Engineering Postgraduate Conference

Pioneering the future

Conference Brochure

MONASH University Engineering

monash graduate association

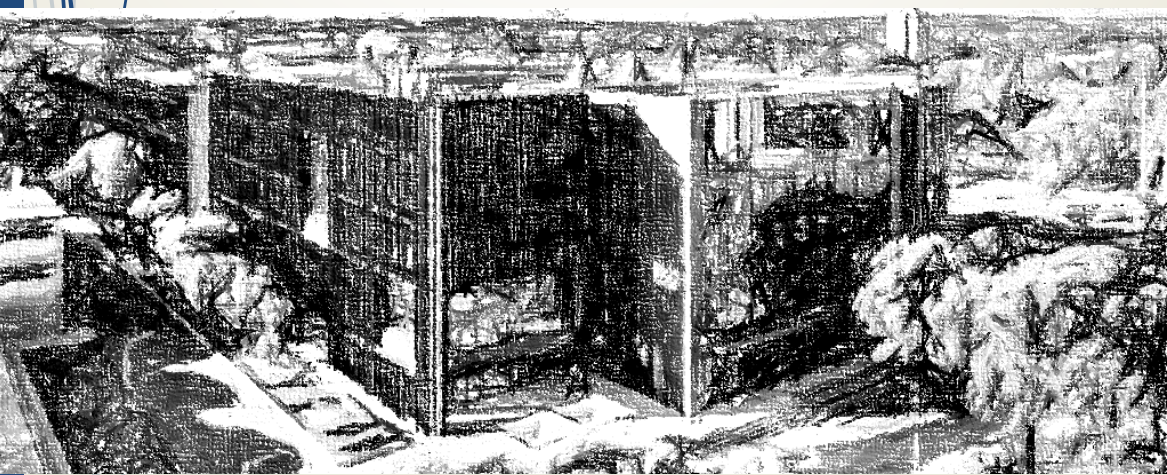
CHEMICAL ENGINEERING POSTGRADUATE ASSOCIATION

CivilEng PostGrads

MÅPS
Materials Science and Engineering Postgraduate Society

ELSEVIER

Woodside Building, Monash Clayton Campus – 1st December 2022



Programme

Woodside Building, Monash Clayton Campus – 1st December 2022

8:30 – 9:00	Reception and registration	Ground floor open spaces
9:00 – 9:15	Welcome: **A/Professor Timothy Scott**	LG02
9:15 – 9:45	Keynote 1: **Dr. Oliver Hutt**	LG02
9:45 – 10:15	Keynote 2: **Dr. Alexa Delbosc**	LG02
10:15 – 10:45	Keynote 3: **Dr. Richard Parsons**	LG02
10:45 – 11:00	Morning tea	Ground floor open spaces
11:00 – 12:30	Research presentations: **Session A**	(Rooms 1.02, 1.04, 1.06, 1.10)
12:30 – 14:15	Lunch + Poster & Exhibit Session	Level 1 open spaces
14:15 – 15:30	Research presentations: **Session B**	(Rooms 1.02, 1.04, 1.06, 1.10)
15:30 – 15:45	Afternoon tea	Ground floor open spaces
15:45 – 16:30	'Life after your Ph.D.' Panel session	LG02
16:30 – 17:00	Awards and close	LG02
17:00 – 18:00	Networking and drinks	Ground floor open spaces

Keynote Speakers:

09:00 – 10:45: LG02, Woodside Building, Monash Clayton

ZOOM:
Meeting ID: 829 8428 4551
Passcode: 704013

Dr. Oliver Hutt

Oliver Hutt is the CEO at Boron Molecular. Dr. Hutt completed his doctoral studies at the Australian National University in 2005 and then two post-doctoral stints in the School of Pharmacy at The University of Kansas and The University of Minnesota, respectively. Dr. Hutt then worked at CSIRO from 2009-2019 as a Research Scientist. In 2014, Dr Hutt was promoted Research Group Leader of the CSIRO Chemicals and Polymer Group. He completed his MBA with Torrens University in 2018 and then joined Boron Molecular in 2019. He spent three years in Business Development at Boron Molecular commercialising Australian science and is now the CEO, from May 2022.

Dr. Alexa Delbosc

Alexa is a Senior Lecturer in the Institute of Transport Studies, Faculty of Civil Engineering at Monash University. After graduating from Harvard with a Masters in social psychology, Alexa wanted to apply her social science research skills to solve real-world problems. Her research has covered such topics as the impact of transport on psychological well-being, understanding the psychology of fare evasion and exploring the changing mobility of the millennial generation. This last project has earned her a prestigious Discovery Early Career Research Award from the Australian Research Council.

Dr. Richard Parsons

Richard is the Founder and CEO of Kite Magnetics, a venture-back aerospace manufacturing company based in Melbourne Australia. Prior to founding Kite Magnetics, Richard worked as a researcher at Monash University for year years where he developing new magnetic materials specifically for ultra-high performance electric motors. In 2021 he left academia to start Kite Magnetics as a spinout company from Monash university in order to commercialise a new materials technology he co-invented that is being used to produce a new generation of smaller, lighter and more efficient electric motors for use on electric aircraft so that they can fly further and carry more.

Oral presentations - Session A

Time	Room 1.07 **Biotechnology** Meeting ID: 841 1129 5576 Passcode: **823502**	Room 1.06 **AI & Computational Modelling** Meeting ID: 886 0960 2676 Passcode: **419681**	Room 1.10 **Energy & Renewables** Meeting ID: 870 0314 8017 Passcode: **080657**	Room 1.02 **Infrastructure & Environment** Meeting ID: 843 1145 9894 Passcode: **641644**
11:00-11:15	**Thuy Nguyen** Microfluidic fabrication of human bone mesenchymal/stromal cells (hBMSCs)-laden microgels for cartilage regeneration	**Kim Sang Tran** A Novel Hybrid Mechanism Actuated by Voice Coil Motor (VCM) and Piezoelectric Actuator (PEA)	**Mohammad Chowdhury** Organic electrolytes for rechargeable Zn-air battery	**Zunaira Naseem** A novel approach via nanomaterial to exterminate air bubble challenges in the construction industry
11:15-11:30	**Tony Huynh** Thiol-acrylate emulsion templated porous polymers and fibrin scaffolds for the formation of in vitro tissue engineered bone-ligament-bone construct	**Aakash Chhabra** RADAR- and optics-based VSPI as a proxy for post-fire recovery over Eucalypt forest in southern Australia	**Geoffrey Ferres** Project-to-project learning between climate response demonstration projects: A review of context, challenges and opportunities	**Ha Anh Nguyen** Vehicle Ownership - Safety I - Safety II: New Insights into Research on Safety of Public Transport
11:30-11:45	**Silpa Mariya** Dendrimer diffusion in semi-dilute solution of linear chains	**Shaun Davey** Comparison of Physics-Informed Neural Network Approaches for Measuring the Unsteady Drag on a Settling Sphere	**Michael Scalzo** Transporting Hydrogen Fuel: Printable MOF-polymer composites for LOHC separation	**Yuxi Liu** NELP Open Excavation Displacement Behaviour Analysis
11:45-12:00	**Farin Yazdan Parast** High-throughput sperm selection using a network of 3D microchannels	**Anup Shahi** A process-based approach to study the effect of microporosity on effective properties in carbonate rock	**Hamza Asmat** Gas Phase CO2 Conversion	**Harini Senadheera** Use of a graphene-coated geotextile for pavement applications
12:00-12:15	**Aswin Paul** Modelling the emergence of intelligent behaviour using an efficient active inference algorithm	**Samuel Brock** Super-resolution reconstruction of wall stresses with machine learning	**Adriano Gomes de Freitas** Energy Efficiency in Pneumatic Conveying Systems	**Tamara Herzog** Phytomining – how temperate, naturalised Tasmanian plant species perform in a river mining setting
12:15-12:30		**Yizhe Wang** Optimization of Human-Robot Collaboration in Off-Site Structure Assembly	**Adrian Cordero Obando** Flow-induced vibration of an oblate spheroid with an aspect ratio of 2	**Reyhaneh Mohammadesmeili** Robustness of temporary structures

Poster presentations – Level 1 open spaces (12:30 – 14:15)

Biotechnology	AI & Computational Modelling	Energy & Renewables		Infrastructure & Environment	
Lingxiao Zhen Fibroblast Attachment and Morphology on Additive Manufactured Ti-6al-4v Surfaces	**Henry Shen** Natural Convection in Inclined Enclosures	**Parisa Biniaz** Recovering valuable metals from spent lithium ion battery	**Haoyu Wang** CFD-DEM investigation of particle fluid flow and wall erosion in centrifugal slurry pump	**Leah Barrett** Microbial source tracking in informal settlements for improved human and environmental health	**Pengxuan Ji** Automatic Interpretation of Acoustic Emission (Ae) and Microseismic (Ms) Data for Underground Prospecting
Parisa Eslami The Effect of Temperature and Concentration on the Rheological Properties of Collagen Gels	**Fayuan Huang** Modelling and analysis of sewage rheology effect on anaerobic fluidized bed reactor performance	**Hao Liu** Modification of ZnO electron transport layers with benzoic acid derivatives in non-fullerene based organic solar cells	**Feng Xiao** The effects of CO2 compressibility on hydraulic fracture propagation	**Abishek Arya** Graphene Coatings: A Disruptive Approach to Corrosion Resistance	**Qishen Ye** Enhancing road work zone safety through smart sensing and interaction with vehicles
Ke Wang Artificial cells for methanol conversion	**Yisong 'Ethan' Xu** Analysis of distortions in free-space optical communication	**James Wang** Stratification and Pressure Evolution in LH2 Tanks for Export	**Caitlin Murray** Achieving a Wanted Soliton Crystal Microcomb State Using a Pre-set Pump Frequency Sweep	**Xilin Chen** Sustainability assessment and adaptive design for TBM tunnel and prefabricated metro station	**Yimo Zhu** Seismic motion design and equivalent-linear input program for deep underground cavern
Sophie Armstrong Polydopamine Deposition to Enhance the Tissue Integration of Soft Elastomeric Materials for Cardiovascular Implants	**Victor Arowoiya** A real-time monitoring of IoT sensors data and thermal comfort parameters assessment in buildings	**Jingwei Wang** Catalytic upgrading of cellulose fast pyrolysis to furfural over MCM-41-Zn/Pd catalyst	**Yonghang Sun** Stimulated-Brillouin-Scattering Based Optical Carrier Recovery	**Vihan Weeraratne** Understanding the historical variation and driving factors of the Urban Heat Island (UHI) effect in Melbourne, Australia	**Jian Tsen Goh** Contextual visualization of crane lift information for real-time execution in modular integrated construction
Zaimao Peng Effect of shearing on the rheological properties of alginate-xanthan gum hybrid hydrogel	**Ezhilsabareesh Kannadasan** Spectral analysis of the evolution of energy-containing eddies				**Senuri Siriwardhana** International Comparison of Industry 4.0 Concepts and Interpretation of Skills Development: A Literature Review
Hajar Samadian Anti-tumor Effect of Folate Binding Protein	**Tianjie Yang** Crane-to-Crane (C2C) collaboration in façade panel installation				

Oral presentations - Session B

Time	Room 1.07 **Biotechnology** Meeting ID: 841 1129 5576 Passcode: **823502**	Room 1.06 **AI & Computational Modelling** Meeting ID: 886 0960 2676 Passcode: **419681**	Room 1.10 **Energy & Renewables** Meeting ID: 870 0314 8017 Passcode: **080657**	Room 1.02 **Infrastructure & Environment** Meeting ID: 843 1145 9894 Passcode: **641644**
14:15-14:30	**Nina Langer** Artificial Hearts for Complex Heart Failure Cases.	**Ravee Pathya** Jet noise source modelling	**Linjing Tang** Capture two polymorphs of P(NDI2OD-T2) using grazing incidence wide angle X-ray scattering and their thermal behaviour	**Foad Brakhasi** A comparison passive microwave models for predicting the microwave emission from soils
14:30-14:45	**Nasim Klaie** The effect of surface micro-topographies on human mesenchymal stem cells	**Kasun Kalhara** Motion Prediction of Roadside Agents Surrounding Autonomous Vehicles on the Urban Roads	**Mohammad Fazli** Fully-Resolved CFD-DEM Simulation of Newtonian Suspension Flows	**Mahsa Naseri** Can the built environment explain walking changes during COVID-19 lockdown? An exploration of the Melbourne experience
14:45-15:00	**Adrian Vidal** Efficiently Computable Error Bounds for Piecewise Constant Nanopore Channels	**Osama Hussain** A Novel financial decision-making framework for Mega Rail Projects based on 5D-Building Information Modelling (BIM)	**Jonathan Lo** Machine-learning approaches for estimating the flow-induced vibrations of elliptical cylinders	**Elnaz Karamati Niaragh** Passive Sampling in Various Water Systems for Microbial Detection: A review
15:00-15:15	**Pallavi Sengupta** Production and Functionalization of Biopolymers using Continuous Flow	**Behzad Abdellahi** Prediction the failure behaviour of pseudo-ductile composite using a micro scale finite element model	**Bihai Sun** Investigation of the Contribution from the Reynolds Shear Stress Quadrant Events via the Renard-Deck Decomposition to the Wall Skin Friction Coefficient in a Zero-pressure-gradient Turbulent Boundary Layer	**Farah Bilawal** An Insight into a smart tri-band radiometer development for soil moisture measurements.
15:15-15:30		**Zheng Xu** Analysing the impact of scenario criticality on user acceptance of AVs during high-level autonomous driving: A VR-enabled empirical study	**Yan Lu** Pd-Conformally Coated, One-end-embedded Gold Nanowire Percolation Network for Intrinsically Stretchable, Epidermal Tattoo Fuel Cell	**Lik Tze Lee** Detailed mechanical behaviour of carbon fibre reinforced polymer (CFRP) reinforced Ultra-high strength steel (UHSS) hollow sections under impact loadings

PhD alumni Panel members:

‘Life after your Ph.D.’

15:45 – 16:30: LG02, Woodside Building, Monash Clayton

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Dr. Mitra Nosratpour

Mitra is a product development technologist currently working at Riverina oils and Bio energy. Having spent the almost 10 years studying food science, culminating with the completion of her PhD in Chemical Engineering at Monash University, focusing on the fortification of dairy products with omega-3 fatty acids. Mitra now believes that consumers need to be opened up, to be exposed and introduced to new food products and tastes, so that they can truly experience the cutting-edge advancements that science is bringing us in terms of food variety.

Dr. Rodrigo Curvello

Rodrigo is a biomedical engineer with knowledge in biomaterials, cancer, and organoid models. He completed his Bachelor in Biomedical Engineering and Science and Technology at the Federal University of ABC in Brazil and was awarded the best graduate by the Brazilian Council of Engineering. He obtained his PhD from Monash University in 2020 and won the Mollie Holman Award for the best thesis within the Faculty of Engineering. Currently, Rodrigo is a postdoctoral researcher in the 3D Cancer Models Group led by Professor Daniela Loessner.

Dr. Mayer Melhem

Mayer is a lead engineer at the Department of Transport Victoria and an adjunct structural engineering research associate plus teaching associate in the Department of Civil Engineering at Monash University. He received his PhD in Structural Engineering at Monash University. Mayer has prior biomedical science research experience, but his current research interests lie in applying structural reliability methods in bridges. Mayer is also passionate about engineering education, with prior experience in teaching.

PhD alumni Panel members:

‘Life after your Ph.D.’

15:45 – 16:30: LG02, Woodside Building, Monash Clayton

Dr. Farhana Naznin

Farhana was awarded her PhD in Transportation Engineering from Monash University in 2016. Before commencing her PhD study, she was working as a university lecturer in Bangladesh. Her major area of interest is road safety and traffic engineering. After completing PhD, Farhana started working as a research fellow at Institute of Transport Studies, Monash University and then moved to Australian Road Research Board (ARRB) in 2019 where she was working as a senior professional in the Transport Safety Team. Recently, she joined the Department of Transport (DoT) in their Movement and Safety Team.

Panel session chaired by:

Dr. Andrew Stephens

Research Fellow, Department of Mechanical and Aerospace Engineering at Monash University

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