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ARC INDUSTRIAL TRANSFORMATION TRAINING CENTRE
NØBEL
DIGITAL PLATFORMS

WESTERN SYDNEY UNIVERSITY

ARC ITTC NØBEL CENTRE

Digital Pathways to a Net-Zero Built Environment

AUBEA2026 Conference

DATE
Monday 16 November 2026

VENUE
Peter Shergold Building
Western Sydney University Parramatta
Level 9, Conference Room 03-04

NØBEL

PROGRAMME
Research · Innovation · Sustainable Construction

TIME	SESSION	SPEAKER
11:30 – 11:40 am	Welcome and Introduction to ARC ITTC NØBEL Session	**Dist. Professor Vivian Tam** Director, ARC ITTC NØBEL
11:40 – 12:00 pm	ITTC NØBEL Project Presentation **Towards Net-Zero Energy Buildings: Integrating Sustainable Design, Lifecycle Cost, and Emerging Technologies**	**Dr Khalegh Barati** Chief Investigator, ARC ITTC NØBEL UNSW Sydney
12:00 – 12:15 pm	ITTC NØBEL Research Presentation **Biochar Concrete: New Strategy for Sustainable Building**	**Dr Ramos Lin** Postdoctoral Research Fellow Western Sydney University
12:15 – 12:30 pm	ITTC NØBEL Research Presentation **Safe for Life: Digital Governance of Consumer Energy Resources in the Net-Zero Transition**	**Ms Wenqing Wan** HDR, ARC ITTC NØBEL Western Sydney University
12:30 – 12:55 pm	**Panel Discussion and Q&A** Moderator **Dist. Professor Vivian Tam** Director, ARC ITTC NØBEL	**Professor Pejman Sharafi** Deputy Director, ARC ITTC NØBEL, WSU **Dr Khalegh Barati** Chief Investigator, ARC ITTC NØBEL, UNSW **Professor Srinath Perera** Chief Investigator, ARC ITTC NØBEL, WSU **A/Prof. Johnson Xuesong Shen** Chief Investigator, ARC ITTC NØBEL, UNSW
12:55 – 1:00 pm	Closing Remarks	**Professor Pejman Sharafi** Deputy Director, ARC ITTC NØBEL

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Speaker Biographies



Distinguished Professor Vivian Tam

Director, ARC ITTC NØBEL
Western Sydney University

Dist. Professor Vivian W. Y. Tam is a world-leading researcher in the field of construction engineering and management. Her findings have found applications and impact for tackling climate-change issues for green buildings and recycled concrete. She is currently the Director of Centre for Infrastructure Engineering, Associate Dean (Research and HDR), Associate Dean (International) and Discipline Leader (Construction Management) at School of Engineering, Design and Built Environment, Western Sydney University, Australia. She was nominated to the College of Expert, Australian Research Council, Australian Government in 2018-2021. She is currently the Editor-in-Chief of International Journal of Construction Management and Senior Editor of Construction and Building Materials. She has published over 330 referred journal articles. Her work has been recognised by peers nationally and internationally, which has been exemplified by seven Australian Research Council projects and over 24,000 citations with a h-index of 81. Vivian is also named as 100,000 Top-Scientists (Top 2% Scientists) in the World for since 2017. Vivian is also nominated as a Runner Up, Scopus Researcher of the Year Award 2019, Excellence in Research Impacting a Sustainable Future, Scopus, and her team has won the Gold Award, 2021 Urban Innovation and Entrepreneurship Competition, Guangzhou International Sister-City Universities (GISU).



Professor Pejman Sharafi

Deputy Director, ARC ITTC NØBEL
Western Sydney University

Professor Pejman Sharafi is the head of Modular Prefab Design Laboratory (MPD-Lab) and a principal research academic in the Centre for Infrastructure Engineering (CIE) and Urban Transformation Research Centre (UTRC). He is the node for research and consulting on industrialised and modular construction and offsite manufacturing at Western Sydney University (WSU). He is the academic chair of the advisory board for major industries in offsite construction and has served as chair of the board of directors at major infrastructure companies, such as NIGC Co, prior to joining academia in 2010. He obtained his PhD from the University of Wollongong in 2013 and joined WSU in 2014. He obtained his bachelor degree in civil engineering from the University of Tehran, Iran, immediately followed by a Master in 1998. In 2004 he joined the Building and Housing Research Centre in Tehran, Iran, and completed a Master in Earthquake Engineering. His areas of expertise are structural systems, offsite manufacturing, prefabricated systems, modular design, and optimisation. He has led several national and international research projects in collaboration with a number of leading universities and major industries, and has been the chief investigator of over $3.9M research projects in this area. He has authored and co-authored over 130 publications in the area of building design, construction and optimisation.



Dr Khalegh Barati

Chief Investigator, ARC ITTC NØBEL
UNSW Sydney

Dr Khalegh Barati is a Senior Lecturer in Engineering Construction and Management at UNSW Sydney. His research focuses on sustainability in residential construction through modularisation, using advanced AI-enabled and smart technologies to improve building performance and support net-zero housing. His work brings together building energy optimisation, lifecycle assessment, BIM and digital construction to reduce energy demand, increase on-site renewable generation and develop practical, site-specific solutions.

Dr Barati is a Chief Investigator in the ARC Industrial Transformation Training Centre for the Net-Zero Building Ecosystem Lifecycle (NØBEL) and the ARC Research Hub for Human–Robot Teaming for Sustainable and Resilient Construction. He has supervised more than 10 PhD students and over 50 MSc students. His research record includes over 75 peer-reviewed publications, more than 10 Q1 journal papers, and best paper awards at ISARC, ICMLT, and IPC Conferences. Through NØBEL, he is advancing house-specific energy plans that integrate modular design, AI-enabled smart-home energy management, and renewable energy generation.



Professor Srinath Perera
Chief Investigator, ARC ITTC NØBEL
Western Sydney University

Head of Discipline, Quantity Surveying and Project Management, School of Built Environment & Design.

Professor of Built Environment & Construction Management, Western Sydney University and Director at c4SMC.

Specialties: Smart Construction, AI, Off-Site Manufacturing & Construction, Digital Construction/Engineering, Carbon Estimating and Management, Value Management/Engineering, Risk Management, Whole Life Costing, Cost Benefit Analysis, Disaster Management, Sustainability, Project Management, Cost Planning and Control, Circular Economy, ESG, Embodied Carbon and Embodied Water Estimating, Policy Development.

President, Australasian Universities Building Education Association – AUBEA.



A/Prof. Johnson Xuesong Shen
Chief Investigator, ARC ITTC NØBEL
UNSW Sydney

A/Prof. Johnson Xuesong Shen is an Associate Professor (Equiv. to Reader in the UK) of Engineering Construction and Management, Founding Director of the Autonomy and Intelligence in Construction (AICON) research lab, Deputy Director of the Centre for Infrastructure Engineering and Safety (CIES) at the School of Civil and Environmental Engineering, the University of New South Wales (UNSW Sydney), Sydney, Australia. A/Prof. Shen's research interests lie in Autonomous Reality Capturing, Intelligent Information Modelling, Knowledge-Driven Decision Making in the preparation, construction, operation, and maintenance of civil infrastructure and the built environment. A/Prof. Shen has extensive research experience in Real-Time 3D Light Detection and Ranging (LiDAR) Mapping with Unmanned Aerial Vehicles (UAV) or Drones; Artificial Intelligence (AI) enabled Automated As-built Building Information Modelling (BIM); Field Emissions and Fuel Consumption Modelling of Construction Equipment; as well as Tunnel Boring Machine (TBM) Tunnelling Methods and Trenchless Techniques for Urban Underground Infrastructure Construction. He serves as the Treasurer in the Executive Committee of the International Association for Automation and Robotics in Construction (IAARC).

Dr Ramos Lin
Postdoctoral Research Fellow
Western Sydney University

Dr Ramos Lin is a Postdoctoral Research Fellow at Western Sydney University, working in Distinguished Professor Vivian Tam's research team. His research focuses on low-carbon and sustainable concrete, with particular expertise in biochar concrete, self-healing concrete and metakaolin-based concrete. His work aims to develop innovative and environmentally friendly construction materials that contribute to a more sustainable built environment.

Ms Wenqing Wan
HDR, ARC ITTC NØBEL
Western Sydney University

Wenqing Wan is a second-year PhD candidate at Western Sydney University, supervised by Professor Vivian Tam and Professor Pejman Sharafi. Her research interests include the energy transition, safety governance and digital platforms for the built environment. Her PhD focuses on the life-cycle safety of consumer energy resources. In this session, she will share her research progress with us.

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