



ACCM2021

SYDNEY

13–15 December 2021

**The Fifth Australasian Conference on
Computational Mechanics (ACCM 2021)**

Western Sydney University
Sydney, Australia
13-15 December 2021

Conference Website:
<https://westernsydney.edu.au/accm2021>

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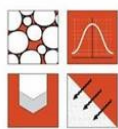
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A special thank you to Prof Grant Steven for his generosity to donate \$300 for the best HDR award and \$300 for the best ECR paper award.

Welcome from the Conference Chairs

On behalf of the Local Organising Committee, we warmly welcome you to the 5th Australasian Conference on Computational Mechanics (ACCM 2021) which is held at Western Sydney University.

The ACCM Conference series started in 2013 with the ACCM-2013, ACCM-2015, ACCM-2017 and ACCM-2019 successfully held in Sydney, Brisbane, Geelong, and Hobart, respectively. Supported by the Australian Association for Computational Mechanics (AACM), ACCM conference has become a flagship event for the Australasian Computational Mechanics Community.

ACCM 2021 brings together 150 researchers at the forefront in many fields of Computational Mechanics to discuss the recent advances in computational methods and applications of numerical modelling techniques in various areas across different disciplines. The conference will be run in flexible hybrid modes with both physical and online participation to respond to the travel restrictions due to the COVID-19 pandemic.

We would like to thank all who have supported us to make this conference happening in this difficult time. We wholeheartedly thank all the members of the Advisory Committee, International Technical Committee and National Organization Committee for their great support. In particular we thank all authors for submitting their work to ACCM 2021 and all reviewers for reviewing the extended abstracts. Special thanks to the five distinguished plenary keynote speakers for sharing their exciting research findings with us.

We would like to express our sincere gratitude to all our sponsors who have provided generous support. Without these, it is impossible to run this conference in this difficult time while keeping the low registration fees benefiting all especially HDRs.

In the coming two days, in addition to the plenary keynote sessions, over 150 papers will be presented in 25 parallel sessions. 70 HDR students and 19 ECRs will compete for the Best Paper Awards. We trust you will also find the HDR/ECR forum very valuable. Thanks for the invited speakers to share their experience in HDR training and growing from a HDR to a successful ECR. You are also welcomed to attend the lab visit to see the state-of-the-art labs in the Advanced Manufacturing Precincts and Centre for Infrastructure Engineering at Western Sydney University's Penrith campus.

Finally, we sincerely hope you have a wonderful and richly rewarding conference experience at Western Sydney University.

Conference Chair: Prof. Yixia (Sarah) Zhang

Co-chairs: Prof. Yang Xiang & Prof. Chunhui (Richard) Yang

ACCM 2021 Conference Committees

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Zhang, Lihai	University of Melbourne, Australia
Zhao, Ming	Western Sydney University, Australia
Zeng, Qinghua	Western Sydney University, Australia

ACCM 2021 Conference Venue

All sessions at ACCM2021 will be held in hybrid modes with both physical attendance and online attendance via Zoom meetings. The venue is the 3rd floor of the Parramatta Engineering Innovation Hub (PEIH), located at 6 Hassall Street, Parramatta, NSW 2150, Australia.



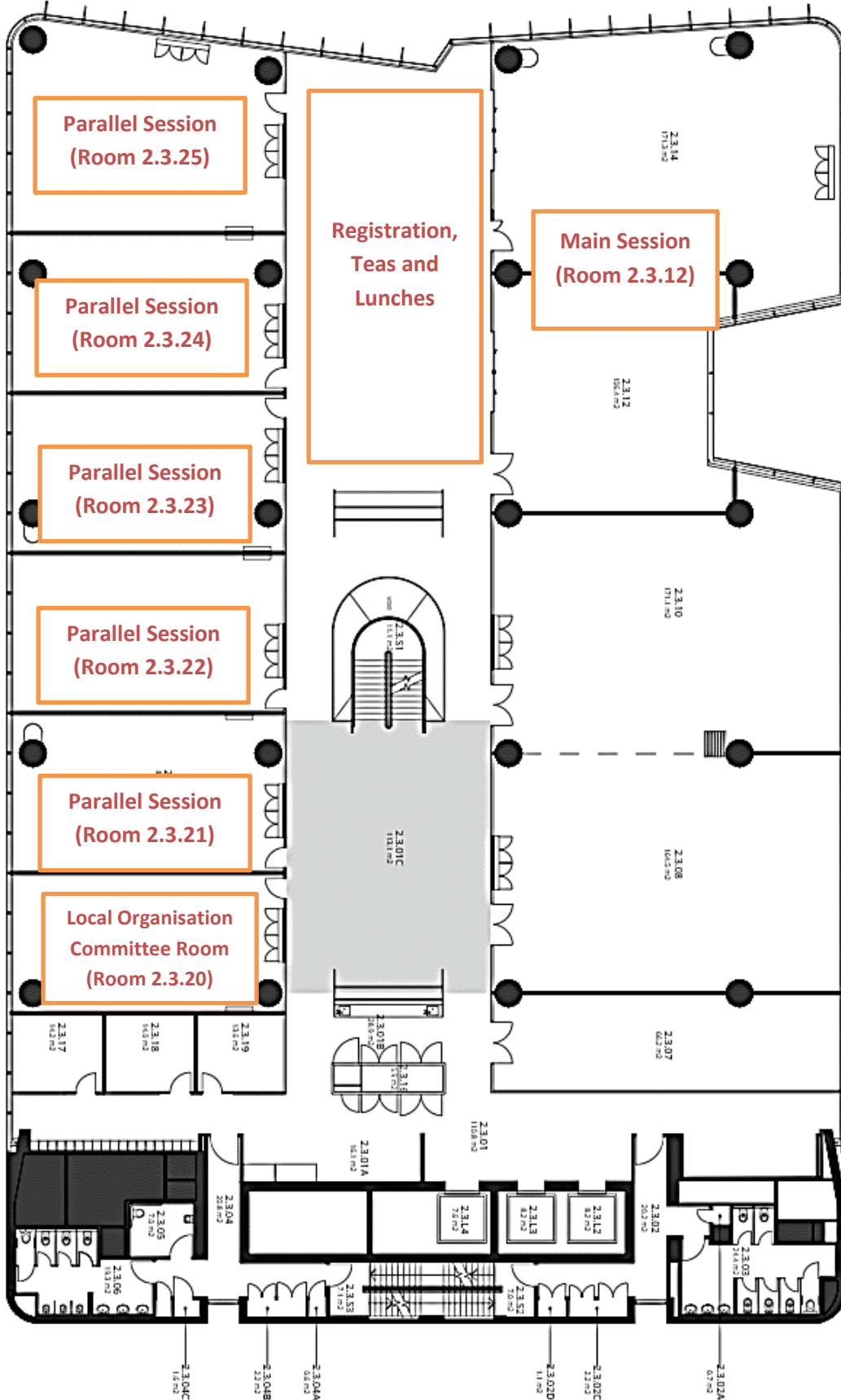
Parramatta Engineering Innovation Hub

The room number and Zoom ID for different sessions/activities are shown in the below table and also in the detailed conference program.

Activity and Room	Room No (3 rd floor)	Zoom ID for Dec. 14	Zoom ID for Dec. 15
Registration, Teas and Lunches	Foyer	N/A	N/A
Main Session (Opening, Plenary Sessions, Forums, & Closing Ceremony)	2.3.12	Meeting ID: 885 4875 5764 Password: ACCM2021	Meeting ID: 853 4985 8613 Password: ACCM2021
Local Committee Meeting Room	2.3.20	N/A	N/A
Parallel Session	2.3.21	Meeting ID: 886 1005 0721 Password: ACCM2021	Meeting ID: 846 0538 7244 Password: ACCM2021
Parallel Session	2.3.22	Meeting ID: 817 5305 6000 Password: ACCM2021	Meeting ID: 845 5803 9808 Password: ACCM2021
Parallel Session	2.3.23	Meeting ID: 848 1358 0986 Password: ACCM2021	Meeting ID: 846 2478 7193 Password: ACCM2021
Parallel Session	2.3.24	Meeting ID: 858 7030 2146 Password: ACCM2021	Meeting ID: 830 2228 0975 Password: ACCM2021
Parallel Session	2.3.25	Meeting ID: 847 5503 2494 Password: ACCM2021	Meeting ID: 885 9590 6917 Password: ACCM2021
Conference Dinner	Marsden Room, Ground Floor, PARKROYAL Parramatta Hotel	N/A	N/A

ACCM2021 Conference Venue Floor Plan

3rd Floor, Parramatta Engineering Innovation Hub, Western Sydney University, 6 Hassall St,
Parramatta, NSW 2150, Australia



Instructions to Speakers and Session Chairs/Co-chairs

Instructions to Speakers

All physical attendees need to upload your PPT into the PC of the room before your session starts preferably in the tea or lunch break. A student assistant will be standby to help.

All online speakers will share the PPT via sharing screen in Zoom session. Please ensure you are familiar with the sharing screen function in zoom.

Time slot for plenary keynote: 30 minutes including 5 minutes Q & A.

Time slot for session keynote: 20 minutes including 5 minutes Q & A.

Time slot for session invited talks and general papers: 15 minutes including 3 minutes Q & A.

Please finish your presentation within the allocated time to avoid delays.

Instructions to Session Chairs/Co-chairs

Please attend the session before it starts and call all speakers in the session.

The conference has tight schedule and please ensure the speaker finishes the talk within the allocated time slot. Please adhere to the program schedule to facilitate movement between the sessions.

Please share the duty between session Chair and Co-chair.

Useful Information

Registration

Registration will be in the foyer of 3rd floor of the conference venue from 2-5pm on Dec. 13. The registration desk will be open during conference starting from 8:30am on Dec. 14 and 15.

Arrival tea/coffee will be served from 8:30am during conference.

Transport

Public Transport – Trains & Ferries

The conference venue is around 3-minute walk from Parramatta Railway station (Exit 7, Station Street). You are encouraged to take public transportation to the conference venue.

Please see the NSW Transport Information website to assist with planning your journey and to ensure that your journey time is not impacted by planned maintenance. See <http://www.transportnsw.info/> for timetables and to plan your trip.

Parking

Public car parks are available near the conference venue, including the car park in the Westfield Shopping Centre nearby in a walking distance.

Conference Dinner

The conference dinner will be held on 14th Dec. 2021 in the Marsden Room, Ground floor at PARKROYAL Parramatta Hotel located at 30 Phillip St, Parramatta NSW 2150, Australia. It is about 8 minutes' walk from the conference venue. Fee paying car parking is available at the hotel or nearby car parks.

Pre-dinner drinks start from 6:30 pm, dinner will start from 7:00 pm and finish by 10:00 pm. Join us for a three-course banquet where you will enjoy the beautiful scene of Christmas and music from DJ.

Tickets are included in the FULL conference registration. Special invited guests can get the ticket from the ACCM 2021 registration table on the Ground floor of the hotel from 6:00-7:00 pm on 14th Dec 2021. Ask for the hotel reception if you run late.

Wi-Fi Access



If you are visiting Western Sydney University from a participating eduroam institution, you can connect to the **eduroam** wireless network using your login credentials (username and password) and security settings from your home institution.

You must enter your full username including domain/realm (e.g., jsmith@inst.edu.au). This may differ to when you access eduroam from your home institution, where you may not be required to enter the domain/realm (@inst.edu.au).

COVID-19 Procedures

The conference venue is Western Sydney University's Parramatta Engineering Innovation Hub at 6 Hassall Street, Parramatta. The health, safety and wellbeing of the conference participants is the top priority of the ACCM 2021 Local Organisation Committee. For all conference participants, the following COVID-19 procedures must be followed at all times during the duration of the conference.

Please read the [Vaccination Privacy Notice](#) for attending activities at a WSU venue. When register to attend the conference in person, you will be required to sign a statement "I declare that I have received the adequate dose of the COVID-19 vaccine to take part in this conference or have an authorised exemption form. I am able to produce evidence as part of condition of entry or access on the day."

Please do not attend the conference if you are unwell, have been in close contact with a positive case, have been tested and/or been instructed to conduct self-isolation. You may attend the conference sessions online.

Please scan NSW Services QR code prior to entering the Engineering Innovation Hub.

Please bring a clean face mask each day as you may wear it if it is required by NSW Health Orders. Adopt good hand hygiene practices. Hand sanitisers and disinfectant wipes will be available at the conference venue.

Please keep social distancing (1.5 metres apart) when seated in conference sessions and/or in morning/afternoon tea and conference dinner sessions.

Smoking

To further increase their commitment to providing a healthy, clean air environment for staff, students and visitors, all Western Sydney University premises became completely smoke-free on 1 January 2014. Therefore, students and visitors who smoke on campus may be issued an infringement notice under the Smoke-Free Environment Act.

Emergency/First Aid

The WSU Campus Safety & Security handles all First Aid and Emergency services on campus. Call Western Sydney University Campus Safety & Security on 1300 737 003 or call 2300 from any fixed internal phone on campus if you have immediate concerns for your personal safety.

Emergency contacts

- In an emergency, call 000 for ambulance, police and fire 24 hours a day.
- For non-emergencies, call the Police Assistance Line on 131 444.

Campus Safety & Security contacts

- 24-hour security hotline - 1300 737 003
- Parramatta City campus (PEIH) contact – 0296838111, ground floor
- security - security@westernsydney.edu.au
- parking - parking@westernsydney.edu.au
- shuttle bus - shuttlebus@westernsydney.edu.au

Plenary Keynotes

Plenary Keynote 1

Computational design of lightweight structures and materials for crashworthiness
Keynote speaker: Prof. Qing Li, University of Sydney

Abstract: Structural safety and energy efficiency signify two important yet competing aspects for modern vehicles in aerospace, automotive, railway and nautical engineering. Computational design provides an effective approach for developing crashworthy light-weighting materials and structures. This talk depicts a range of novel computational algorithms for deterministic and/or nondeterministic optimisation with crashing and blast criteria. A variety of innovative designs are presented for metallic, fibre-reinforced polymer (CFP) composite and hybrid materials and structures under different crashing/impact load cases. The design methodology is anticipated to be applicable in range of new developments, such as electric vehicle, drone, protective devices etc.

Prof. Qing Li received his PhD in aerospace engineering with a Golden Jubilee Prize from the University of Sydney in 2000. He was a postdoc fellow at Cornell University USA 2000-01, an Australian Research Council (ARC) Australian Postdoctoral (APD) Fellow in 2001-03 and a Future Fellow in 2013-17. Professor Li's research has focused on computational design and multidisciplinary optimisation. He has been contributing on computational optimisation of highly nonlinear and time-dependent multifunctional materials and structures mainly for mechanical and biomedical applications. Professor Li is named as a Clarivate "Highly Cited Researcher" and top 50 Australia's Research Leaders in Engineering and Computer Science in 2020. He has served in the editorial boards for several leading journals in his field, including Structural and Multidisciplinary Optimization, Biofabrication, International Journal of Mechanical Science, etc. Professor Li is the Vice President of International Society of Structural and Multidisciplinary Optimization (ISSMO), the Executive Committee of International Society of Biofabrication (ISBF), and the General Council of International Association for Computational Mechanics (IACM). He is the Secretary of Australian Association for Computational Mechanics (AACM).



Plenary Keynote 2

Numerical modelling for the design of rockfall mitigation systems for civil and mining applications

Keynote Speaker: Prof. Anna Giacomini, The University of Newcastle

Abstract: An appropriate management of rockfall risk is paramount in both civil and mining applications. Rockfall represents one of the major natural hazards, threatening human life along pivotal national transportation networks, recreation coastal areas and popular scenic walking paths. In the context of mining environments, safety of workers and machineries in all mine areas affected by rockfall has to be rigorously managed. Appropriate mitigation measures become necessary to reduce the risk to an acceptable level and minimise any potential economic loss in the production caused by an event. Several empirical and numerical approaches have been proposed to design various active and passive rockfall protective structures over the last four decades. The lecture will present recent developments of the discrete element method (DEM) and the finite element method (FEM) to simulate the impact of falling rocks against rockfall protection systems, such as draperies, rockfall barriers and dumping modules, to investigate their energy absorption capacity and efficiency. The models have been calibrated and validated by comparing numerical predictions with laboratory and field scale experimental findings. Results show the models' capability to adequately simulate realistic rockfall scenarios and accurately assess the residual rockfall hazard associated to the modelled structures, providing a valid tool for future mitigation designs.

Prof. Anna Giacomini received her PhD in 2003 from the University of Parma, Italy, and joined the University of Newcastle in 2005. She is currently Professor in Civil Engineering at the University of Newcastle and, since May 2019, along with her full-time research and teaching academic role, she is also the Director of the Priority Research Centre for Geotechnical Science and Engineering in the College of Engineering, Science and Environment of the University of Newcastle. Anna has been working in the field of rock mechanics and rockfall analyses for more than 20 years. Adapting to the new Australian Environment, she has extended her extensive research experience in rockfall analysis and rock mechanics from civil engineering to mining. Since 2009,



she has been leading several major research projects through industry and government funds on rockfall hazard and mitigation developing new designs for engineered barriers to protect valuable major corridors, infrastructures, and recreational areas from rockfall hazards. Anna's contribution to science in rock mechanics and rockfall analysis has been recognised by several awards such as the recent 2019 John Booker Medal from the Australian Academy of Science and the 2019 Best Practice Industry Engagement Award she received from the Newcastle Institute for Energy and Resources. Anna has published over 150 scientific works, she serves as Editorial board member of four prestigious International Journals in the field, as reviewer for several national and international funding bodies and many international journals in the rock mechanics and engineering fields.

Plenary Keynote 3

A collaborative learning framework for energy-efficient buildings

Keynote speaker: Prof. Gianluca Ranzi, University of Sydney

Abstract: A large proportion of greenhouse gas emissions is generated by energy consumption in buildings. It is expected that, in coming years, the combined effects of population growth, urbanization, global warming and income growth will have an enormous impact in terms of increased energy demand. Extensive research is underway throughout the world in different disciplines to develop sustainable technologies and methodologies that will meet these future energy demands. In this context, this contribution intends to present a computational framework that can be implemented at building and precinct levels to minimise the impact of the building energy consumption and to exploit a wider use of renewables. Particular features of the proposed framework rely on the implementation of collaborative filtering strategies to assist building occupants in supporting energy-efficient behaviours and in the setting up of a federated learning approach to enhance the energy load forecasting. An effective implementation of these approaches requires consideration for the needs of the specific buildings within their urban and climatic context.



Prof. Gianluca Ranzi is a Professor in the School of Civil Engineering and Director of the Centre for Advanced Structural Engineering at The University of Sydney. His research interests range from the field of structural engineering, with focus on computational mechanics, behaviour and design of concrete and composite steel-concrete structures, to architectural science, heritage conservation and mitigation technologies for urban heat island effects. He is an active member of national and international engineering committees, e.g., Standards Australia, ACI and IABSE, and has published over 200 publications, including six textbooks.

Plenary Keynote 4

Challenges and solutions for water security in a vulnerable catchment in coastal cities

Keynote speaker: Professor Hong Zhang, Griffith University

Abstract: River catchments are important economic, environmental, and social resources that support aquatic life, fisheries, recreational activities, agriculture, trade, and industry. However, over the past century industrialisation and urbanisation have substantially altered the natural characteristics of many river catchments. Hydrological extremes such as floods and droughts apparently exacerbate water quality issues worldwide. This talk presents a novel holistic modelling framework that is developed based on advanced sensing technologies and computational techniques, to simulate the hydrodynamics and transport processes of complex and dynamic catchment, riverine and estuarine systems. The developed model can be used to identify catchment hotspots such as sources of nutrients and sediments and flood-prone areas, and finally to assess climate change impacts using downscaled climate models. The outcomes of this research will facilitate government agencies for strategic plans to support a resilient, productive, liveable and growing regions.

Prof. Hong Zhang received her PhD from the Centre for Water Research, The University of Western Australia. She then worked at the Tropical Marine Science Institute, National University of Singapore for several years before joining Griffith University in 2003. Prof. Zhang has enriched expertise in numerical modelling of complex water resource and coastal systems. She has published over 180 technical articles and led a number of national and international projects to support government agencies for better development and management decisions. She has editorial roles in international journals and is a current member of ARC College of Experts.



Plenary Keynote 5

Machine-Learning based Computational mechanics as a powerful tool for engineering and science

Keynote Speaker: Professor YuanTong Gu, Queensland University of Technology

Abstract: In recent years, a new paradigm of Machine-Learning based, or data-driven computational mechanics is proposed and has been attracting increased research effort. This talk reports recent research in the speaker's group for machine-learning-based computational mechanics. It has proven that, with the aid of the Machine-Learning techniques, computational mechanics is a powerful tool for engineering and science. The challenges and future directions of computational mechanics are also discussed.

Professor YuanTong Gu is Head of School of Mechanical, Medical and Process Engineering at Queensland University of Technology (QUT), and Director of Australian ARC Industrial Transformation Training—Joint Biomechanics. He was a prestigious Australian Research Council (ARC) Future Fellow. Prof Gu is a world-renowned expert in computational mechanics and mechanical engineering. Prof Gu's research interests include Computational mechanics, Mechanical engineering, Biomechanics, Multiscale modelling, Nanomechanics, and Energy and environment engineering. He has secured more \$20M research fund in relevant fields. He authored more than 350 refereed journal publications and one popular book. Most of his publications are in highly ranked journals including *Nature Communications*, *Advanced Functional Materials*, *Nano Letters*, *International Journal for Numerical Methods in Engineering*, and *Computational Mechanics*. His publications have been attracted more than 12K citations in Google Scholar. He was Editor-in-Chief for Australian Journal of Mechanical Engineering, and is Associate Editor for two prestigious international journals, and an Editorial Board Member for other five journals. He is now an Executive Committee Member of Australian Association on Computational Mechanics and International Association of Applied Mechanics. Prof Gu has obtained several awards and prizes in the mechanics including The International Computational Methods Award and The ICACM Computational Mechanics Award. He has been invited to give more than 30 plenary and invited talks in international conferences. He served as the conference chair for two international conferences and will organize the 9th Asian Pacific Congress on Computational Mechanic in 2025.



ACCM 2021 Conference Program Overview

DAY 1 – Dec. 13 2021	
14:00-17:00	Registration (Foyer, 3rd floor, PEIH, 6 Hassall St, Parramatta, NSW 2150)
DAY 2 – Dec. 14 2021	
Morning	
9:00-9:40	Conference Opening and Welcome (Room 2.3.12, 3rd floor, PEIH) 9:00-9:15 Opening from Conference Chair 9:15-9:30 Welcome from Prof Barney Glover, Vice-Chancellor, Western Sydney University 9:30-9:40 Address from Prof. Nassar Khalili, President of Australian Computational Mechanics Association
9:40-10:10	Plenary Keynote 1 (Prof. Qing Li, Room 2.3.12, 3rd floor)
10:10-10:40	Plenary Keynote 2 (Prof. Anna Giacomini, Room 2.3.12, 3rd floor)
10:40-11:10	Morning Tea (Foyer, 3rd floor)
11:10-12:40	Parallel Sessions (Room 2.3.21-2.3.25, 3rd floor)
12:40-13:40	Lunch (Foyer, 3rd floor)
Afternoon	
13:40-14:10	Plenary Keynote 3 (Prof. Gianluca Ranzi, Room 2.3.12, 3rd floor)
14:20-15:50	Parallel Sessions (Room 2.3.21-2.3.25, 3rd floor)
15:50-16:10	Afternoon Tea (Foyer, 3rd floor)
16:10-17:40	Parallel Sessions (Room 2.3.21-2.3.25, 3rd floor)
18:30-22:00	Pre-dinner Drink and Conference Dinner (PARKROYAL Parramatta Hotel)
DAY 3 – Dec. 15 2021	
Morning	
9:00-9:30	Plenary Keynote 4 (Prof. Hong Zhang, Room 2.3.12, 3rd floor)
9:40-11:10	Parallel Sessions (Room 2.3.21-2.3.25, 3rd floor)
11:10-11:30	Morning Tea (Foyer, 3rd floor)
11:30-13:00	Parallel Sessions (Room 2.3.21-2.3.25, 3rd floor)
13:00-14:00	Lunch (Foyer, 3rd floor)
Afternoon	
14:00-14:25	Invited Luncheon Talk (Tony Dong, Hexagon MCS Software)
14:25-14:55	Plenary Keynote 5 (Prof. YuanTong Gu, Room 2.3.12, 3rd floor)
15:00-16:00	HDR and ECR Forum (Room 2.3.12, 3rd floor)
16:00-16:30	Afternoon Tea (Foyer, 3rd floor)
16:30-17:00	Closing Ceremony (Room 2.3.12, 3rd floor)
17:00-18:00	HDR and ECR Networking (QUT Sponsored)
DAY 4 – Dec. 16th 2021	
9:00-12:00	Lab tour

Dinner Program (Chair: Prof. Yang Xiang) 19:00-22:00, Dec. 14 2021	
19:00-19:10	Guest to be Seated
19:10-19:15	Welcome and Set the Scene (Prof. Yang Xiang)
19:20	Entree
19:40-19:50	Speech from Dean, School of Engineering, Design and Built Environment, WSU (Prof. Mike Kagioglou)
19:50	Main Course
20:30-20:40	Speech from Prof. Grant Steven
20:40	Desert
21:10	Tea/Coffee
21:30-22:00	Dinner Concludes

HDR Forum Program (Chairs: Prof. Richard Yang, Prof. YuanTong Gu) 15:00-16:00, Dec. 15 2021	
15:00-15:05	Introduction from Chair (Prof. Richard Yang)
15:05-15:15	Opening Speech from Prof. YuanTong Gu
15:15-15:40	Invited Speech (Prof. C.M. Wang)
15:40-16:00	Invited Speech (Dr Mehrisadat Makki Alamdari, Virtual Talk)

Lab Tour Program (Facilitator: Prof. Richard Yang, 9:00-12:00, Dec. 16 2021	
9:00-9:10	Meet at 1PSQ and Board on the Coach from CDC Travel. Travel to Advanced Manufacturing Precinct (AMP), Building Z, Penrith (Kingwood) Campus, 2 nd Avenue, Kingswood, NSW 2747.
10:00-12:00	Two-hour Lab Tour at the WSU Engineering Labs
12:00-12:10	Meet at AMP, Building Z, Penrith Campus and Board on the Coach from CDC Travel. Travel Back to 1PSQ, Parramatta

Note: This lab tour is only for those who have registered their interests beforehand as the seats in the coach are limited.

Plenary Keynote Details

Time	Plenary Keynote 1 (14th Dec. 2021)	
	Room No: 2.3.12; Zoom ID: 885 4875 5764 (Password: ACCM2021) Session chair: Yang Xiang	
9:40 – 10:10	Paper title: Computational design of lightweight structures and materials for crashworthiness	Speaker: Qing Li <i>(University of Sydney)</i>
Time	Plenary Keynote 2 (14th Dec. 2021)	
	Room No: 2.3.12; Zoom ID: 885 4875 5764 (Password: ACCM2021) Session chair: Richard Yang	
10:10 – 10:40	Paper title: Numerical modelling for the design of rockfall mitigation systems for civil and mining applications	Speaker: Anna Giacomini <i>(The University of Newcastle)</i>
Time	Plenary Keynote 3 (14th Dec. 2021)	
	Room No: 2.3.12; Zoom ID: 885 4875 5764 (Password: ACCM2021) Session chair: Wei Gao	
13:40 – 14:10	Paper title: A collaborative learning framework for energy-efficient buildings	Speaker: Gianluca Ranzi <i>(University of Sydney)</i>
Time	Plenary Keynote 4 (15th Dec 2021)	
	Room No: 2.3.12; Zoom ID: 853 4985 8613 (Password: ACCM2021) Session chair: Dong Ruan	
9:00 – 9:30	Paper title: Challenges and solutions for water security in a vulnerable catchment in coastal cities	Speaker: Hong Zhang <i>(Griffith University)</i>
Time	Plenary Keynote 5 (15th Dec 2021)	
	Room No: 2.3.12; Zoom ID: 853 4985 8613 (Password: ACCM2021) Session chair: Zhengyi Jiang	
14:25 – 14:55	Paper Title: Machine-Learning based Computational mechanics as a powerful tool for engineering and science	Speaker: Yuantong Gu <i>(Queensland University of Technology)</i>

Parallel Session Details

Day 2: Tuesday – December 14, 2021 (Morning)

Time		Parallel Session I – 1	
		Theme: Modelling and Simulation of Structures	
		Session chair(s): Klaus Thoeni, Leo Zhang	
		Room: 2.3.21; Zoom ID: 886 1005 0721 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
11:10 – 12:40	11:10 – 11:30	<i>Keynote</i> Paper ID: 72 - Three-point bending of sandwich panels with aluminum foam, honeycomb, truss, and corrugated cores	Dong Ruan <i>(Swinburne University of Technology)</i>
	11:30 – 11:45	Paper ID: 69 - Computational buckling analysis of stiffened cone-cylinder structure under compressive axial load	Fukun Xia <i>(Swinburne University of Technology)</i>
	11:45 – 12:00	Paper ID: 152 - Hydrodynamic analysis of floating breakwaters with porous medium	Hongchuan Zhang <i>(Griffith University)</i>
	12:00 – 12:15	Paper ID: 50 - A numerical procedure for damage growth assessment of bonded metal-composite and composite-composite joints	Md Imran Kabir <i>(Western Sydney University)</i>
	12:15 – 12:30	Paper ID: 108 - Seismic analysis of post-tensioned gravity dam considering bond-slip based on the scaled boundary finite element method	Shukai Ya <i>(University of New South Wales)</i>

Day 2: Tuesday – December 14, 2021 (Morning)

Time		Parallel Session I – 2	
		Theme: Computational Methods & Computational Materials	
		Session chair(s): Xiaodong Huang, Xiaoshan Lin	
		Room: 2.3.22; Zoom ID: 817 5305 6000 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
11:10 – 12:45	11:10 – 11:30	<i>Keynote</i> Paper ID: 23 - Topology optimization of lightweight multi-material structures	Xiaodong Huang (Swinburne University of Technology)
	11:30 – 11:45	<i>Invited talk</i> Paper ID: 34 - Constitutive model for hybrid fibre reinforced concrete subjected to elevated temperatures	Xiaoshan Lin (RMIT University)
	11:45 – 12:00	Paper ID: 45 - Development of flexible boom path planning using Artificial Intelligence for a Dynacut machine	Murat Uckan (University of Wollongong)
	12:00 – 12:15	Paper ID: 20 - Vibration control of a seat suspension system using variable damping and stiffness magnetorheo-logical dampers	Lei Deng (University of Wollongong)
	12:15 – 12:30	Paper ID: 110 - DEM analysis of energy distribution during compaction of crushable particles	Dazhao Gou (University of New South Wales)
	12:30 – 12:45	Paper ID: 145 - Development of a multiscale modelling and analysis for 3D printed nanocomposites	Mostafa Mohamed (Western Sydney University)

Day 2: Tuesday – December 14, 2021 (Morning)

Time		Parallel Session I – 3	
		Theme: Computational Materials	
		Session chair(s): Zhen Luo, Yansong Shen	
		Room: 2.3.23; Zoom ID: 848 1358 0986 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
11:10 – 12:45	11:10 – 11:30	<i>Keynote</i> Paper ID: 123 - Modelling of reacting flows and industry applications: Recent work of hydrogen injection processes in ironmaking blast furnaces	Yansong Shen (<i>University of New South Wales</i>)
	11:30 – 11:45	<i>Invited talk</i> Paper ID: 109 - Will a novel expandable helmet design protect bicyclists from sustaining traumatic brain injury? A computational study (Virtual)	Kwong Ming (KM) Tse (<i>Swinburne University of Technology</i>)
	11:45 – 12:00	Paper ID: 125 - A novel spatially varying heterogenous material model to accurately characterize arterial wall properties in abdominal aortic aneurysms (Virtual)	Ahmad Rehan Shaikh (<i>B.M.S. College of Engineering</i>)
	12:00 – 12:15	Paper ID: 43 - Three-dimensional complex microstructures reconstruction with the descriptor-based method and feature partition approach	Yilin Li (<i>Monash University</i>)
	12:15 – 12:30	Paper ID: 19 - From semi-active to smart-passive: design of adaptive tuned mass dampers using magnetorheological and shear-thickening fluids	Matthew Christie (<i>University of Wollongong</i>)

Day 2: Tuesday – December 14, 2021 (Morning)

Time		Parallel Session I – 4	
		Theme: ECR Award Session	
		Session chair(s): Helen Wu, Jun LI (UTS)	
		Room: 2.3.24; Zoom ID: 858 7030 2146 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
11:10 – 12:40	11:10 – 11:25	Paper ID: 24 - Modelling rate-dependent inelasticity in composites using the scaled boundary finite element method	Johanna Eisentrager (University of New South Wales)
	11:25 – 11:40	Paper ID: 70 - Formulating Lade-Duncan Finite Element Limit Analysis Problems as Conic Programs (Virtual)	Nathan Podlich (University of Newcastle)
	11:40 – 11:55	Paper ID: 3 - High-fidelity corrosion modelling under non-uniform material aging (Virtual)	Yuguo Yu (University of New South Wales)
	11:55 – 12:10	Paper ID: 64 - A pore-network model for quasistatic fluid-fluid displacement in realistic porous media (Virtual)	Zhongzheng Wang (Queensland University of Technology)
	12:10 – 12:25	Paper ID: 58 - Benchmarking A coupled finite element-immersed boundary-lattice Boltzmann method solver for simulations of collapsible tube flows (Virtual)	Qiuxiang Huang (University of New South Wales)
	12:25 – 12:40	Paper ID: 94 - Targeted drug delivery: an advanced modelling framework	Saidul Islam (University of Technology Sydney)

Day 2: Tuesday – December 14, 2021 (Morning)

Time		Parallel Session I – 5	
		Theme: HDR Award Session	
		Session chair(s): Kaiming Bi, Yuan Chen	
		Room: 2.3.25; Zoom ID: 847 5503 2494 (Password: ACCM2021)	
		Paper ID – Paper Title	Presenter (Affiliation)
11:10 – 12:40	11:10 – 11:25	Paper ID: 47 - Computational morphogenesis and experimental measurement of 3D leaf vein structure (Virtual)	Jiaming Ma (<i>RMIT University</i>)
	11:25 – 11:40	Paper ID: 52 - Topology optimization of continuum structures with the maximum first principal stress constraint (Virtual)	Anbang Chen (<i>RMIT University</i>)
	11:40 – 11:55	Paper ID: 21 - COMSOL multiphysics implementation of XFEM for fracture analysis in solids	Ahmad Jafari (<i>University of New South Wales</i>)
	11:55 – 12:10	Paper ID: 41 - Numerical modelling of interface bond behavior between steel-PVA hybrid engineered cementitious composite and concrete (Virtual)	Muhammad Qasim (<i>University of New South Wales</i>)
	12:10 – 12:25	Paper ID: 68 - A hybrid method for predicting the fatigue life of microsoldier joints under electric–thermal–mechanical coupling (Virtual)	Jianlei Yi (<i>Tianjin University</i>)
	12:25 – 12:40	Paper ID: 49 - A novel modelling framework for chloride-induced macrocell corrosion of reinforced concrete structures (Virtual)	Bin Dong (<i>University of New South Wales</i>)

Day 2: Tuesday – December 14, 2021 (Afternoon)

Time		Parallel Session I – 6	
		Theme: Computational Dynamics of Structures	
		Session chair(s): Yixiang Gan, Jun Li (Curtin University)	
		Room: 2.3.21; Zoom ID: 886 1005 0721 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
14:20 – 15:55	14:20 – 14:40	<u>Keynote</u> Paper ID: 147 - Finite element analysis of porous bi-directional functionally graded plates subjected to low-velocity impact (Virtual)	Raj Das (RMIT University)
	14:40 – 14:55	<u>Invited Talk</u> Paper ID: 13 - A new characteristic time-based heat input model for selective laser melting (Virtual)	Wenyi Yan (Monash University)
	14:55 – 15:10	Paper ID: 106 - Numerical analysis of Mode-I fracture behaviour of timber adhesive bond (Virtual)	Shaikh Atikur Rahman (Deakin University)
	15:10 – 15:25	Paper ID: 66 - Numerical study on flat plate substructures subjected to upward and downward punching shear failures of interior slab-column joints (Virtual)	Zhi Yang (Griffith University)
	15:25 – 15:40	Paper ID: 82 - Study the performance of rail pad under the mixed traffic of heavy haul and passenger trains by laboratory test & numerical analysis	Ralph Zhang (Western Sydney University)
	15:40 – 15:55	Paper ID: 107 - Technical assessment of a rail profile measurement system by big data analysis model & processing methodology	Ralph Zhang (Western Sydney University)

Day 2: Tuesday – December 14, 2021 (Afternoon)

Time		Parallel Session I – 7	
		Theme: Computational Methods	
		Session chair(s): Gianluca Ranzi, Xuemei Liu	
		Room: 2.3.22; Zoom ID: 817 5305 6000 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
14:20 – 15:50	14:20 – 14:40	<i>Keynote</i> Paper ID: 127 - Topologically optimized auxetic metamaterial architectures for innovating coronary stents with adverse hemodynamics	Zhen Luo <i>(University of Technology Sydney)</i>
	14:40 – 14:55	<i>Invited talk</i> Paper ID: 5 - Statistical nanoindentation study of sodium aluminosilicate hydrate gel in geopolymer	Zhiyu Luo <i>(University of Technology Sydney)</i>
	14:55 – 15:10	Paper ID: 25 - Experimental and numerical study on micro deep drawing with SUS301 (Virtual)	Di Pan <i>(University of Wollongong)</i>
	15:10 – 15:25	Paper ID: 60 - Understanding the lithiation mechanism and mechanical behaviour of Si anodes in Li-ion batteries (Virtual)	Su Chen <i>(Queensland University of Technology)</i>
	15:25 – 15:40	Paper ID: 112 - Using the big data, life cycle modelling and state-of-the-art technologies for the scope of rail re-profiling	Ralph Zhang <i>(Western Sydney University)</i>

Day 2: Tuesday – December 14, 2021 (Afternoon)

Time		Parallel Session I – 8	
		Theme: HDR Award Session	
		Session chair(s): Jun Ma, Xiaoshan Lin	
		Room: 2.3.23; Zoom ID: 848 1358 0986 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
14:20 – 15:50	14:20 – 14:35	Paper ID: 71 - Modelling liquid transport in PEM fuel cells: The effects of compressive stress on water management in porous layers	Yanyao Bao <i>(University of Sydney)</i>
	14:35 – 14:50	Paper ID: 32 - Nanoparticle Kinematic and Deposition in Alveoli Using Realistic Breathing Velocity Profile	Isabella Francis <i>(University of Technology Sydney)</i>
	14:50 – 15:05	Paper ID: 28 - Finite element analysis of Engineered Cementitious Composite Link Slabs (Virtual)	Shiyao Zhu <i>(University of New South Wales)</i>
	15:05 – 15:20	Paper ID: 137 - Adsorption of NaOH solution on montmorillonite surface: a molecular dynamics study	Yixing Xu <i>(Western Sydney University)</i>
	15:20 – 15:35	Paper ID: 129 - Numerical study of road tunnel against internal gas explosion (Virtual)	Ruishan Cheng <i>(Curtin University)</i>
	15:35 – 15:50	Paper ID: 87 - Scaled Boundary Finite Element Analysis of Laminated Composites	Nikhil Garg <i>(University of New South Wales)</i>

Day 2: Tuesday – December 14, 2021 (Afternoon)

Time		Parallel Session I – 9	
		Theme: HDR Award Session	
		Session chair(s): Yuguo Yu, Helen Wu	
		Room: 2.3.24; Zoom ID: 858 7030 2146 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
14:20 – 15:50	14:20 – 14:35	Paper ID: 62 - Discrete element modelling of cohesive granular packing	Mingrui Dong <i>(University of Sydney)</i>
	14:35 – 14:50	Paper ID: 27 - A flow deformation model for consolidation analysis of unsaturated soils including hydraulic hysteresis	Mahnoush Gharehdaghikhajehghiasi <i>(University of New South Wales)</i>
	14:50 – 15:05	Paper ID: 63 - Phase-field modelling of fracture of rock-like brittle materials	Zifeng Cheng <i>(University of Sydney)</i>
	15:05 – 15:20	Paper ID: 51 - A massively parallel explicit solver for impact-induced delamination analysis utilising octree meshes	Ankit <i>(University of New South Wales)</i>
	15:20 – 15:35	Paper ID: 76 - Prediction of particle flow in mills based on feed parameters and acoustic signals	Yaoyu Li <i>(University of New South Wales)</i>
	15:35 – 15:50	Paper ID: 65 - A DEM based sintering model for selective laser sintering process	Zi Wang <i>(University of New South Wales)</i>

Day 2: Tuesday – December 14, 2021 (Afternoon)

Time		Parallel Session I – 10	
		Theme: HDR Award Session	
		Session chair(s): Jun Li (UTS), Junjie Zeng	
		Room: 2.3.25; Zoom ID: 847 5503 2494 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
14:20 – 15:50	14:20 – 14:35	Paper ID: 133 - The effects of density on particle deposition in the human respiratory tract	Md Mizanur Rahman <i>(Western Sydney University)</i>
	14:35 – 14:50	Paper ID: 139 - A molecular dynamics study on the interactions of gold nanorods	Pan Yang <i>(Western Sydney University)</i>
	14:50 – 15:05	Paper ID: 120 - Evaluation of Young's modulus of 3D printed fibre reinforced composites	Tusharbai Gajjar <i>(Western Sydney University)</i>
	15:05 – 15:20	Paper ID: 138 - Numerical modelling of additive manufacturing process for stainless steel tension testing samples	Veerappan <i>(Western Sydney University)</i>
	15:20 – 15:35	Paper ID: 135 - Modelling lightning strikes to carbon fibre reinforced polymer composites using the finite element method	Peter Lendrum <i>(Western Sydney University)</i>
	15:35 – 15:50	Paper ID: 121 - DEM study and machine learning model of particles passing along inclined vibrating screen	S M Arifuzzaman <i>(Western Sydney University)</i>

Day 2: Tuesday – December 14, 2021 (Afternoon)

Time		Parallel Session I – 11	
		Theme: Computational Methods & Computational Materials	
		Session chair(s): Helen Wu, John Wang	
		Room: 2.3.21; Zoom ID: 886 1005 0721 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
16:10 – 17:30	16:10 – 16:30	<i>Keynote</i> Paper ID: 12 - Damage tolerance management of composite structures – application of slow `growth approach (Virtual)	John Wang <i>(Defence Science and Technology Group, Department of Defence)</i>
	16:30 – 16:45	<i>Invited talk</i> Paper ID: 89 - Numerical simulation method on fibre orientation and distribution during concrete casting (Virtual)	Xuemei Liu <i>(University of Melbourne)</i>
	16:45 – 17:00	Paper ID: 114 - The maintenance of “mud hole” defects on railway tracks by prioritization by using big data analysis and numerical study	Ralph Zhang <i>(Western Sydney University)</i>
	17:00 – 17:15	Paper ID: 83 - Automated Bayesian calibration of DEM contact parameters	Philipp Hartmann <i>(University of Newcastle)</i>
	17:15 – 17:30	Paper ID: 99 - Direct point-cloud based numerical analysis using octree meshes	Yifan Zhan <i>(University of New South Wales)</i>

Day 2: Tuesday – December 14, 2021 (Afternoon)

Time		Parallel Session I – 12	
		Theme: Computational Fluid Dynamics	
		Session chair(s): Hong Zhang, Yixiang Gan	
		Room: 2.3.22; Zoom ID: 817 5305 6000 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
16:10 – 17:40	16:10 – 16:30	<i>Keynote</i> Paper ID: 40 - Using stress-blended eddy simulation method to simulate vortex-induced vibration of an elastically mounted cylinder at subcritical Reynolds numbers (Virtual)	Kaiming Bi (Curtin University)
	16:30 – 16:45	<i>Invited Talk</i> Paper ID: 71 - Modelling liquid transport in PEM fuel cells: The effects of compressive stress on water management in porous layers	Yixiang Gan (University of Sydney)
	16:45 – 17:00	Paper ID: 57 - Conjugate heat transfer in pulsatile, laminar flow over a backward-facing step	Sam Mallinson (University of New South Wales)
	17:00 – 17:15	Paper ID: 117 - Sub-grid scale (SGS) large-eddy simulation (LES) models for non-Newtonian multiphase flows (Virtual)	Mohammad Shakil Ahmmed (The University of Queensland)
	17:15 – 17:30	Paper ID: 154 - Optimisation of additive manufacturing process for bone scaffold design	Venus Savaliya (Western Sydney University)

Day 2: Tuesday – December 14, 2021 (Afternoon)

Time		Parallel Session I – 13	
		Theme: ECR Award Session	
		Session chair(s): Gianluca Ranzi, Xiaoshan Lin	
		Room: 2.3.23; Zoom ID: 848 1358 0986 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
16:10 – 17:40	16:10 – 16:25	Paper ID: 151 - The influence of natural convection on deep borehole heat exchangers' efficiency	Asal Bidarmaghz <i>(University of New South Wales)</i>
	16:25 – 16:40	Paper ID: 122 - Three-dimensional finite element modeling and theoretical analysis of concrete confined with FRP rings (Virtual)	Jun-Jie Zeng <i>(Guangdong University of Technology)</i>
	16:40 – 16:55	Paper ID: 111 - Phase field fracture in elasto-plastic solids: variational formulation, numerical implementation and applications	Jianguang Fang <i>(University of Technology Sydney)</i>
	16:55 – 17:10	Paper ID: 27 - A flow deformation model for consolidation analysis of unsaturated soils including hydraulic hysteresis	Mahnoush Gharehdaghikhajehghiasi <i>(University of New South Wales)</i>
	17:10 – 17:25	Paper ID: 81 - Machine Learning Assisted Finite Element Simulation of Progressive Damage in Fibre Reinforced Composites (Virtual)	Johannes Reiner <i>(Deakin University)</i>
	17:25 – 17:40	Paper ID: 148 - A multiscale modelling tool linking microstructure to the complete tensile stress-strain response of Ti-6Al-4V (Virtual)	Fatemeh Azhari <i>(University of Melbourne)</i>

Day 2: Tuesday – December 14, 2021 (Afternoon)

Time		Parallel Session I – 14	
		Theme: HDR Award Session	
		Session chair(s): Leo Zhang, Jianguang Fang	
		Room: 2.3.24; Zoom ID: 858 7030 2146 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
16:10 – 17:25	16:10 – 16:25	Paper ID: 16 - Developing SCFs for concrete-filled joints under high cycle fatigue loading	Feleb Matti (<i>Western Sydney University</i>)
	16:25 – 16:40	Paper ID: 54 - Numerical analysis of the effect of work roll bending on strip crown during the tandem hot rolling (Virtual)	Lianjie Li (<i>University of Wollongong Australia</i>)
	16:40 – 16:55	Paper ID: 95 - Nonlinear damage detection of precast segmental columns	Zhen Peng (<i>Curtin University</i>)
	16:55 – 17:10	Paper ID: 102 - Shear-induced droplet mobility within patterned surfaces (Virtual)	Si Suo (<i>University of Sydney</i>)
	17:10 – 17:25	Paper ID: 80 - A combined multi-body system and finite element analysis approach to simulating train-track switch interaction dynamics (Virtual)	Nikhil Pillai (<i>University of Birmingham</i>)

Day 2: Tuesday – December 14, 2021 (Afternoon)

Time		Parallel Session I – 15	
		Theme: HDR Award Session	
		Session chair(s): Xiaodong Huang, Nathan Podlich	
		Room: 2.3.25; Zoom ID: 847 5503 2494 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
16:10 – 17:40	16:10 – 16:25	Paper ID: 46 - CFD-DEM modelling of the migration of fines in suspension flow through a solid packed bed	Zhouzun Xie <i>(University of New South Wales)</i>
	16:25 – 16:40	Paper ID: 53 - Numerical investigation of drag property for fluid flow through random arrays of elliptical cylinders	Shuang Song <i>(University of New South Wales)</i>
	16:40 – 16:55	Paper ID: 59 - Nonlinear dynamic buckling of the functionally graded plate under linearly increasing load	Luo Bo <i>(University of New South Wales)</i>
	16:55 – 17:10	Paper ID: 48 - Phase field fracture in elasto-plastic solids: introducing stress state dependent crack driving force for ductile fracture (Virtual)	Cunyi Li <i>(University of Technology Sydney)</i>
	17:10 – 17:25	Paper ID: 39 - How does the size-dependency influence the buckling behaviour of the solar cells? (Virtual)	Qingya Li <i>(University of New South Wales)</i>
	17:25 – 17:40	Paper ID: 36 - Virtual modelling technique for impact resistant analysis of composite structures under uncertainty (Virtual)	Yuan Feng <i>(University of New South Wales)</i>

Day 3: Wednesday – December 15, 2021 (Morning)

Time		Parallel Session II – 1	
		Theme: ECR Award Session	
		Session chair(s): Hong Guan, Jun Li (UTS)	
		Room: 2.3.21; Zoom ID: 846 0538 7244 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
09:40 – 11:10	09:40 – 09:55	Paper ID: 78 - Sensitivity study of shale gas production of the hydraulically fractured well in Velkerri formation in beetaloo basin	Pengyu Huang <i>(University of Sydney)</i>
	09:55 – 10:10	Paper ID: 140 - 3D printed CFRP composite lattice with high-level thermal dimension stability (Virtual)	Yuan Chen <i>(University of Sydney)</i>
	10:10 – 10:25	Paper ID: 17 - A physics informed neural network method to the solution of biharmonic equation of elasticity	Mohammad Vahab <i>(University of New South Wales)</i>
	10:25 – 10:40	Paper ID: 104 - Assessment of Neural-Network Stress Integration method for sheet metal forming simulation (Virtual)	Yunpeng Zhang <i>(The University of Queensland)</i>
	10:40 – 10:55	Paper ID: 84 - Nanoindentation on graphene Kirigami by atomistic simulations (Virtual)	Yihe Zhang <i>(RMIT University)</i>
	10:55 – 11:10	Paper ID: 119 - Application of a multi-scale PD-DEM framework for the simulation of rubber-sand mixtures	Philipp Hartmann <i>(University of Newcastle)</i>

Day 3: Wednesday – December 15, 2021 (Morning)

Time		Parallel Session II – 2	
		Theme: HDR Award Session	
		Session chair(s): Yuguo Yu, Mohammad Islam	
		Room: 2.3.22; Zoom ID: 845 5803 9808 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
09:40 – 10:55	09:40 – 09:55	Paper ID: 14 - Static strength and fatigue life prediction of bonded joints/patch repairs used in primary aircraft structures	Veldyanto Tanulia <i>(University of New South Wales)</i>
	09:55 – 10:10	Paper ID: 132 - A new constitutive model for hexagonal close-packed sheet metals under uniaxial cyclic loading	Hamed Mehrabi <i>(Western Sydney University)</i>
	10:10 – 10:25	Paper ID: 153 - Finite element modelling of a shell-and-tube heat exchanger	Zhi Zhu <i>(Western Sydney University)</i>
	10:25 – 10:40	Paper ID: 33 - Calibration of KCC model for ultra-high-performance concrete after exposure to elevated temperatures (Virtual)	Zhenhuan Xu <i>(University of Technology Sydney)</i>
	10:40 – 10:55	Paper ID: 31 - Numerical simulation of ultra-high-performance concrete strengthened reinforced concrete beams against impact loading (Virtual)	Jie Wei <i>(University of Technology Sydney)</i>

Day 3: Wednesday – December 15, 2021 (Morning)

Time		Parallel Session II – 3	
		Theme: HDR Award Session	
		Session chair(s): Yuantong Gu, Yuan Chen	
		Room: 2.3.23; Zoom ID: 846 2478 7193 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
09:40 – 11:10	09:40 – 09:55	Paper ID: 74 - Spurious Wave Reflection on Coupled BEM-DEM	Guilherme Barros <i>(University of Newcastle)</i>
	09:55 – 10:10	Paper ID: 91 - Structural Responses of Prefabricated Steel-Framed Modular Units Lifted by Crane	Mostafa Farajian <i>(Western Sydney University)</i>
	10:10 – 10:25	Paper ID: 124 - Numerical simulation of damaged RC columns strengthened with FRP (Virtual)	Shuo Li <i>(Tsinghua University)</i>
	10:25 – 10:40	Paper ID: 55 - Design of pentamode lattice metamaterials by topology optimization (Virtual)	Zuyu Li <i>(University of Technology Sydney)</i>
	10:40 – 10:55	Paper ID: 90 - XFEM modeling of fatigue crack growth in prosthetic devices	Boyang Wan <i>(University of Sydney)</i>
	10:55 – 11:00	Paper ID: 163 - A new data-driven framework for energy absorption analysis of a Miura-origami structure using machine learning method (Virtual)	Dian Zhang <i>(Swinburne University of Technology)</i>

Day 3: Wednesday – December 15, 2021 (Morning)

Time		Parallel Session II – 4	
		Theme: HDR Award Session	
		Session chair(s): Xiaodong Huang, Wengui Li	
		Room: 2.3.24; Zoom ID: 830 2228 0975 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
09:40 – 11:10	09:40 – 09:55	Paper ID: 100 - Adaptive phase field model with scaled boundary finite element method	Hongzhe Chen <i>(University of New South Wales)</i>
	09:55 – 10:10	Paper ID: 92 - The effectiveness of a novel method to model the entrainment effect of droplets on the airflow in the print gap of inkjet printers	Andre Aquino <i>(University of New South Wales)</i>
	10:10 – 10:25	Paper ID: 150 - Numerical simulation of laser ablation processes	Yutaka Tsumura <i>(University of Sydney)</i>
	10:25 – 10:40	Paper ID: 29 - A fast Matlab program for 3D structural topology optimization (Virtual)	Zicheng Zhuang <i>(RMIT University)</i>
	10:40 – 10:55	Paper ID: 98 - Thermodynamics-informed machine learning approach to constitutive modelling of geomaterials (Virtual)	Tien Nguyen Viet <i>(Monash University)</i>
	10:55 – 11:00	Paper ID: 101 - Investigation of the buildability of 3D printed concrete using finite element method	Dong An <i>(Western Sydney University)</i>

Day 3: Wednesday – December 15, 2021 (Morning)

Time		Parallel Session II – 5	
		Theme: Computational Methods	
		Session chair(s): Yixiang Gan, Klaus Thoeni	
		Room: 2.3.25; Zoom ID: 885 9590 6917 (Password: ACCM2021)	
		Paper ID – Paper Title	Presenter (Affiliation)
09:40 – 11:10	09:40 – 09:55	<i>Keynote</i> Paper ID: 157 - Numerical study of air-vapor-particle flow in gas cyclone	Kejun Dong (Western Sydney University)
	09:55 – 10:10	<i>Invited talk</i> Paper ID: 146 - Development of digital twining for commercial furniture products	Richard Yang (Western Sydney University)
	10:10 – 10:25	Paper ID: Paper ID: 7 - Effect of deck modelling approaches on the dynamic analysis of a cable-stayed bridge for structural health monitoring (Virtual)	Thomas Sharry (Griffith University)
	10:25 – 10:40	Paper ID: 67 - Computational Nano-Micro-Mechanics Modelling of Matrix Microcracking and Toughening Effect of Nanofillers for Multiscale Composite Laminates (Virtual)	Wenkai Chang (University of New South Wales)
	10:40 – 10:55	Paper ID: 86 - Numerical investigation of impeller rotation effects to assess the performance of centrifugal blood pump (Virtual)	Talwinder Singh (University of Technology Sydney)
	10:55 – 11:00	Paper ID: 113 - Studying the interaction between concrete sleeper and ballast on heavy haul track by numerical study and in-field assessment	Ralph Zhang (Western Sydney University)

Day 3: Wednesday – December 15, 2021 (Morning)

Time		Parallel Session II – 6	
		Theme: HDR Award Session	
		Session chair(s): Raj Das, Jun Li (UTS)	
		Room: 2.3.21; Zoom ID: 846 0538 7244 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
11:30 – 13:05	11:30 – 11:50	Paper ID: 26 - Acoustic Hologram with Phased Arrays via Topology Optimization	Weibai Li <i>(Swinburne University of Technology)</i>
	11:50 – 12:05	Paper ID: 141 - Mechanical calibration of metal additive manufacturing process using inherent strain method	Raju Majji <i>(Western Sydney University)</i>
	12:05 – 12:20	Paper ID: 38 - Modelling unsaturated and liquefiable silty tailings	Yanzhi Wang <i>(University of New South Wales)</i>
	12:20 – 12:35	Paper ID: 56 - Hydro-elastic interactions between wave and cylindrical flexible porous net array (Virtual)	Mingyuan Ma <i>(Griffith University)</i>
	12:35 – 12:50	Paper ID: 134 - Segregation of a non-spherical intruder in vibrated granular bed (Virtual)	Jinpeng Qiao <i>(Western Sydney University)</i>
	12:50 – 13:05	Paper ID: 136 - Implementation of design for additive manufacturing in a real-world metal mechanical part	Laurence Wong <i>(Western Sydney University)</i>

Day 3: Wednesday – December 15, 2021 (Morning)

Time		Parallel Session II – 7	
		Theme: Computational Materials	
		Session chair(s): Noor Baktash, Wengui Li	
		Room: 2.3.22; Zoom ID: 845 5803 9808 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
11:30 – 13:00	11:30 – 11:45	<i>Keynote</i> Paper ID: 155 - Fracture resistance optimisation of ceramic structures by interactive topological rearrangement	Leo Zhang (Western Sydney University)
	11:45 – 12:00	Paper ID: 126 - Multiscale modelling of additively manufactured high impact polystyrene	Patrick Kamlade (Western Sydney University)
	12:00 – 12:15	Paper ID: 128 - Finite element modelling of additively manufactured acrylonitrile butadiene styrene	Phan Nguyen (Western Sydney University)
	12:15 – 12:30	Paper ID: 142 - Numerical modelling of stainless-steel product using additive manufacturing	Jasper Guzman (Western Sydney University)
	12:30 – 12:45	Paper ID: 144 - Effects of welding path and cooling mode on a wire arc additive manufacturing process	Chengchao Zhao (Western Sydney University)

Day 3: Wednesday – December 15, 2021 (Morning)

Time		Parallel Session II – 8	
		Theme: HDR Award Session	
		Session chair(s): Helen Wu, Jianguang Fang	
		Room: 2.3.23; Zoom ID: 846 2478 7193 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
11:30 – 13:00	11:30 – 11:45	Paper ID: 44 - Computational simulation of biomechanics and mechano-biology of distal radius fracture healing under physiologically relevant dynamic loading	Xuanchi Liu <i>(University of Melbourne)</i>
	11:45 – 12:00	Paper ID: 35 - Failure Mechanisms of Hawkesbury Sandstone under Different Load Configurations (Virtual)	Zeinab Aliabadian <i>(University of New South Wales)</i>
	12:00 – 12:15	Paper ID: 77 - Machine Learning Based Optimization of Continuously Variable Stiffness Composites with Level Set Method	Yanan Xu <i>(University of Sydney)</i>
	12:15 – 12:30	Paper ID: 97 - A discrete material optimization approach for finite oriented periodic structures	Simon Thomas <i>(University of Sydney)</i>
	12:30 – 12:45	Paper ID: 115 - Transformation Bands in Zirconia	Tom Wilson <i>(University of Sydney)</i>
	12:45 – 13:00	Paper ID: 88 - Virtual geometry optimization of fibre reinforced composite specimens subjected to planar biaxial tensile loads (Virtual)	Calvin Gomez <i>(Deakin University)</i>

Day 3: Wednesday – December 15, 2021 (Morning)

Time		Parallel Session II – 9	
		Theme: HDR Award Session	
		Session chair(s): Yixiang Gan, Saeed Miramini	
		Room: 2.3.24; Zoom ID: 830 2228 0975 (Password: ACCM2021)	
		<i>Paper ID – Paper Title</i>	<i>Presenter (Affiliation)</i>
11:30 – 13:00	11:30 – 11:45	Paper ID: 18 - Computational simulation of TNF- α mediated fracture healing under normal and diabetic conditions	Enhao Zhang <i>(University of Melbourne)</i>
	11:45 – 12:00	Paper ID: 96 - Progressive Failure Analysis of AP-Ply Laminate using Tow Wise Modelling Technique	Xie Li <i>(University of New South Wales)</i>
	12:00 – 12:15	Paper ID: 103 - Machine learning in computational mechanics of tissue scaffolds	Chi Wu <i>(University of Sydney)</i>
	12:15 – 12:30	Paper ID: 105 - Computational Modelling of Microstructural Heterogeneity of Collagenous Network	Jingxiao Zhong <i>(University of Sydney)</i>
	12:30 – 12:45	Paper ID: 75 - Biomechanical Model for Effect of Human Bruxism	Wenwei Huang <i>(University of Sydney)</i>
	12:45 – 13:00	Paper ID: 143 - Concurrent topology optimization of multiscale structures under stress constraint (Virtual)	Guangkai Wei <i>(Tongji University)</i>

Day 3: Wednesday – December 15, 2021 (Morning)

Time		Parallel Session II – 10	
		Theme: Modelling and Simulation of Structures	
		Session chair(s): Lihai Zhang, Jun Li (Curtin)	
		Room: 2.3.25; Zoom ID: 885 9590 6917 (Password: ACCM2021)	
		Paper ID – Paper Title	Presenter (Affiliation)
11:30 – 13:05	11:30 – 11:50	Keynote Paper ID: 42 - Dynamic stability analysis of functionally graded graphene oxide/phenolic resin nanocomposite plate subjected to impulsive load	Wei Gao (University of New South Wales)
	11:50 – 12:05	Invited talk Paper ID: 95 - Deep learning-assisted structural health monitoring of civil engineering structures (Virtual)	Jun Li (Curtin University)
	12:05 – 12:20	Paper ID: 37 - Machine Learning Aided Non-Probabilistic Uncertainty Quantification for Engineering Structures (Virtual)	Qihan Wang (University of New South Wales)
	12:20 – 12:35	Paper ID: 15 - Modelling the Effect of Strain Rate on 1D Compression of Saturated Soils	Noor Baktash (University of New South Wales)
	12:35 – 12:50	Paper ID: 130 - Three-dimensional discontinuous deformation analysis (3D DDA) simulations of rock block seismic sliding movements (Virtual)	Xinyang Lv (Southwest Petroleum University)
	12:50 – 13:05	Paper ID: 164 – Numerical Investigation of Helium – Oxygen Gas Mixture Model for Airflow and Particle Transport	Suvash C. Saha (University of Technology Sydney)

