Department of Civil Engineering eNews (May to June 2025)

Department News

Prof. Elizabeth Deakin's Civil Engineering Grand Challenge Lecture

Prof. Elizabeth Deakin, Professor Emerita of City and Regional Planning and Urban Design, University of California, Berkeley and our RAE International Advisor, visited the Department of Civil Engineering and delivered a Civil Engineering Grand Challenge Lecture on April 29, 2025. The title of the seminar was "The Future of Public Transit in the US: Effects of Changing Technologies and Travel Options and What We can Learn – and Not Learn – from Transit-Supportive Cities". Displayed below is a photo taken during the seminar.

HKU Hosts International Week on Geotechnology: Advancing Landslide Safety and Slope Innovation

HKU and Geotechnical Engineering Office of CEDD hosted the International Week on Geotechnology, a week-long series of events dedicated to advancing landslide risk assessment, mitigation strategies, and slope safety. From June 2 to 7, 2025, activities included the 4th Innotech Forum on Geotechnology, the LARAM International School, and a field trip showcasing real-world mitigation efforts across Hong Kong. The event was supported by the Construction Innovation and Technology Fund (CITF) through the Construction Industry Council, and the Geotechnical Division of HKIE.

Nestled among steep hills and densely populated areas, Hong Kong has long grappled with the challenge of limited flat space and severe landslide risks. Historical tragedies, such as the 1972 Sau Mau Ping landslide and the Po Shan Road disaster, underscore the devastating consequences of slope instability. Today, with approximately 300 landslides occurring annually, Hong Kong has established itself as a global leader in

slope safety. This achievement stems from decades of pioneering research, innovative engineering, and close collaboration between academia and government.

Since the 1960s, HKU's geotechnical engineering group—guided by trailblazers like Prof. Peter Lumb and Prof. C.F. Lee—has revolutionized practical approaches to slope stability. Landmark contributions include advanced methods for water table prediction and soil nail technology, which now form the backbone of slope stabilization in Hong Kong. Today, HKU continues to lead in this field. Our geotechnical colleagues (i.e., Prof. Jun Yang, Dr. Sergio Lourenco, Dr. Fiona Kwok, and Dr. Clarence Choi) are pushing the boundaries further by developing advanced debris flow hazard mitigation strategies, utilizing cutting-edge prediction tools and innovative design methods.

A Warm Welcome and Historical Reflection

Prof. Wei Pan, Head of the Civil Engineering Department at HKU, opened the week with inspiring remarks, emphasizing Hong Kong's enduring commitment to engineering excellence and innovation, he said that "*115 years ago, the foundation of the Main Building, where we are now, was laid. Just 109 years ago, the first batch of engineering undergraduates at HKU graduated here, including seven in civil engineering. Today, as we gather for this international event, we continue that proud legacy of pioneering engineering solutions*". Displayed below is a photo of Prof. Wei Pan delivering an opening remark.

Event Highlights

June 2, 2025: The 4th Innotech Forum on Geotechnology brought together over 300 local practitioners, international experts, and academics. The forum served as a platform

for sharing innovative solutions to landslide mitigation and fostering collaboration between research and practice. Displayed below is a photo of Guests of honours including Permanent Secretary Ir Ricky Lau, Acting Director of CEDD Ir Harry Ma, Head of GEO Dr. Raymond Cheung, Executive Director of CIC Ir Albert Cheung.

June 3–6, 2025: The LARAM International School trained more than 60 early-career scientists and practitioners from 10 difference countries, focusing on landslide risk assessment and mitigation, emphasizing real-world applications and innovative strategies. Displayed below is a photo of international and local researchers and practitioners participating in the LARAM course.

June 7, 2025: A field trip ended the week with visits to historic landslide sites like Po Shan Road, demonstrating the practical application of mitigation structures such as soil-nailed slopes and drainage systems in Hong Kong.

Hong Kong's Global Leadership

Hong Kong's expertise in slope stability has made it a living laboratory for geotechnical innovation. The International Week on Geotechnology not only celebrated this legacy but also reinforced HKU and Hong Kong's role as a vital hub for knowledge exchange—where ground-breaking research transforms into life-saving engineering solutions.

By uniting global minds and fostering international collaboration, this event underscored HKU and Hong Kong's unwavering commitment to advancing slope safety worldwide—a mission rooted in its history, driven by HKU's ingenuity, and sustained through close partnership among academia, government, and industry.

Please access via these newspaper links for details: Mingpao, Hong Kong Commercial Daily, Singtao and RTHK

Staff Awards

ASCE Journal of Management in Engineering 2025 Best Peer-Reviewed Paper Honorable Mention Award

Prof. Wei Pan and his team members Dr. Yang Zhang (RAP, first author) and Mr Siwei Chen (PhD student) from Department of Civil Engineering have won the ASCE Journal of Management in Engineering 2025 Best Peer-Reviewed Paper Honorable Mention Award, for their paper titled "Construction Waste Reduction in Buildings through Modular and Offsite Construction".

The HKIE Structural Division Structural Excellence Award 2025 – Grand Award in R&D Branch

Dr. Ray Su (right) and Dr. Lijie Chen (left) have been awarded the HKIE Structural Division Structural Excellence Award 2025 – Grand Award in R&D Branch for the paper titled "Service life modelling of carbonated reinforced concrete with supplementary cementitious materials considering early corrosion propagation".

SCMs (such as GGBS and PFA) are widely used to reduce concrete's carbon footprint, but they lower carbonation resistance. This paper proposes a new service life model of carbonated SCM concretes, considering early corrosion propagation. This model, validated by Hong Kong field data, can improve durability design of concrete. Besides, this model has been applied in real projects of Urban Renewal Authority of HKSAR. It is the first to provide a performance-based model and practical equations for service life design of carbonated SCM concrete, enhancing sustainability without compromising durability.

The HKIE 50th Anniversary Legacy Award

Dr. Ray Su's study on the "Plate-reinforced composite coupling beam" has been awarded a Certificate of Merit in the Innovation Category of The HKIE 50th Anniversary Legacy Award. This award aims to recognize exceptional engineering projects, technologies, and initiatives that have significantly influenced the engineering sector and society in Hong Kong and worldwide from the 1970s through to the present day. From over 100 nominations, 19 outstanding finalists and 10 merits have been selected. Displayed below is a photo taken during price presentation ceremony.

Please access via this link for results: Results of HKIE 50th Anniversary Legacy Award

HKU scholars secure top spots in Asia across disciplines in Research.com rankings 2025

Prof. Chuyang Tang is one of the twelve HKU scholars to secure top spots (52nd globally, 9th in China for the subject of Engineering and Technology) in Research.com rankings 2025. Please access via this links for details: HKU Media

Staff News

Prof. Tak-Ming Chan Delivered a Keynote Lecture at an International Workshop

Prof. Tak-Ming Chan was invited as a keynote speaker at the international workshop for the EU project "LASTTS – LASer cutting Technology for Tubular Structures" on May 12, 2025, organized by Project Coordinator Prof. Alper Kanyilmaz (Department of Architecture, Construction Engineering, and Built Environment (DABC), Polytechnic University of Milan, Italy).

Prof. Chan delivered the keynote lecture titled "Circularity in Construction: Transforming Tubular Joint Challenges into Sustainable Opportunities Across Asia". His presentation addressed critical challenges in tubular joint design and highlighted innovative pathways towards sustainable construction practices, particularly focusing on the proposed direct reuse circular economy approach for construction industry.

Please access via this link for details: LASTTS – LASer cutting Technology for Tubular Structures

Prof. Tak-Ming Chan Appointed to be an Editorial Board member of two Academic Journals

Prof. Tak-Ming Chan has been appointed to the editorial boards of two academic journals in May 2025: Progress in Steel Building Structures (《建筑钢结构进展》) and the Journal of Energy Infrastructure.

Progress in Steel Building Structures is a leading Chinese journal disseminating cutting-edge research on steel design, fabrication, and sustainability in construction. Please access via this link for details: Progress in Steel Building Structures

The Journal of Energy Infrastructure is an international, peer-reviewed, open-access journal dedicated to advancing high-quality scholarly research and technological innovation in the field of energy infrastructure. The journal highlights cutting-edge developments in design innovation, intelligent construction, structural safety and resilience, smart operation and maintenance, and low-carbon transformation. Please access via this link for details: Journal of Energy Infrastructure

Prof. Wei Pan delivered an Invited Speech at the Policy Research Seminar Organized by the Chief Executive's Policy Unit of the HKSAR Government

The Chief Executive's Policy Unit (CEPU) of the HKSAR Government held the "Public Policy Research Funding Scheme (PPRFS) and Strategic Public Policy Research Funding Scheme (SPPRFS) Policy Research Seminar 2025" on April 1, 2025. The theme of this seminar was "Innovation Leading High-Quality Development and Deepening International Exchanges and Cooperation", with over 130 representatives from universities, think tanks, experts from various sectors, and Legislative Council members participating on-site and online.

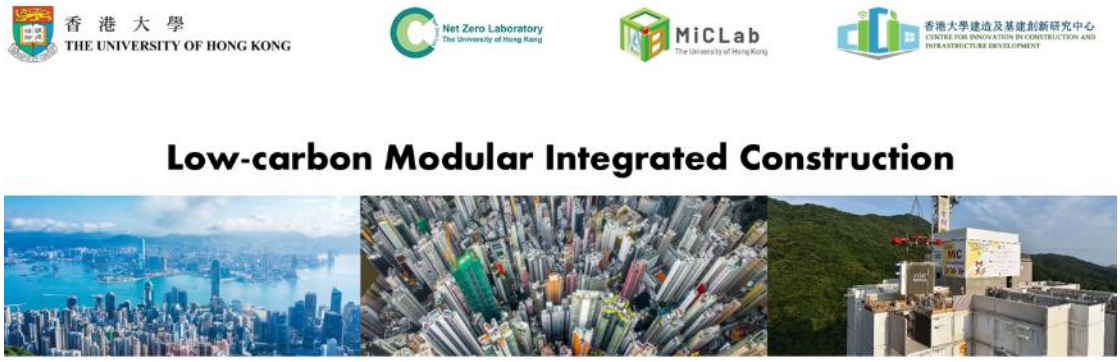
Prof. Wei Pan, Head of Department of Civil Engineering, Director of MiCLab and Executive Director of CICID, HKU was invited to deliver a speech on the recently completed research project, which is titled "Enhancing Modular Integrated Construction

(MiC) Supply Chain in the Greater Bay Area (GBA) for Hong Kong (HK) Development" and funded by the SPPRFS, with Prof. Pan as the Principal Investigator of the project. In the speech, Prof. Pan first reviewed MiC developments in Hong Kong, then reported the major findings of the research project, especially on MiC supply and demand analysis and policy roadmap with an action plan, and finally provided recommendations for achieving demand stability, process integration, and supply sustainability, as well as for enhancing systematic MiC cost-effectiveness and MiC eco-system. Displayed below is a photo taken during the invited speech on an SPPR project on MiC at the Policy Research Seminar organized by the CEPU.

Please access via this link for details:
https://www.cepu.gov.hk/en/PUEG/expertGroup_events/20250401.html

Prof. Wei Pan Delivered a Keynote Speech at an International Workshop Organised by Curtin University, Australia

Prof. Wei Pan, Head of the Department of Civil Engineering, Executive Director of CICID, Director of MiCLab and Director of NetZeroLab, HKU, delivered an invited keynote speech (online) titled "Low-carbon Modular Integrated Construction" at the International Workshop "Precinct Retrofitting for Decarbonisation" organised by Curtin University, Australia, on April 28, 2025. The Modular Integrated Construction (MiC) approach has been promoted globally with widely demonstrated benefits, including enhanced sustainability. In this keynote speech, Prof. Pan first introduced the systematic framework of life cycle carbon modelling for high-rise MiC buildings, then addressed the challenges imposed by climate change, and finally broadened the scope of study by sharing the concept of total factor sustainability to promote the sustainable development of MiC projects. Display below is title slide at the International Workshop organized by Curtin University, Australia.



Prof. Wei Pan Delivered a Keynote Speech on the Nexus Forum 2025

The Nexus Forum 2025, co-hosted by The Hong Kong Polytechnic University and Cell Press, served as a vital platform for promoting exchange and collaboration in interdisciplinary research and innovation. The Forum, with a theme on "Collaborative Innovation for Smart Sustainable Development", involved a wide range of discussions on innovative techniques for sustainable cities, industrial and interdisciplinary solutions for sustainability, and carbon neutrality and energy system transformation.

Prof. Wei Pan, Head of the Department of Civil Engineering, Executive Director of CICID, Director of MiCLab and Director of NetZeroLab, HKU, delivered an invited keynote speech titled "Dialectical system theory for sustainable MiC and infrastructure" at the Nexus Forum on May 10, 2025. Prof. Pan first explained the dialectical system theory and how it guides the research on sustainable MiC and infrastructure. He also shared research on the Infrastructure Sustainability Assessment Tool (iSAT) and sustainability performance measurement of MiC building projects. This keynote contributed sophisticated systems theories and approaches regarding the sustainable development of MiC and infrastructure to the discourse of the Forum. Displayed below is a photo taken during the keynote Speech in Nexus Forum 2025.

Prof. Wei Pan Delivered a Keynote Speech at the Modular Integrated Construction Technology Exchange Conference in Shenzhen

Organised by the China Civil Engineering Society (CCES), the Modular Integrated Construction (MiC) Technology Exchange Conference was held in Shenzhen on May 16, 2025. The conference invited industrial experts and renowned scholars to share their knowledge and join discussions about cutting-edge MiC technologies and innovative practices.

Prof. Wei Pan, Head of the Department of Civil Engineering, Executive Director of CICID, Director of MiCLab, HKU, delivered an invited keynote speech at the conference. Prof. Pan emphasised that MiC is a key technology for promoting the transformation and upgrading of the construction industry and high-quality development. He further pointed out that advanced MiC technologies will enable the integration of structural components, mechanical, electrical, and plumbing systems, and finishes and furniture. Through MiC innovation, investment can be turned around two or three times faster than traditional construction, which brings in a great business potential and value propulsion. Displayed below are a group photo and the keynote speech at the Modular Integrated Construction Technology Exchange Conference in Shenzhen.

Prof. Wei Pan moderated the HKAE TechTalk titled "Environmental Analytical Microbiology and its Applications", which was delivered by Prof. Tong Zhang at HKU on May 20, 2025.

Prof. Wei Pan Joined the Panel Discussion of BTRi Conference 2025

Prof. Wei Pan, Head of the Department of Civil Engineering, Executive Director of CICID, Director of MiCLab, HKU, participated in the Panel Discussion, titled "From Hong Kong to GBA and the World: Strengthening Our Role as an International Leader in Construction Innovation", of the Building Technology Research Institute (BTRi) Conference 2025 in Hong Kong on June 2, 2025.

Prof. Wei Pan Delivered an Invited Distinguished Speech at the International Conference of Roads and Railways 2025 (ICRR2025)

Prof. Wei Pan, Head of the Department of Civil Engineering, Executive Director of CICID, Director of MiCLab, HKU, delivered an invited Distinguished Speech titled "Enhancing the Safety, Efficiency and Sustainability of Transportation Through Innovation" at the International Conference of Roads and Railways 2025 (ICRR2025), with a theme on "Building Smart and Green Transport Infrastructure" at the Hong Kong Convention and Exhibition Centre on June 13, 2025. In this speech, Prof. Pan first examined the challenges to MiC transportation. He then shared the research of HKU MiCLab on smart MiC transportation, including mobile mapping system, 3D swept path analysis, 360 Bird's eye view, collision early alarming, module damage analysis, and turnover early alarming. Real-life applications in the HKU High West MiC project and CEDD Fanling Footbridge project were reported. He finally suggested government-industry-university collaboration for closed-loop innovation. Displayed below is a photo taken during Prof. Pan's speech.

HKU MiCLab Hosted International Conference on Modular Integrated Construction

Modular Integrated Construction (MiC) is an innovative approach to revolutionising the construction industry. To advance the sustainable development of MiC and align with the government's strategic vision for high-quality development and the creation of "better houses", MiC Laboratory (MiCLab) of HKU hosted the "International Conference on Modular Integrated Construction: New Paradigm" on June 26, 2025 at HKU. The conference brought together over 400 local and international experts from government, industry, and academia to share ground-breaking advancements in MiC and exchange insights into innovative modular construction practices and knowledge. Displayed below is a group photo at the International Conference on Modular Integrated Construction.

Prof. Richard Wong, Provost and Deputy Vice-Chancellor of HKU, delivered the welcome address, he mentioned that "*HKU developed MiC together with the Development Bureau of the HKSAR Government in 2017. Supported by the systematic research conducted by HKU MiCLab, MiC has made significant impacts on policy, society, and industry development.*"

The Guest of Honour, Ms. Bernadette Linn, JP, Secretary for Development of the HKSAR Government, delivered the opening address, she said that "*HKU has been a crucial partner of the government, driving progress in modular construction through innovation and technology. This conference gathers experts from around the world to strengthen partnerships, leverage expertise, and embrace cutting-edge innovations.*"

Mr Wei Wang, Level I Bureau Rank Official, from the Department of Standards and Norms, Ministry of Housing and Urban-Rural Development (MOHURD) delivered the special remarks, he said that "*Hong Kong has made remarkable achievements in promoting MiC. MOHURD will support Hong Kong further to develop MiC, actively promote exchanges and cooperation between Mainland and Hong Kong, jointly promote the transformation and upgrading of China's construction industry, and provide significant support for the construction of better houses*."

Displayed below is a group photo of Distinguished Guests at the Conference (From Left: Ir Prof. Thomas Ho, Chairman, Construction Industry Council; Ir Prof. Chai-kwong Mak, Vice Chairman, CICID, HKU; Ir Ricky Lau, Permanent Secretary for Development (Works); Prof. Y.C. Richard Wong, Provost and Deputy Vice-Chancellor, HKU; Ms Bernadette Linn, Secretary for Development; Mr Wei Wang, Level I Bureau Rank Official, Department of Standards and Norms, MOHURD; Ms. Linfeng Wen, General Director, Center of Science and Technology and Industrialization Development, MOHURD; Ir Chi-keung Hon, Chairman, Building Technology Research Institute; Prof. Wei Pan, Head of Department of Civil Engineering, Director of MiCLab, Executive Director, CICID, HKU).

During the conference, HKU MiCLab signed the Memoranda of Understanding (MoU) with the Civil Engineering and Development Department (CEDD) of the HKSAR Government, which was witnessed by Prof. Richard Wong, Provost and Deputy Vice-Chancellor of HKU and Ir Ricky Lau, Permanent Secretary for Development (Works) of the HKSAR Government. Also, HKU MiCLab signed the MoU with the Authority of Qianhai Shenzhen-Hong Kong Modern Service Industry Cooperation Zone of Shenzhen, which was witnessed by Prof. Richard Wong and Mr Genghui Liu, Deputy Director-General of the Department of Housing and Urban-Rural Development of Guangdong Province. These MoUs aim to expand collaboration networks to foster the promotion of innovative MiC applications in Hong Kong and beyond. Displayed below is HKU MiCLab signed the MoU with the CEDD of the HKSAR Government.

Displayed below is HKU MiCLab signed the MoU with the Authority of Qianhai Shenzhen-Hong Kong Modern Service Industry Cooperation Zone of Shenzhen.

Prof. Wei Pan, Head of Department of Civil Engineering, Director of MiCLab and Executive Director of CICID, HKU, introduced the New Paradigm for MiC Research and Development (R&D) with cutting-edge research outcomes from HKU MiCLab.

Prof. Pan also launched the Guidebook for Safe Heavy Lifting in Modular Integrated Construction for High-Rise Buildings, together with Ir Ricky Lau, Permanent Secretary for Development (Works) of the HKSAR Government. This Guidebook aims to equip industry stakeholders with the knowledge and tools necessary to ensure safer and more efficient practices. Displayed below is a photo of Launch of the Guidebook for Safe Heavy Lifting in Modular Integrated Construction for High-Rise Buildings.

Furthermore, Prof. Pan announced the launch of the International Association for Modular Construction (IAMC). The IAMC envisions a smart, sustainable and resilient built environment through continuously pushing outward the knowledge boundary of modular construction technology and innovation, and gathers leading modular construction research units worldwide to drive knowledge creation and sharing, champion technology breakthroughs, and facilitate industry application of modular construction. Prof. Pan is the founding President of the IAMC. Displayed below is a photo of Launch of the International Association for Modular Construction (From Left: Prof. Richard Liew, National University of Singapore; Prof. Mohamed Al-Hussein, University of Alberta; Prof. Martin Fischer, Stanford University; Prof. Wei Pan, HKU; Prof. Chris Goodier, Loughborough University; Prof. Tuan Ngo, The University of Melbourne).

Other prominent local and overseas scholars, experts, and industry leaders shared their insights, including Prof. Martin Fischer, Stanford University; Prof. Richard Liew, National University of Singapore; Prof. Mohamed Al-Hussein, University of Alberta; Ms. Linfeng Wen, General Director, Center of Science and Technology and Industrialization Development, MOHURD; Prof. Chris Goodier, Loughborough University; Prof. Tuan Ngo, The University of Melbourne; Prof. Thomas Bock, Technical University of Munich; Mr. Edward Wong, Architectural Services Department, HKSAR Government; Dr. Sherman Yip, Housing Department, HKSAR Government; Mr. Edmond Lo, Chinachem Group; Mr. Allan Tan, United Tec Construction Pte. Ltd.; and Er. Seng Wong, TW-Asia Consultants Pte Ltd.

On the panel discussions, Ir Prof. Thomas Ho, Chairman, Construction Industry Council; Ir Frankie Fung, Principal Assistant Secretary (Project Capability and Strategy), Project Strategy and Governance Office, Development Bureau; Mrs. Foo-Leoh Chay Hong, Director, Construction Productivity and Quality Group, Building and Construction Authority, Singapore; Ir John Kwong, Director, Building Technology Research Institute; Ir Franco Cheung, Director (Projects), Hong Kong Housing Society; Ir Dr. Conrad Wong, Chairman, Hong Kong Modular Integrated Construction Manufacturer Association; Dr. Louis Chu, Associate Director, Estates Office, HKU; and Mr. Baojun Zhao, General Manager, China State Construction Hailong Technology Co., Ltd. also shared their knowledge regarding the technology breakthroughs and industry application of modular construction.

Prof. C.K. Mak, Vice Chairman of CICID, delivered the closing remarks. He expressed his gratitude to all guests, especially for the strong support from the government,

research institutions, and industry partners, which will certainly be conducive to the future development of MiC.

Please access via this link for the press release: https://www.hku.hk/press/press-releases/detail/28459.html

Prof. S.C. Wong has been reappointed as Chairman of the Advisory Committee on Post-service Employment of Civil Servants of the HKSAR Government, effective from September 1, 2025, to August 31, 2027.

Prof. S.C. Wong has been reappointed as Member of the Road Safety Research Committee of the HKSAR Government, effective from June 1, 2025, to May 31, 2027.

Student Awards

A published paper "ConPPMF: Construction Datasets for Privacy-Preserving Mental Fatigue" by Ms. Jianhuan Zeng (a PhD student supervised by Dr. Xiao Li) has been awarded the Best Paper Award on TG81 - Global Construction Data at the prestigious CIB World Building Congress 2025. This recognition highlights our commitment to advancing smart construction collaboration while prioritizing worker well-being and data privacy.

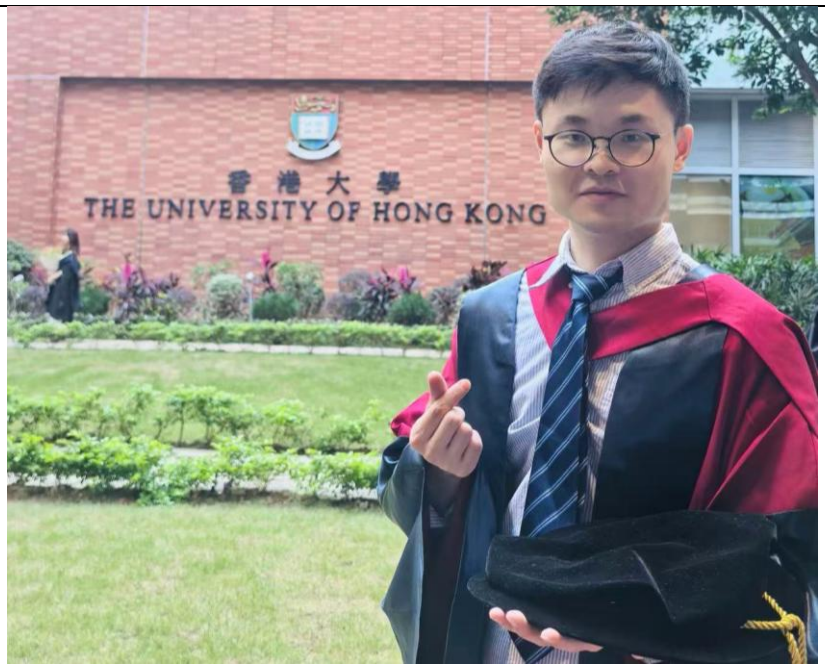
The research project focuses on decentralized collaboration in smart construction, this study introduces a multimodal dataset that integrates physiological data from smartwatches (Heart Rate Variability, HRV) and synchronized visual data (92 worksite videos). Collected from 17 male workers (including those in high-risk roles such as crane operators and truck drivers) across three active construction sites, this dataset addresses two critical industry challenges which are data scarcity and privacy concerns.

CIB World Building Congress is one of the most influential academic conferences in architecture and construction research, the CIB World Building Congress attracts top global scholars and industry leaders in an annual basis. Displayed below is a photo of Ms. Zeng.

Department of Civil Engineering Outstanding PhD Thesis Award 土木工程系優秀博士論文獎

Department of Civil Engineering has established "Department of Civil Engineering Outstanding PhD Thesis Award" from the academic year of 2024-2025 onwards. This award is given to outstanding PhD students who have submitted a thesis of exceptional quality and have demonstrated outstanding performance in other academic aspects. The reward of each award shall be HK$5,000, plus a certificate. This year, the awards are given to Dr. Qimao Gan and Dr. Haochen Yan, whose supervisors are Prof. C.Y. Tang and Dr. M.F. Guan respectively. They were recommended for the award owing to the excellent quality of their thesis and their publication record.

Dr. Qimao Gan said that "*My PhD thesis focuses on tailoring thin film composite (TFC) reverse osmosis (RO) membranes for desalination and water reuse, a research area of critical importance to freshwater production and environment protection. Specifically, the reaction-morphology-performance relationship in TFC RO membranes—an important topic that has been debated by membrane researchers for decades—was systematically investigated. As a result, an innovative "nanofoaming mechanism" was proposed. This novel mechanism allows me to establish a theoretical framework for guiding RO membrane design toward enhanced desalination and water reuse. In my future research plan, I intend to further extend this "nanofoaming mechanism" to another type of TFC membranes—nanofiltration (NF). Such TFC NF membranes offer great potential for not only freshwater production but also resource recovery such as recovering lithium ions from saline lake brine.*" Displayed below is a photo of Dr. Gan.



Dr. Haochen Yan said that "*My research focuses on short-duration rainfall extremes and resulting flood hazards. While climate warming induces non-stationarity in the long-term statistics, these extremes also exhibit complex spatiotemporal variabilities at the event scale. My research reveals the prominence of non-stationarity in short time scales, moderated by meteorological and land-use factors. I also develop novel tools to capture and reconstruct multiscale spatiotemporal variability of rainfall extremes, and to establish urban flood event catalogs through hydrodynamic simulation. Such a hybrid framework integrates statistical and physical models, which enables us to assess urban flood hazard at street level despite lack of long-term records. My work can assist high-resolution urban flood risk assessment and associated adaptation measures under the changing climate. I am profoundly grateful to my supervisor, Dr. Guan, for his unwavering support and guidance. Moving forward, I aim to enhance urban resilience to extreme climates through deeper process understanding and advanced methodologies.*" Displayed below is a photo of Dr. Yan.

Student News

2025 Greater Bay Area "Future Stars" Camp: Students from Three Regions Collaborate on Rural Revitalization

The 2025 Guangdong-Hong Kong-Macao Greater Bay Area (GBA) "Future Stars" Camp, hosted by the School of Civil Engineering and Transportation at South China University of Technology (SCUT), was held from June 2 to 6, 2025. Dr. Xiao Li with nine students from the HKU, Dr. Mi Pan and Dr. Qi Zhang with three students from the University of Macau, and SCUT's faculty and their students attended the camp and they were engaged in field research, academic discussions, and rural practice, contributing to Heshan City's "Hundreds, Thousands, and Tens of Thousands Project" model village development. The camp explored innovative approaches for GBA youth to collaborate on rural revitalization.

From Labs to the Countryside

Under the theme of "Empowering Rural Development Through Academia," the camp began with touring SCUT's State Key Laboratory of Subtropical Building Science (including wind tunnel, fire resistance, and seismic testing labs) and a 3D printing innovation center, learning cutting-edge engineering technologies. On the second day, they visited China Construction Fifth Engineering Division's ongoing *Bai'etan* project in Guangzhou, gaining insights into real-world construction challenges. The "university-enterprise-rural" tripartite model facilitated the translation of theory into practice.

Cultural Heritage Meets Rural Revitalization

In Chenshan Village (Yayao Town, Heshan), students explored intangible cultural heritage museums, the Li Tiefu Memorial Hall, and a traditional fire dragon culture exhibition, and they were studying rural tourism integration strategies. Later on, in Qingwen Village (Longkou Town), the teams assessed the *Hongqi Canal* restoration project and applied principles from *Rural Planning and Design* courses to draft spatial planning proposals. The blend of international perspectives from Hong Kong and Macao students, combined with mainland students' local expertise, infused fresh ideas into the solutions.


ALL ABOARD!

Outcomes: Partnership & Long-Term Collaboration

At the closing ceremony on June 6, 2025, SCUT's School of Civil Engineering and Transportation signed a cooperative agreement with Qingwen Village, incorporating outstanding designs into the village's renovation plan. As a key initiative under the GBA Higher Education Collaboration Program, the "Future Stars" Camp cultivates engineering talent through project-based learning, fostering cross-regional synergy for sustainable development.

Department of Civil Engineering eNews (January to April 2025)

Department News

Department Celebration Lunch for being ranked13th at QS World University Ranking 2025

The Department of Civil Engineering is proud to announce its remarkable achievement of being ranked 13th globally in the QS World University Subject Rankings 2025 in the area of Civil and Structural Engineering. This prestigious recognition underscores our unwavering commitment to academic excellence and puts us in a global leading position.

In celebration of this significant milestone, the department hosted a celebration lunch on March 25, 2025 (Tuesday), at the Ming Pavilion of the Senior Common Room, HKU. The event was graced by the presence of esteemed guests including Prof. Xiang Zhang, President and Vice-Chancellor of HKU, Prof. David Srolovitz, Dean of Engineering, Mr. Jason Yip, Faculty Secretary of Engineering, government officials, Honorary Professors and department members. Their participation made the occasion truly memorable, reflecting the collective pride and dedication of our academic community. Displayed below are some of the photos captured during the lunch.

Scholarship Presentation Ceremony 2024 - 2025

The Department of Civil Engineering held its highly anticipated Scholarship Presentation Ceremony for the 2024-2025 academic year on April 16, 2025 in the prestigious Convocation Room of the Main Building of HKU. This yearly event celebrated the outstanding achievements of deserving students and recognized the invaluable support of donors, scholarship representatives and distinguished guests. The ceremony was graced by the presence of the esteemed Guest of Honour ("GoH"), Ir Kwok Ting Tony Yau, JP, Director of Highways Department of the Government of the HKSAR.

Displayed below is a group photo of GoH, Prof. Wei Pan, our Head of Department, donors, scholarship representatives, distinguished guests and scholarship recipients.

Staff Award

The journal publication of Dr Clarence E. Choi and his team members entitled, Effects of solid fraction of saturated granular flows on overflow and landing mechanisms of rigid barriers, in Géotechnique, has been awarded 2025 Telford Gold Medal - first overall by the Institution of Civil Engineers (ICE), UK. The Telford Gold Medal is the highest award of ICE and is given to the best civil engineering (i.e., structural, environmental, geotechnical, materials, construction management) paper each year. The award was named after Thomas Telford, the first ICE President.

The medal has been awarded since 1835 to pioneers like Isambard Kingdom Brunel and Ove Arup, whose ground breaking contributions have transformed the industry. The award is recognized globally and celebrates exceptional innovation, originality, and lasting impact in areas such as research, design, and construction, often solving major challenges and influencing engineering practices worldwide.

ICE assesses all papers from industry and academia who are deemed by peers to be of exceptional quality and benefit the entire civil engineering discipline, construction, and materials science community. The medal will be received by Dr Clarence Choi in London at the institution in July later this year.

Staff News

Dr. Clarence E. Choi was awarded a Collaborative Research Fund from the Research Grants Council (RGC) with a project title “Disaster Reconstruction of Debris Flow for Rapid Rescue of Buried Objects using Differentiable Physics-guided Machine Learning.” The funded project is in collaboration with investigators from The Hong

Kong University of Science and Technology. Out of 402 applications in the 2024/2025 exercise, 42 research projects were funded by RGC.

Landslides are one of the most destructive natural hazards in the world. There is a dearth of tools to assist in post-landslide rescue. The 36-months project will adopt differentiable modelling to reconstruct landslide disasters in a rapid manner to locate displaced and buried structures to boost search and rescue efforts in mountainous regions. It is expected that the state-of-the-art tools that will be developed from this project will help to reduce landslide fatalities globally.

Student Awards

Mr. Tak San Lau (CivE 4 2023-2024) was awarded with The HKIE Structural Division Best Student Awards 2024. This award is sponsored by structural engineering firms in Hong Kong for commendation of university undergraduates who have demonstrated excellent academic results and a high level of competence in structural engineering.

Student News

The Shaking Table Competition 2025

The Shaking Table Competition 2025, organized by the Department of Civil Engineering and Project Mingde Student Association (PMSA), took place on February 20, 2025. This competition served dual purposes of education and entertainment, aiming to inspire students to apply their diverse skills and engineering mindset to design small-scale physical models addressing real-world challenges.

The models underwent testing on a shaking table under earthquake loads. Teams were provided with limited materials, predominantly balsa wooden sticks and super glue. Over the 7-day preparation period, each team employed unique design strategies and innovative approaches to meet the specified requirements. Additionally, teams had to present their engineering justifications to the distinguished judge, Prof. Francis Au, the former Head of Department.

There are 5 teams comprising a total of 19 students participated in this year's competition. It is with great pleasure that we announce Team B as the winners, consisting of Kwok Po Fai, Tsang Siu Tung, Pang Sik Yuen, and Hui Hong, representing students from Civil Engineering, Mechanical Engineering, and Computer Science disciplines. Team B was awarded a cash prize of HK$1000 and a Certificate of Champion. We extended our heartfelt congratulations to Team B for their remarkable victory and applaud all participants for their dedication and hard work throughout the competition. Displayed below are winning team's group photo and their model, along with other teams' model.

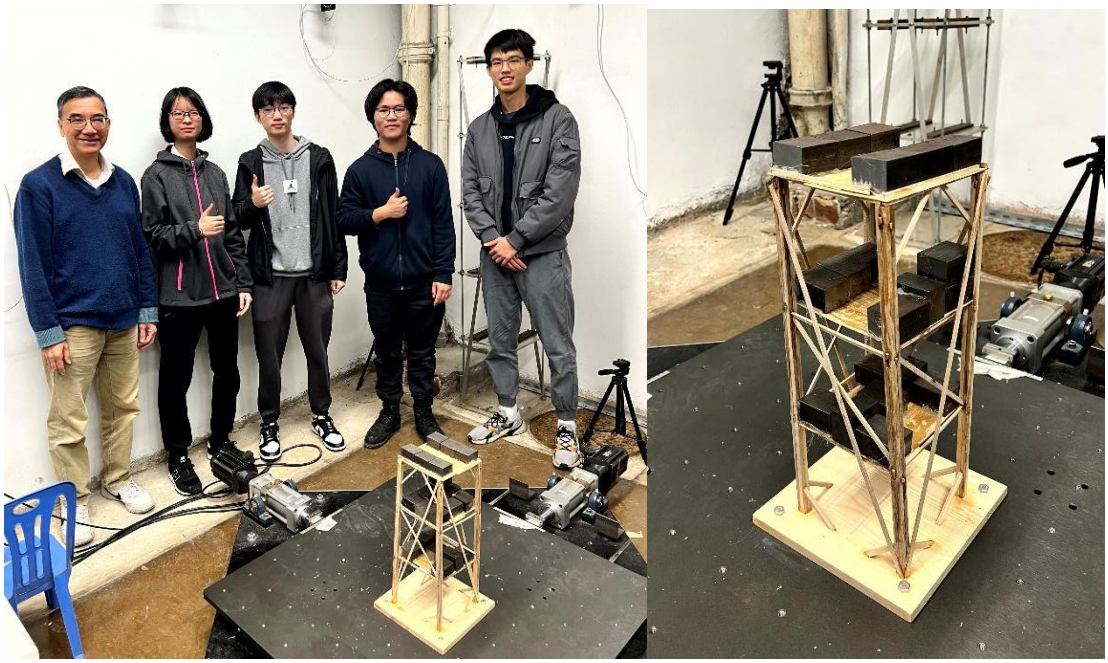


Figure 1. Group photo of winning team and their model, with our Judge Prof. Au.

Figure 2. Other teams' model.

School Outreach Activities

With The Department of Civil Engineering's support, The Institution of Civil Engineers, Hong Kong Association Graduates and Students Division, organised one of their "Shaping our Future City 2025' events at HKU on March 15, 2025. The aim of the event is to encourage students to select civil engineering as their future career.

Around 120 secondary school students joined. The event consisted of lectures on the 'planning and design of pedestrian linkages' and 'structural design of footbridges'. Dr. Clarence Choi also introduced our department and our undergraduate programme. The students then visited 4 laboratories. In the afternoon, a bridge building competition was held. Displayed below are some of the photos captured during the event.


Shaping Our Future City 2025 構建明日香港
Bridging communities, spanning possibilities 連繫社群，拓展可能
ice
AECOM
ARUP
AtkinsRéalis
MEINHARDT
MTR


Why HKU Engineering?
Dept of Civil Engg
13th
in the world
Faculty of Engineering
1st
in Hong Kong
2nd
in Asia
17th
in the world
HKU Ranking
- Quacquarelli Symonds (QS) Rankings 2024
1
Long and Glorious
2
3
4
5

Alumni News

ICE Emerging Engineers Award 2025 (Hong Kong regional finals)

Miss Elise Yi Lam Lau (a graduate who was previously supervised by Dr. Liguan Li and Prof. Tong Zhang) was awarded as champion for ICE Emerging Engineers Award 2025 (Hong Kong regional finals) with a project titled "Developing an Energy-Positive and Low-Carbon Emission Sludge Treatment Process by Integrating Physicochemical Capture and Anaerobic Digestion".

土木工程系
Department of Civil Engineering
The University of Hong Kong

Department of Civil Engineering eNews (November and December 2024)

Department News

William Mong Distinguished Lecture

Professor Michael Wagner from University of Vienna has delivered the William Mong Distinguished Lecture titled “Seeing is Understanding: Next Generation Chemical Imaging for Super-Fast Functional Analyses of Microbiomes” on November 13, 2024. The lecture was hosted by Professor Tong Zhang.

For full details, please access the webpage via this link: Faculty eNews - Issue 12, 2024

Departmental Distinguished Lecture

A Departmental Distinguished Lecture was held successfully on December 12, 2024. The Department is honoured to have Professor Nikolaos Geroliminis, one of the world's leading experts in urban transportation, to give a keynote speech for the lecture. Professor Nikolaos Geroliminis is a Full Professor at EPFL and the Head of the Urban Transport Systems Laboratory (LUTS). His research interests focus on urban transportation systems, traffic flow theory and control, public transportation and on-demand transport, car sharing, optimization and large-scale networks. He is currently the Editor-In-Chief of Transportation Research Part C: Emerging Technologies.

The title of the lecture is "Large-scale Modelling and Perimeter Control for Congested Transport Networks." The lecture was hosted by Dr. Jintao Ke and the Department souvenir was presented to Professor Geroliminis by Professor S.C. Wong. This lecture was held in KKLG109 on LG1/F of K.K. Leung Building in HKU, with around 100 participants. Professor Geroliminis shared insights on how to trace where congestion originates and how traffic management systems affect its

formation and the time it finishes. A black-tie dinner was hosted following the lecture.

Staff Award

Leung Cheuk Tong Outstanding Young Professorship

Dr. Hailong Ye has been honoured with the Leung Cheuk Tong Outstanding Young Professorship and has received the award at The Thirteenth Inauguration of Endowed Professorships on November 25, 2024.

For full details, please access the webpage via this link: HKU Media and Faculty eNews - Issue 12, 2024

Staff News

Dr. Mingfu Guan has been promoted to Associate Professor, effective from November 1, 2024.

Dr. Mingfu Guan has been awarded with 2024/2025 NSFC-RGC Joint Research Scheme grant (HK$ 992,300) by Research Grant Council, with a project titled "Developing strategies to boost resilience of metro systems to extreme flooding in a changing climate".

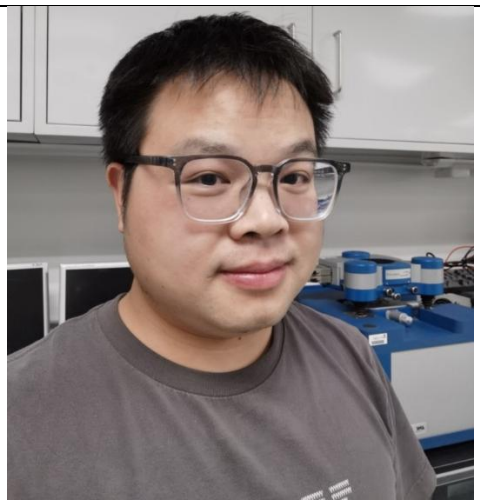
Professor A.W. Jayawardena has been invited to a Keynote Lecture on the "Role of artificial intelligence in hydrological modelling" given at the International Conference on Hydrology and Water Management (CHWM2024) held during April 19-21, 2024 in Xiamen, China (via Zoom).

He has also been invited to a Keynote presentation on the "Role of water for a sustainable future" at the International Conference on Environmental Science and Sustainable Earth 2024 held during November 11 – 12, 2024 in Paris, France (in person).

Dr. Xiao Li has been awarded with Innovation and Technology Fund with the project titled "Hybrid Pose Adjustment (HyPA) robot for assembly process in modular integrated construction (MiC)".

The MEMBest research team led by Professor Chuyang Tang, Chair Professor of Environmental Engineering, has developed a novel nanofiltration membrane using natural silk. This membrane is ten times more permeable than commercially available products, allowing a water flux of as high as 56.8 liters per square meter per hour under a partial vacuum suction. The patented technology can offer approximately 80% reduction in energy consumption for water purification.

"Silk is an amazing material—strong, flexible, and eco-friendly. We've harnessed its unique properties to push the boundaries of water purification," explained Mr. Bowen GAN, Professor Tang's PhD student who spearheaded the invention.



The team has published the work in *Nature Communications*, in an article entitled "Ultra-permeable Silk-based Polymeric Membranes for Vacuum-driven Nanofiltration".

For full details, please access the webpages via these links: Nature Communications, HKU Media, Ming Pao, Hong Kong Economic Times, Hong Kong Economic Journal, Oriental Daily News and Ta Kung Pao.

Professor Sze Chun Wong has been appointed as a Member of the Environment Committee for San Tin Technopole, effective from September 27, 2024, to September 26, 2026.

Alumni News

Fellow of Australian Academy of Technological Science and Engineering

Professor Yixia Zhang has been elected as the Fellow of Australian Academy of Technological Science and Engineering in October 2024. Professor Zhang was awarded PhD in Structural Engineering from Department of Civil Engineering at the University of Hong Kong in 2001, under the supervision of Professor Y.K. Cheung.

Professor Zhang is currently Deputy Chair of Academic Senate (was Acting Chair and member of Board of Trustee) of Western Sydney University, Discipline Lead of Civil and Environmental Engineering and Co-Director of Advanced Manufacturing Technology. Before joining Western Sydney University in 2019, she worked in University of New South Wales for 15 years. She was elected as the member of the College of Expert of Australian Research Council since 2021. Professor Zhang has made tremendous contribution in the area of advanced engineering materials, construction and building materials, composite materials and structures, and structural engineering and computational mechanics. Her interest focuses on the construction sustainability and infrastructure resilience and structural safety. Working closely with her industry partners and government, her research over 50 projects made significant impact to the society. Up until October 2024, she published

over 400 peer reviewed papers with 210 papers published in the top international journals in the relevant areas. She supervised and mentored over 100 researchers from the globe with many from China.

For full details, please access the webpage via this link: ATSE

Student Awards

Mr. Chen Chen (Mphil student supervised by Dr. Xiao Li) has won the Best Innovation and Impact Award at the 2024 International Conference on Construction Project Management and Construction Engineering (iCCPMCE), which was held during November 20 – 23, 2024 in Sydney, Australia.

Miss Siyuan Wu (PhD student supervised by Professor Quentin Z.Q. Yue) has won the Excellent Graduate Student Presentation Award at The 12th China Engineering Geology Conference, which was held during November 22 - 25, 2024 in Shenzhen, China.

Ms. Wentao Zhu (PhD student supervised by Dr. Xiao Li) has won the Best Paper Award at the 2024 International Conference on Construction and Real Estate Management (ICCREM), which was held during November 23 – 24, 2024 in Guangzhou, China.

Mr. Zexiu Zhu (PhD student supervised by Dr. Ray Su) has won the Best Student Paper Award with a paper titled "Performance of a Demountable CFST Column-to-column Connection in the Shear Wall System with Boundary Columns" at The 1st International Conference on Engineering Structures, which was held during November 8 - 11, 2024 in Guangzhou, China.

Student News

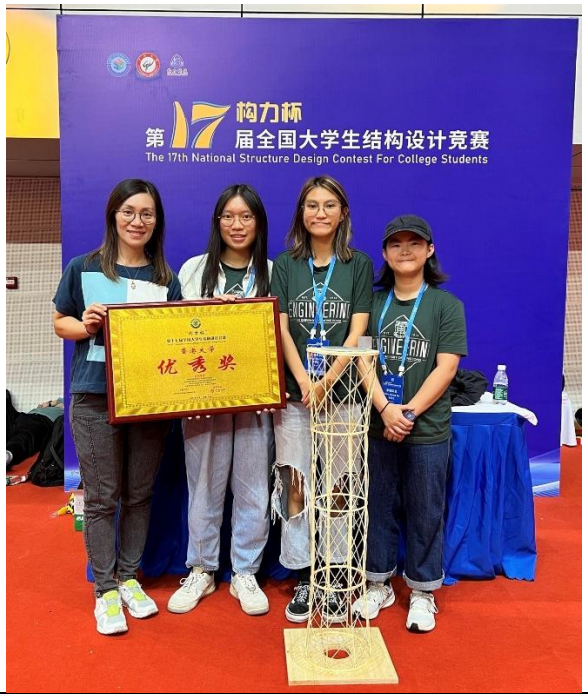
The 17th National Structural Design Contest for College Students

Recognized as one of the most prestigious structural design contests for college students in mainland China, the National Structural Design Contest for College Students encourages participants to develop innovative solutions for modern engineering challenges through collaboration. This year's competition, the 17th National Structural Design Contest, took place at Guangzhou University. Representing Hong Kong as the sole invited team, Fung Tsoi Ying, Leung Hei Yan, and Man Kwun Po, all third-year civil engineering students, participated under the guidance of Dr. Ada Law from November 8 to 10, 2024.

The theme of this year's competition was 'Structural Stability of High-Rise Structures', reflecting the increasing prevalence of such structures in mainland China's urban landscapes. With 121 teams from universities across China taking part, the competition required teams to construct their models using provided materials within a tight 12-hour timeframe spread over 2 days. The models underwent rigorous testing to assess their structural integrity, including monitoring horizontal displacement and acceleration under varying loads.

During the competition, our team had the opportunity to interact with and exchange ideas with other top-tier teams from different universities. They also enjoyed building new friendships and sharing HKU souvenirs. Witnessing the diverse yet effective models crafted with precision by other teams was truly enlightening for our students. It served as a reminder of the importance of striving for excellence in engineering solutions and provided inspiration for their future endeavors in the field.

Overall, the National Structural Design Contest was a valuable and eye-opening experience for our students, showcasing their dedication to the field of civil engineering and their commitment to excellence in their work.



Department of Civil Engineering eNews (September and October 2024)

Staff Awards

The HKIE Best Transactions Paper Prize 2024

Professor Francis Au (right), Dr. Yingqi Liu (first one from the left, PhD 2021) and Mr. Ho Kit Siu (second one from the left, BEng 2019, MSc(Eng) 2023) have been awarded the HKIE Best Transactions Paper Prize 2024 for the paper titled "Long-term performance of hybrid MiC buildings considering concrete creep and shrinkage.

Figure 1. A group photo taken during The Prize Presentation Ceremony on September 13, 2024 (Friday).

HKU Scholars in the Top 1% ranked by Clarivate Analytics

The following researchers are ranked by Clarivate Analytics in the top 1% worldwide by citations in their research fields:

- Dr. Xiao Li;
- Prof. Xiao-yan Li;
- Prof. Wei Pan;
- Prof. Kaimin Shih;
- Prof. Wai Yuen Szeto;
- Prof. Chuyang Tang;

- Prof. Sze Chun Wong;
- Prof. Jun Yang; and
- Prof. Tong Zhang.

For full details, please access the webpage via this link: https://hub.hku.hk/local/top1pc/top1pc.jsp?year=2024

World Top 2% Scientists by Stanford University's List 2024

The following researchers are ranked by Stanford University's List 2024 in the top 2% Scientist worldwide in their research fields:

By career long (2023):

- Prof. Francis Au;
- Prof. A.W. Jayawardena;
- Prof. Albert Kwan;
- Prof Mohan Kumaraswamy;
- Prof. Wei Pan;
- Prof. Kaimin Shih;
- Dr. Ray Su;
- Prof. Wai Yuen Szeto;
- Prof. Leslie George Tham;
- Prof. Chuyang Tang
- Prof. Sze Chun Wong;
- Prof. Jun Yang;
- Dr. Hailong Ye;
- Prof. Quentin Zhongqi Yue; and
- Prof. Tong Zhang.

By single year (2023):

- Prof. Francis Au;
- Prof. Ji Chen;
- Dr. May Chui;
- Dr. Jintao Ke;
- Prof Mohan Kumaraswamy;
- Prof. Albert Kwan;
- Dr. Xiao Li;
- Prof. Wei Pan;
- Prof. Kaimin Shih
- Dr. Ray Su;
- Prof. Wai Yuen Szeto;
- Prof. Chuyang Tang;
- Prof. Sze Chun Wong;
- Prof. Jun Yang;
- Dr. Hailong Ye;

- Dr. Jing Yu; and
- Prof. Quentin Zongqi Yue; and
- Prof. Tong Zhang.

For full details, please access the webpage via this link: https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/7

Staff News

Adjunct Professor A. W. Jayawardena authored his 4th book and it is published by Cambridge Scholars Publishing.

For full details, please access the webpage via this link https://www.cambridgescholars.com/product/978-1-0364-1100-8

Professor W. Pan, Head of Department, was elected Fellow of the Hong Kong Institution of Engineers on September 6, 2024.

Professor CY Tang's group published a series of papers in the prestigious journal *Nature Communications*:

- Highly porous metal-organic framework (MOF) nanosheets have shown promising potential for efficient water sorption kinetics in atmospheric water harvesting (AWH) systems. However, the water uptake of single-component MOF absorbents remains limited due to their low water retention. To overcome this limitation, Dr. Zhang Lingyue, a Research Assistant Professor working with Professor CY Tang, developed a strategy for fabricating vertically aligned MOF nanosheets on hydrogelmembrane substrates (MOF-CT/PVA) to achieve ultrafast AWH with high water uptake, achieving 91.4% saturation within 15 min. This construction approach significantly enhances the water vapor adsorption, offering a potential solution for the design of composite MOF-membrane harvesters to mitigate the freshwater crisis. More details can be found in the *Nature Communications* paper: Zhang, L.; Li, R.; Zheng, S.; Zhu, H.; Cao, M.; Li, M.; Hu, Y.; Long, L.; Feng, H.; Tang, C. Y.*, Hydrogel-embedded vertically aligned metal-organic framework nanosheet membrane for efficient water harvesting. *Nature Communications* **2024,** *15*, 9738. https://www.nature.com/articles/s41467-024-54215-z

- Chlorinated organic pollutants widely exist in aquatic environments and threaten human health. Catalytic approaches are proposed for their elimination, but sluggish degradation, incomplete dechlorination, and catalyst recovery remain extremely challenging. The work by Dr. Xiao Qian, a postdoc working with Professor CY Tang, demonstrates efficient dechlorination using ferrous oxide/graphene oxide catalytic membranes with strong nanoconfinement effects. The catalytic membrane shows complete dechlorination of dichloroacetic acid to chloride, with nearly 100% reduction

efficiency within a record-breaking 3.9 ms, improving the first-order rate constant by more than six orders of magnitude compared to current catalysis. More details can be found in the *Nature Communications* paper: Xiao, Q.; Li, W.*; Xie, S.; Wang, L.; Tang, C. Y.*, Ultrafast complete dechlorination enabled by ferrous oxide/graphene oxide catalytic membranes via nanoconfinement advanced reduction. *Nature Communications* **2024,** *15*, 9607. https://www.nature.com/articles/s41467-024-54055-x

- Nanofiltration (NF) membranes are commonly supplied in spiral-wound modules, resulting in numerous drawbacks for practical applications (e.g., high operating pressure/pressure drop/costs). Vacuum-driven NF could be a promising and low-cost alternative by utilizing simple components and operating under an ultra-low vacuum pressure (<1 bar). Nevertheless, existing commercial membranes are incapable of achieving practically relevant water flux in such a system. Mr. Gan Bowen, a PhD student supervised by Professor CY Tang, fabricated a silk-based membrane with a crumpled and defect-free rejection layer, showing water permeance of 96.2 ± 10 L m^{-2} h^{-1} bar^{-1} and a Na_2SO_4 rejection of $96.0 \pm 0.6\%$ under cross-flow filtration mode. In a vacuum-driven system, the membrane demonstrates a water flux of 56.8 ± 7.1 L m^{-2} h^{-1} at a suction pressure of 0.9 bar and high removal rate against various contaminants. Through analysis, silk-based ultra-permeable membranes may offer close to 80% reduction in specific energy consumption and greenhouse gas emissions compared to a commercial benchmark, holding great promise for advancing a more energy-efficient and greener water treatment process and paving the avenue for practical application in real industrial settings. More details can be found in the *Nature Communications* paper: Gan, B.; Peng, L. E.; Liu, W.; Zhang, L.; Wang, L. A.; Long, L.; Guo, H.; Song, X.; Yang, Z.*; Tang, C. Y.*, Ultra-permeable silk-based polymeric membranes for vacuum-driven nanofiltration. *Nature Communications* **2024,** *15*, 8656. https://www.nature.com/articles/s41467-024-53042-6

Professor S.C. Wong has been reappointed as a Member of the Environment and Conservation Fund Committee and Chairman of its Practice and Action Projects Subcommittee, effective from October 16, 2024, to October 15, 2026.

Professor S.C. Wong has been appointed as a Council Member of the Hong Kong Metropolitan University, effective from October 1, 2024, to September 30, 2027.

In Memoriam of Professor Hon Chuen Chan (陳漢銓)

Professor Chan Hon Chuen, former Head of Department of Civil Engineering, passed away on October 16, 2024 at the age of 93.

Prof. Chan obtained his bachelor degree in Civil Engineering from HKU in 1960 and obtained his Ph.D degree in structural engineering from Imperial College London in 1965.

Professor Chan worked in our department for 31 years from 1968 until his retirement in 1999. From 1994 to 1998, he was appointed Head of Department.

Professor Chan specialized in structural engineering, his main research interests were in the areas of higher order finite element method, shearwalls and corewalls, and plate and space structures.

His presence and wisdom will be dearly missed by all who had the privilege of knowing him.