis abstract: New understanding of the mechanisms controlling the performance of vortex-based solar particle receiver-reactors is provided in this thesis. A one-dimensional numerical model is developed and used to systematically characterise the heat and mass transport processes and provide insight into the factors affecting the thermal performance. Direct measurement of particle residence time distributions provides new understanding of the physical mechanisms controlling the two-phase flow behaviour. Finally, a first-of-a-kind experimental investigation of alumina calcination with concentrated solar radiation in a small-scale vortex-based solar particle receiver demonstrates chemical conversions of up to 95.8% along with potential improvements in the alumina product quality.

Dr Natalie Debenham

thesis: Characterising the structural, petrophysical, and geochemical properties of inverted fault zones

thesis abstract: This thesis characterises the structural, petrophysical, and geochemical properties of inverted fault zones from the Otway and Bristol Channel basins, in order to understand how inverted faults influence fluid flow at a range of scales. This thesis has two topics of focus: (1) identify the influence of inverted faults on surrounding lithology by assessing the relationship between faults, fault damage zones, and fractures related to fault growth; and (2) identify how subsurface fluids flow, interact, and modify their surrounds by assessing the geochemistry of fluids in fractures and thereby constraining the source and migration of fluids preserved in fractures.

Dr Hong Xuan Do

thesis: Flood Hazard Characteristics at the Global Scale: An Observation-based Perspective

thesis abstract: Understanding of large-scale flood hazard characteristics is important for effective mitigation strategies that reduce the future impacts of floods. Barriers to understanding floods include fragmented scientific findings of regional studies and limited spatiotemporal coverage of streamflow observations. This thesis aims to improve the observation-based understanding of flood hazard characteristics at the global scale, focusing on three key objectives: (1) collating streamflow databases to support global-scale hydrological research; (2) identifying global patterns of flooding characteristics using the most comprehensive available streamflow database(s); and (3) evaluating the ability of hydrological simulations to reproduce trends exhibited from streamflow observations.

Dr Thomas Kirch

thesis: Small-Scale Batch-Fed Biomass Gasification and Combustion

thesis abstract: This thesis investigates various aspects of the staged combustion process in gasifier cookstoves. This work sheds light on fundamental processes and the impacts of the production of char. The experimental work, presented in four independent research articles, contributes to our understanding of: the mode of air supply, in particular, via natural or forced draft; the relationship between the staged air supply, of primary to secondary air and the relative locations thereof; the fuel bed height; and the utilisation of a variety of fuels, with a wide range of ash contents.

Dr Linh Anh Le

thesis: A Mechanism-based Approach to Constitutive Modelling of Quasi-Brittle Geomaterials with and without Fibre Reinforcement

thesis abstract: The development of localisation bands is experimentally identified as the key failure mechanism governing responses of quasi-brittle geomaterials like sandstone, soft rocks and short fibre reinforced concrete. The localised failure mechanism is employed as the basis to develop a continuum-based constitutive model by explicitly incorporating localisation bands with their behaviour in conjunction with the responses of the surrounding bulk material. Model validations against experimental data show that the proposed model is simple yet effective in capturing the localised failure, together with inelastic behaviour and important features of quasi-brittle geomaterials with and without fibre reinforcement at both constitutive and structural levels.

Dr Shen Long

thesis: Large Scale Flow Characteristics of Multiple Annular Impinging Jets within a Cylindrical Chamber

thesis abstract: The thesis presents a systematic study of the flow structure within a cylindrical chamber generated by multiple-jets, under conditions relevant to a wide range of practical applications, including the Hybrid Solar Receiver Combustor (HSRC). A joint experimental and numerical methodology was used to characterise the large-scale flow field within the HSRC configuration. The results reveal a strong dependence of the flow characteristics on the nozzle arrangements and geometric parameters. All of the major flow regimes that can be generated by multiple confined jets have been identified, while configurations of greatest relevance to solar thermal environments and combustion regimes were identified.

Dr Munawwar Ahmad Mohabuth

thesis: Investigation of Lamb Wave Propagation in Pre-stressed Plates with Applications to Structural Health Monitoring

thesis abstract: This thesis investigates the phenomena associated with the propagation of guided waves in pre-stressed plates. An understanding of these phenomena is essential for the development of in-situ stress monitoring procedures based on guided waves and the operation of existing and future guided wave based structural health monitoring systems. The specific objectives of this thesis include the extension of the classical theory of acoustoelasticity to guided waves, the development of a new experimental procedure for the evaluation of third-order elastic constants and the analysis of the residual noise due to the effect of applied or thermally-induced stress after baseline signal subtraction.

Dr Mohammad Mohsen Sarafraz

thesis: Liquid Chemical Looping Gasification

thesis abstract: In this research, a new process was developed to produce a synthetic gaseous fuel from a carbonaceous feedstock such as biomass or coal. This process produces a clean fuel with the high ratio of carbon monoxide to hydrogen and also decreases the emission of carbon dioxide and particulate materials to the environment. It also offers a potential for utilising the concentrated solar thermal energy, which decreases the consumption of the fossil fuels. The synthetic fuel produced with the proposed system has various applications in the industrial sector such as liquid fuel production plants and fuel cells.

Dr He Shi

thesis: Pipe Wall Condition Assessment and Leak Detection using Paired Pressure Sensors with Hydraulic Transient Analysis

thesis abstract: This PhD research has developed new measurement strategies and analysis techniques to enable hydraulic transient-based condition assessment of targeted pipe sections in complex pipe systems. Key research outcomes include: (1) a wave separation technique using a dual-sensor measurement strategy, enabling the extraction of the directional pressure waves travelling upstream and downstream along a pipe; (2) a technique for transfer matrix extraction and leak detection of targeted pipe sections in complex pipe systems using a two-source-four-sensor testing configuration; (3) laboratory validation of the wave separation technique and a customised in-pipe fibre optic sensor array for distributed pressure measurement.

Dr Sammuel Aleck Sobey

thesis: Three-Dimensional Measurement of Spinal Kinematics and Whole-Body Activity Recognition

thesis abstract: Back pain is one of the most significant ailments in modern society. Two of the most commonly reported risk factors for back pain are poor posture and prolonged-sedentary behaviour. Inactivity is also a risk factor for numerous non-communicable diseases and is responsible for nine percent of premature deaths worldwide. This thesis details the design and validation of a novel device for the tracking of spinal kinematics and classification of human activity. The device was found to measure spinal kinematics with average errors of below five degrees and to classify activity with an average prediction rate of above ninety percent.

Dr Nicholas David Sullivan

thesis: Task Allocation and Collaborative Localisation in Multi-Robot Systems

thesis abstract: Using multiple robots requires decision-making to determine how robots should complete tasks, known as task allocation. This research improves upon current task allocation algorithms by considering heterogeneity between robots, and new task allocation algorithms are created for robots that can change tools. In addition, we also need to know where the robots are, known as localisation. Localisation can be improved if multiple robots share their sensors and collaborate with one another. This research analyses properties that affect collaborative localisation, and creates new algorithms that include collaborative localisation as part of task allocation.

Dr Heng Wang

thesis: Tailoring Cathode Nanostructures for Performance Improvement of Non-Aqueous Lithium-Oxygen Batteries

thesis abstract: Non-aqueous lithium-oxygen battery has gained interest due to its high energy density. In this thesis, novel nickel cobaltite materials were developed as electrocatalysts for the battery. The surface atom arrangements of nickel cobaltite nanoplates were rationally designed to enhance battery performance. Nickel cobaltite nanoplates being supported by macroporous aerogels were developed to improve stability and efficiently accommodate discharge product. The effects of nickel cobaltite on the morphology and crystallinity of discharge products proved the 3D cathodes based on unconventional layer-like discharge products displayed excellent cyclability. These results provide rational cathode design for future high-performance batteries.

Dr Frances Elizabeth Williams

thesis: The efficacy of Moringa oleifera as a practical application for sustainable water treatment

thesis abstract: The Moringa oleifera tree is known for its use in drinking water treatment. The seeds contain an antibacterial compound called MO2.1 which can be attached to sand and silicon dioxide and this functional sand/ SiO2 can be used for the inhibition and removal of bacteria from water. The main objective of this project was to develop methods to separate inhibited bacteria from the MO2.1 without separating the MO2.1 from the sand/ SiO2. Laboratory scale trials were used to test the methods against Escherichia coli and Micrococcus luteus and for the functional sand for the removal of Escherichia coli from water.

Dr Fangxi Xie

thesis: Complex Hollow Structured Anodes for Sodium and Potassium Ion Batteries

thesis abstract: Sodium and potassium ion batteries are considered as alternatives with reduced cost to conventional lithium-ion batteries. However, the issue of relatively poor performance is one of the major barriers for the practical application of these batteries. This thesis reports several hollow structured anodes for sodium and potassium ion batteries with enhanced performance, including Na2Ti3O7 hollow spheres assembled by nanosheets with N-doped carbon coating, dual-shell sodium and potassium titanate, multi-shell Sb2S3 and dual-shell bismuth boxes. Additionally, mechanism for the enhanced electrochemical performance of as-reported materials are investigated by various electrochemical and spectroscopy characterization approaches.

Dr Seonho Yun

thesis: Intracellular Microenvironment Triggered Co-delivery of Anticancer Drugs and Genes

thesis abstract: Cancer treatment remains a global challenge since most active anticancer drugs for cancer cell apoptosisis are accompanied with severe multidrug-resistance and side-effects. We developed novel multifunctional microgels as the co-delivery carriers of model drug of doxorubicin and supplement-drug (miRNA-21 inhibitor or ATP aptamer) to maximise overall anticancer performance and minimise side-effects. Surface hyaluronic acid coating to the resulting nano-medicines enables stable circulation, selective delivery to multidrug-resistant cancer cells and low toxic to normal cells. The introduction of smart intracellular microenvironment-responsive crosslinkers further enhances therapeutic efficiency by achieving complete biodegradation and spatiotemporal controlled drug release.

Dr Jiahe Zhang

thesis: Assessment and stabilization of micaceous soils

thesis abstract: Micaceous soils are common in many tropical countries and regions, and in some locations with moderate climate. The soils are spongy and unstable when loaded and are not considered suitable as construction material in earth structures. To resolve the issue, this work examined engineering characteristics of micaceous soils, and verified through experiments the solutions that were developed to ameliorate the working performance of micaceous soils. These solutions were green, low cost and readily adoptable in operation and might be used to amend micaceous soils and enhance safety of earth structures in practice.

Additional AWARDS

FACULTY OF THE PROFESSIONS

Adelaide Business School

Degree of Bachelor of Finance

Anthony Babb
Theodore George Balomenos
Fergal Richard Banks
Dion Guerrera
Samuel James Hutton
Matthew Robert Klinck
Andrew Jack Olsen
Georja Lauren Sugars Osborne
Manan Rafiq
Rachael Xu
Matthew William Zuill

Degree of Bachelor of Commerce

Stephen Anthony Gimenez..... Accounting

School of Economics

Degree of Bachelor of Economics

James Stuart Lean

FACULTY OF SCIENCES

Degree of Bachelor of Science (Biotechnology)

Trenten Mills.....Molecular Biotechnology
Lily Beth Warrick.....Biochemistry and Pharmacology

Degree of Bachelor of Science

Sara Mizuho Diggins..... Chemistry double major
Harrison Alexander Kadis ..... Geology, Geophysics and Applied Geology

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