

# EXCITE

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News from the School of Engineering, Design and Built Environment.

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## Message From The Deputy Dean

I am very pleased to share the news of a great addition to Western Sydney University's excellent learning & teaching and research space facilities - The Engineering Innovation Hub (EIH), an 18-storey new building at 6 Hassall St Parramatta CBD. EIH together with the Peter Shergold Building will form Western's Parramatta City campus and will be equipped with the state-of-the-art facilities and learning space to support student learning and research in a range of programs in Architecture, Industrial Design, Engineering and Entrepreneurship. EIH is also home to Western's MakerSpace and LaunchPad to support innovation and creativity. I am also excited to let you know that many of the leading industry firms and organisations will have a presence at EIH which will provide unique opportunities to our students and staff. EIH will be ready for students and staff for the Spring session which commences on Monday 19 July 2021.

Professor Yang Xiang  
Deputy Dean, School of Engineering, Design and Built Environment



## The Buzz | Engineers Australia Cochlear Autumn School

The Autumn Cochlear School is a collaboration between School of Engineering, Design and Built Environment and Engineers Australia. The visit to Western Sydney University was important to provide a glimpse into the vast number of career & discipline choices that are represented under Engineering and Built Environment. Students heard from leading academics, participated in engineering and manufacturing workshop activities and campus tours.

Students were very impressed with the obvious strong university student community and the great academics. There were 65 top performing students from NSW, including from rural areas who were interested in Engineering and Architecture.





## Western Powerhouse Collaboration

School of Engineering, Design and Built Environment, Western Sydney University and Powerhouse has established the foundation for co-operative and productive collaboration which aligns with Western's Strategic Plan, Sustaining Success 2021-2026 to reform our campus networks and maximize our investment in our core activities of teaching and learning, research and engagement.

The Minister for Skills and Tertiary Education, and Minister for Sport, Multiculturalism, The Hon Dr. Geoff Lee launched the partnership followed by Western Sydney University Vice-Chancellor Professor Barney Glover's welcome speech.

Western Sydney University welcomes the opportunity to continue to play a leading role in activating of the Western and Powerhouse collaboration.



## Learning & Teaching

The end of yet another challenging semester under COVID-19 is in sight and everyone is lunging towards the final stretch. Lessons learned in 2020 were invaluable, both to the students and staff alike. Online lecture sessions complemented by hybrid tutorials and face-to-face laboratory were the norm this semester. All of us are eagerly and impatiently looking forward to entering Stage 6 that will bring some normalcy in day-to-day campus activities.

All First Year Engineering units were offered using flipped pedagogy for the first time. Remainder of the First Year Engineering units are being prepared for delivery using flipped mode in the Spring semester. Lessons learnt from the Autumn semester will be used to flip the L&T material for Spring semester units.

## Student Success | Elizabeth Kalou

Elizabeth Kalou is our Bachelor of Civil Engineering Honours student majoring in Structural Engineering who was recently awarded the Railway Technical Society Australasian under 2021 Best Undergraduate Thesis Award and 2020 Dean's Merit Award.

Elizabeth's thesis was entitled "Comparative Study of Different Sleepers for Railway Components" supervised under A/Prof. Olivia Mirza and Mr. Christophe Camille. Aside from Engineering, she loves to draw. She chose Western Sydney University because she knew Western would provide her opportunities to excel in her career. She has worked with Bechtel and is involved in the Western Sydney Airport project



## Research News

School of Engineering, Design and Built Environment has research focuses on Construction Management, Industrial Design, Architecture, Civil Engineering, Mechanical Engineering, Electronic and Electrical Engineering. We have received over \$2.7 million research income in 2020. Over 75% of our publications are Quartile 1. We are currently hosting over 141 HDR students across disciplines.

### Recently awarded research project:

Dr. Maria Rashidi and Professor Bijan Samali from Centre for Infrastructure Engineering (CIE), have recently been successful in securing an industry project funded by Transport for NSW valued AU\$234,000 (Incl. GST). The scope of work is going to be RPA photogrammetry and development of digital twin for timber truss bridges in accordance with the TIMBER TRUSS BRIDGE CONSERVATION STRATEGY supported by the federal government. This achievement is recognition of CIE's research strength in utilisation of emerging technologies in Structural Health Monitoring (SHM).

## The 5th Australasian Conference on Computational Mechanics, ACCM2021, Sydney, Australia, 13th - 15th December 2021

School of Engineering, Design and Built Environment at Western Sydney University proudly hosts the 5th Australasian Conference on Computational Mechanics in Parramatta South Campus on 13th - 15th December 2021.

ACCM 2021 brings researchers at the forefront in the field of Computational Mechanics and numerical modelling across various

engineering areas and disciplines together to discuss the recent advances and exchange innovative academic and research ideas. The conference will be in a flexible hybrid mode with options of both physical and virtual participation. The conference Chair A/Prof. Sarah Zhang, Co-chairs Prof. Yang Xiang and Prof. Richard Yang and local organization committee welcome and encourage researchers, engineers, academics and other professionals who may benefit from this event to attend. For more information, please visit the conference website at <https://westernsydney.edu.au/accm2021>

## Western Experts Corner

### Review of the state of digitalisation of the class 2 (multi-unit) building sector of the New South Wales construction industry | Professor Srinath Perera and Associate Professor Xiaohua Jin

Shafts are amongst components subjected to perhaps the most arduous working conditions in high-performance rotating equipment used in process and utility plants such as high-speed compressors, steam and gas turbines, generators, pumps, etc. Shafts in operation are sometimes susceptible to serious defects that develop without much apparent warning. Consequences of total shaft failure can be catastrophic with enormous costs in down time. The objective is to develop on-line and off-line diagnostic techniques to effectively detect shaft cracks before they cause serious damage. The project was supported by a mining industry.

This New South Wales Government-funded research project set out to review the state of digitalisation of the class 2 (multi-unit) building sector of the New South Wales construction industry with specific reference to the production of design drawings and as-built drawings. Data were gathered through a quantitative survey of class 2 building designers and builders (including developers). The survey received 542 valid responses from 347 designers and 195 builders. A large proportion of the sample were registered members of peak industry bodies representing designers and builders. The data were then further verified and expanded through a series of qualitative interviews involving building designers, builders and software service providers representing small, medium, and large companies. The findings provide an overview of the current state of digitalisation relevant to class 2 buildings in NSW and map the feasible levels of digitalisation that can be achieved over the years. Further, it proposes a strategic framework for digitalisation of design and construction of class 2 buildings aimed at enhancing the state of digitalisation over the next decade and beyond.



### Knowledge Management Networks in Australian Construction Settings | Dr. Sepani Senaratne

Sepani has engaged in knowledge management (KM) in construction research over many years. Recently, she received Researcher Development Award to continue research in KM on identifying and nurturing KM networks in construction using social network analysis (SNA) to enable wider knowledge dissemination at industry level. SNA is a powerful tool that enables to study network patterns. However, there have been limited attempts to incorporate SNA into the study of KM networks in the construction. The current research uses case studies within large construction companies and SMEs.



## Facilities

Building Information MODELLING (BIM) has been in existence for over 3 decades and was seen as the digital saviour of the construction industry. Whilst BIM provides a digital solution to capture building design and provide a platform to develop the design, it has its own limitations in providing a holistic solution for the construction industry. It lacks the ability to connect the complicated supply chains that are essential to procure a building. This where Blockchain plays a vital role in integrating the whole of construction supply chain and providing a solution to track and record all types of communications and transactions between parties. It provides an auditable trail of transactions in a cryptographically protected secure distributed digital ledger. Centre for Smart Modern Construction (c4SMC) is in the forefront of developing a BIM integrated blockchain platform for the construction industry. LandBlocks is a blockchain platform designed for the property sector created by researchers at the c4SMC.





## International News

Addressing issues raised by international students was the priority of the school's international affairs. Associated with the final weeks of the semester, requests for support from international students peaks towards the end of the semester. This year, the situations were exacerbated by the COVID-related events and political unrest in home countries of our international students. The issues included study support, special considerations, interactions with teaching team, financial hardship and making appeals. The international team will keep reaching to international students in the remaining weeks of the semester to advocate their needs.

The school's International Committee met on Monday 17 May 2021 to discuss our Internationalisation Strategic Plan for 2021-2023. The draft plan will be presented to the School for comments after initial review by the School Executive Committee

## Alumni Achievement | Fares Al Faily

Fares Al Faily is currently working as a Project Manager/Construction Manager for AHLA Group. He graduated from a Bachelor of Construction Engineering degree at Western in April 2017 and has been working in the construction Industry for over 7 years.

"The learning experience at Western was amazing and that helped me to achieve more than what I had ever expected, before starting the course. The teaching staff and the students were very helpful and friendly. For my thesis I was able to do experimental study, numerical analysis and parametric study and at the same time with the support of my supervisors; A/Prof. Oliva Mirza and Dr Md Kamrul Hassan. I was able to publish two Conference Papers and one Journal Article." - Fares Al Faily

Fares has come to realise that the mixture of software and the learning he received from both engineering and construction subjects has helped him significantly at his current job. Fares is currently supervising and managing an average of 12 houses a year and he has recently applied for his Builders licence.



## Engineers Australia

*Engineers Australia is the trusted voice of the engineering profession, delivering training, support, accreditation and representation to engineers across the globe. With over 100,000 members, Engineers Australia membership is recognised world-wide and can help open doors via its network and reputation. Being part of Engineers Australia is about more than just membership. As engineers, you have the power to change things - in building a sustainable future, solving the unsolvable and creating a better world. As we all know, it's easier to change things when we work as a team. Students looking to start their engineering career through professional development, support and industry connections should apply for membership today. Apply now:*

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## People Who Inspire | Dr. Md Abdul Alim

I joined the School of Engineering, Design and Built Environment (SoEDBE) at Western Sydney University (Western) in January 2021 as an Associate Lecturer in a tenured position. I started my journey at WSU in 2014 as a PhD student, and since then, I have been working at this university in several roles. A number of factors have attracted me and keep me working at WSU such as extraordinary collegial behaviour of my colleagues in SEDB, sophisticated pedagogy, world-class research facilities, student-centred university, multiculturalism, engaging campus environment and fairness in treating employees by the university.



### What is the interesting research you are doing?

My research focuses on solar energy materials, reflective coating, construction materials and building integrated photovoltaic systems. I have authored or co-authored over 40 scholarly publications in these areas. According to Google Scholar, my citations are 1498 and 92% are from independent researchers (cited by others). One of my inventions, [Self Temperature Controlling Solar Roof Tiles](#), has made Australian national news. I had been interviewed on 2SER Radio for my invention. Currently, we are working with Brickworks Pty Ltd company to commercialise the product. The new projects that we have started working on are durable solar reflective coating and perovskite solar cells.

### Now one of your roles is tutoring first year students, any tips for students?

Western is a student-focused university. We are prepared and equipped with the resources that a student may need to succeed. It is always a good idea to talk about your concerns with academics. Part of my role at Western is to talk to students about their concerns and guide them in the right direction. It does not need to be purely an academic discussion. We may go for a coffee and talk about issues bothering you to continue and/or focus on your study. The best way to study at university is to form groups and work together to learn new things. You will find tutorials and labs are more effective when you prepared yourself before attending the activity. Attending seminars and industry talks are also crucial. You may start building your network early with industry people.

### What is your vision for yourself and the School of Engineering, Design and Built Environment?

The short-term vision is to build my network with industry people to take my research outputs to the commercial level. Increasing collaboration with top researchers in my field is another task that I would love to work on. My long-term goal is to build a Renewable Energy research lab at Western where students will work on different solar energy technologies and perform all sorts of standard tests. I want to become a Professor in renewable energy. I want to build my research group where students will try to solve real-world problems. I would like to see that the School of Engineering, Design and Built Environment becomes one of the top schools taken as an example by others.

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