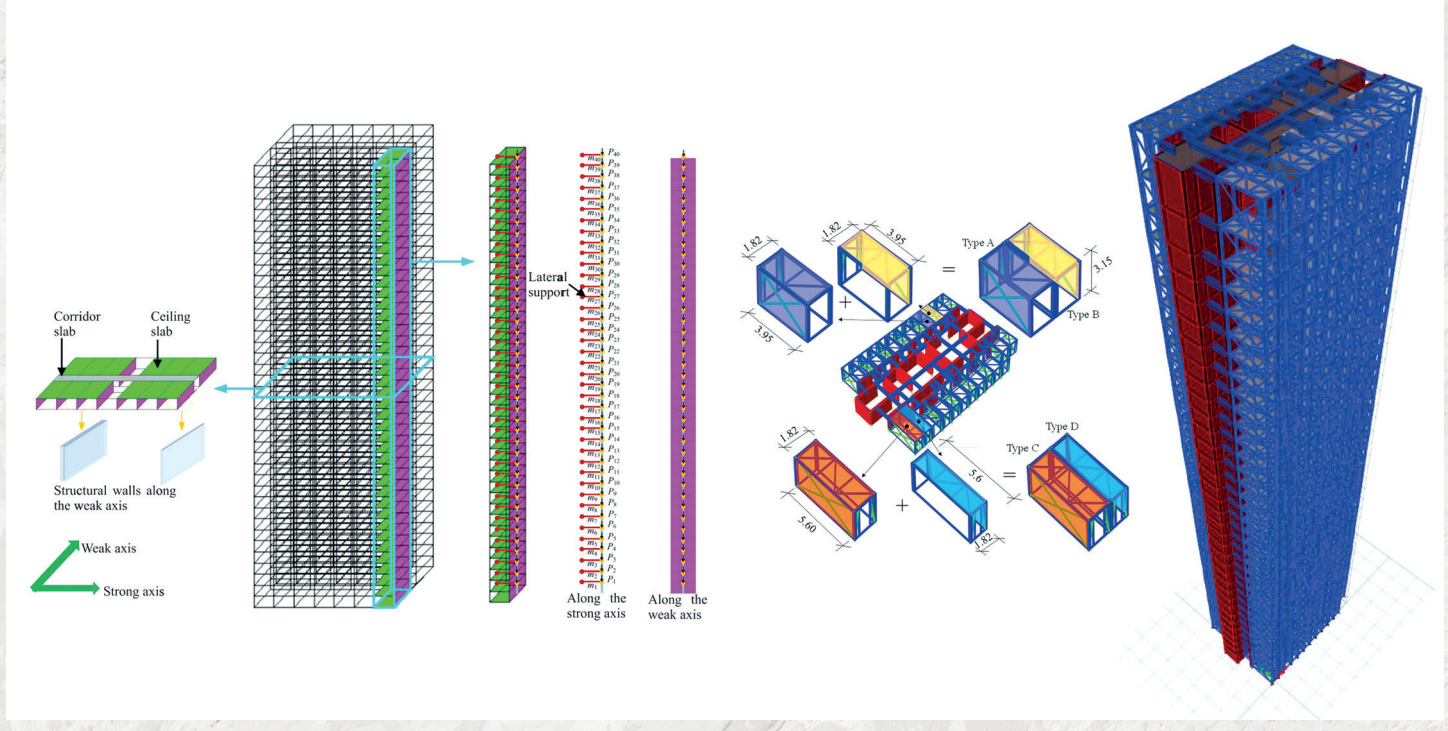
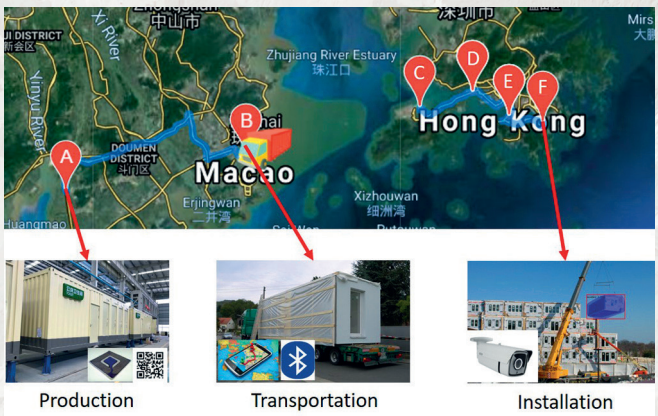
DEPARTMENT OF
Civil Engineering
土木工程系 Newsletter
THE UNIVERSITY OF HONG KONG
MARCH 2020 - AUGUST 2020

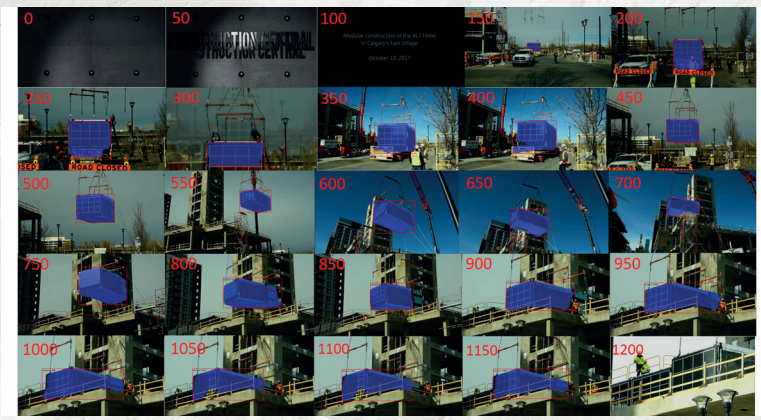
Modular Integrated Construction 2.0+

Modular Integrated Construction (MiC) 2.0+, a breakthrough of the MiC initiative, aims for developing quality and efficient tall residential buildings of 40 to 50 storeys through advanced structural engineering, innovative building materials, and smart project delivery. 'MiC 2.0+' Leader: Professor W. Pan says "We will continue promoting problem-solving and impact-driven research".



Developed solutions for concrete MiC high-rise (left) (Wang, et al 2020), and steel MiC high-rise (right) (Shan and Pan 2020).



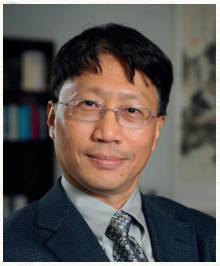


AI and IoT based smart project delivery of MiC (Zheng, et al 2020).

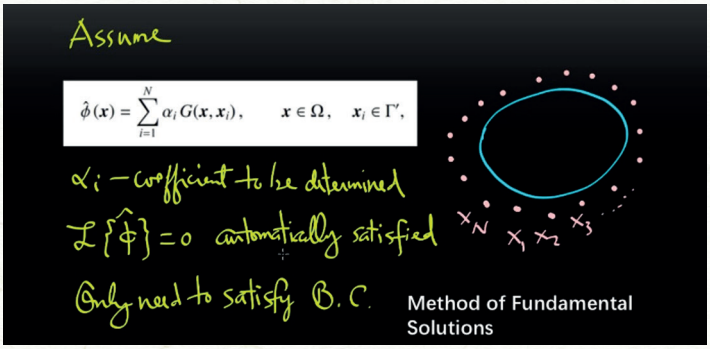
Departmental Events

Distinguished Lectures

Speaker: Professor Alexander H.-D. Cheng



Professor Alexander H.-D. Cheng, University of Mississippi, delivered the Online HKU Civil Engineering Distinguished Lecture on August 12, 2020. The lecture title is "An Overview of Method of Fundamental Solutions: Solvability, Convergence, and Applications". The lecture was well attended by about 180 researchers and engineers from Hong Kong and oversea during current COVID-19 pandemic period.



Speaker: Professor Menachem Elimelech

Professor Menachem Elimelech delivered an online Distinguished Public Lecture entitled "Membrane Materials for Desalination and Water Purification" on July 22, 2020. Professor Elimelech is the Roberto Goizueta Professor at the Department of Chemical and Environmental Engineering at Yale University, a Fellow of the US National Academy of Engineering, and a Foreign Fellow of the Chinese Academy of Engineering. He is among the most accomplished environmental researchers and is a Highly-Cited Researcher in both the Chemistry Category and the Environment/Ecology Category. Professor Elimelech's Distinguished Public Lecture highlighted membrane-based technologies at the water-energy nexus, materials for next-generation desalination and water purification membranes, and environmental applications of nanomaterials. The recorded lecture is available at http://www.civil.hku.hk/video/seminar20200722.html.

Speaker: Professor Itai Einav

Professor Itai Einav, one of the pioneer researchers in breakage mechanics, gave a distinguished lecture to the Department of Civil Engineering at the University of Hong Kong on July 16, 2020, entitled, "On the breakage mechanics of granular systems (a heterarchical journey)." Professor Einav is working at the University of Sydney as Professor of Geomechanics and as Director of Sydney Centre in Geomechanics and Mining Materials. His innovative lecture provided a comprehensive overview of the development of continuum mechanics principles for comminution - the process of grainsize variations through crushing and grinding. Professor Einav also shared his new theoretical paradigm to handle grain crushing in open systems and provided insightful examples of breakage in the applications of the bearing capacity of piles in sand and block cave mining. The lecture attracted more than 120 local and international academics and engineers. The lecture was an astounding success and generated in depth discussions of challenges that need to be tackled in the field of breakage mechanics in the future.

Speaker: Professor John L. Provis

Professor John L. Provis, the Chair in Cement Science & Engineering at The University of Sheffield, U.K., was invited to deliver an online Distinguished Lecture on July 28, 2020. His 90-minute lecture is entitled "Achieving high durability with new sustainable cements", hosted by Dr. H. Ye. The lecture has attracted over 150 audiences, including several oversea participants from Australia, Switzerland, and UK. The lecture has led to a fruitful discussion regarding the practical use and standardization of new concrete materials.

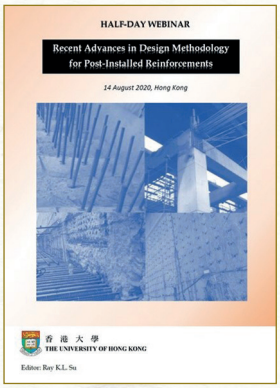
Speaker: Professor Shane Snyder

Professor Shane Snyder delivered an online Distinguished Public Lecture entitled "Challenges of Emerging Pollutants in Water Management" on August 26, 2020. Professor Snyder is one of the best-known researchers working on the identification, fate, and health relevance of emerging water pollutants. He is the President's Chair in Water Technologies and the Executive Director of the Nanyang Environment & Water Research Institute (NEWRI) at Nanyang Technological University (NTU), Singapore. He also serves as the Editor in Chief for the American Chemical Society journal, Environmental Science & Technology Water. Professor Snyder's Distinguished Public Lecture attracted approximately 200 attendees from academia, government agencies, and industries. The recorded video can be accessed at http://www.civil.hku.hk/video/seminar20200826.html.

Webinar

Half-day webinar on Recent advances in design methodology for post-installed reinforcements was successfully held on

August 14, 2020. This webinar was organized by The University of Hong Kong. The welcoming speeches of the webinar was delivered by Professor F.T.K. Au, Head of Department of Civil Engineering. Three distinguished speakers from different parts of the world presented the recent advancement in design methodology for post-installed reinforcements. More than 250 delegates and speakers participated in the webinar. The in-kind supports from the Structural Division of the Hong Kong Institution of Engineers, The Institution of Civil Engineers Hong Kong, the Hong Kong Institute of Steel Construction, Hilti (Hong Kong) Limited and The Hong Kong Institute of Vocational Education are gratefully acknowledged.



Staff Awards/Activities/News

Awards

Dr. K.L. Su has been honoured with the International Association of Advanced Materials (IAAM) Scientist Award by the Institute of Advanced Materials to recognise his valuable contributions to materials science. IAAM is a scientific organization aiming to advance the world of materials science to achieve global excellence.

Research Grants

General Research Fund

The following teachers were awarded the General Research Fund 20/21:

Dr. M.F. Guan - Spatial upscaling effects of Blue-Green Infrastructures on urban stormwater runoff;

Dr. S.H. Lee - A BIM and AI-driven intelligent system for collaborative fire emergency response;

Professor T.S.T. Ng - Digital twin for improving the operational intelligence of building facilities and workplace;

Professor W. Pan - Systematic optimization of modular integrated construction for maximum embodied carbon reduction of high-rise residential buildings in Hong Kong;

Professor K. Shih - Recovering rare-earth elements (REE) from waste electrical and electronic equipment (WEEE): metal speciation in pyrometallurgical processing;

Professor C. Tang - Novel thin film nanocomposite polyamide membranes for water reuse: creating selective nanochannels for enhanced water permeability and micropollutant removal; and

Professor T. Zhang - Time-series study for better control of microbial community in activated sludge systems.

The following teachers were awarded the Early Career Scheme 20/21:

Dr. C.E. Choi - Impact dynamics of debris flow on a series of barriers with basal clearances designed to self-clean: physical modelling;

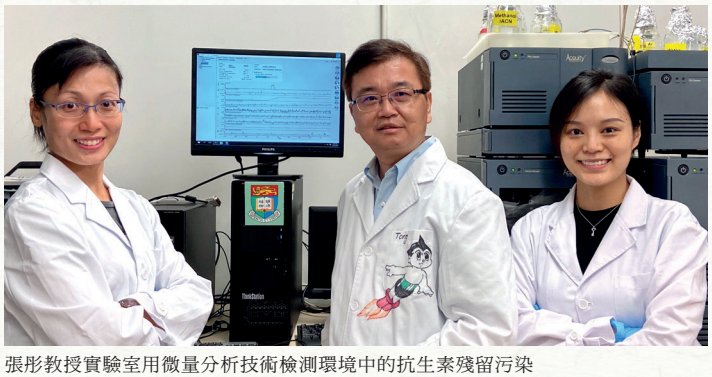
Dr. M.M. Hu - A multi-physics study on enhanced cracking in geo-energy engineering; and

Dr. Y. Qian - Modifying the rheological properties of fiber-reinforced concrete for extrusion-based 3D printing.

Theme-based Research Scheme

The Research Grants Council (RGC) has announced the funding results of 2020/21. Among a number of competitive peer-reviewed research proposals, Professor Tong Zhang's research project on "Assess antibiotic resistome flows from pollution hotspots to environments and explore the control strategies" has been selected as one of the two funded projects under Theme 2: Developing a Sustainable Environment and awarded a funding of HK$34 million.

This TRS program aims to address an emerging environmental pollution (antibiotics resistance genes) and a global public health threat of antibiotic resistance in Hong Kong from an environmental perspective. It aims to 1) achieve a comprehensive surveillance of current status of antibiotic resistance in local urban environment; 2) understand the transmission pathway of antibiotic resistance genes from pollution source to environmental sites; and 3) develop control technologies to remove antibiotic resistance genes as a group of emerging pollutants in critical sites. The project will make Hong Kong a worldwide example of adapting comprehensive strategies in tackling the environmental dimension of antibiotic resistance.



張彤教授實驗室用微量分析技術檢測環境中的抗生素殘留污染
Professor Zhang's Group using UPLC analyzes antibiotics in the Environment.

Activities

Dr. K.L. Su delivered an invited online presentation entitled Deposition and Deformation of Rust in Reinforced Concrete at the IAAM Award Lecture in the Advanced Materials Lecture Series 2020 organized by the Institute of Advanced Materials in Stockholm, Sweden on August 20, 2020.

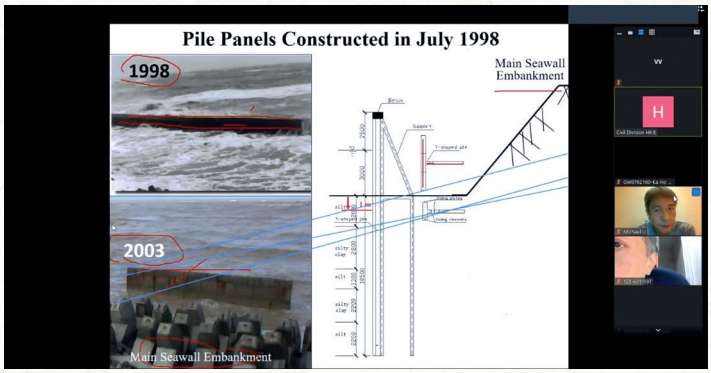
Professor C.Y. Tang

- delivered an online Keynote Talk on "Creating selective channels in membranes for enhanced water reuse" at the 4th Chinese National Conference on Water Treatment and Reuse, July 31 – August 2, 2020;

- delivered an online Public Lecture on "A reflection on structure & morphology of polyamide RO membranes", organized by Dalian University of Technology

Professor Z.Q. Yue delivered an online lecture on the second hypothesis of heat genesis in geothemal resources on July 6, 2020. This lecture was invited by and for School of Resources and Geosciences of China University of Mining and Techanology (CYMT), Xuzhou, China. Other organizers of the event include CYMT's Research Center of Geothermal Resources, School of Electrical and Power Engineering, and Ministry of Education's Key Laboratory of Coalbed Methane Resources & Reservior Formation Process. In the lecture, Professor Yue reviewed the first hypothsis of heat genesis in geothemal resources that the heat is from the heat of hot and fluid magam from deep mantle and core. Then, Professor Yue presented the second hypothesis that has been developed by him on the basis of his 40 year study and research in geology, volcano, earthquake, geomechanics, geophysics, geochemistry and geohazards. The new hypothesis states that the heat in geothemal resources is from the heat of the chemical reaction between the methane gas and the mantle or curstal rocks. The chemical reactions are the types of reduction and decomposition. The reactions change the gas chemical compounds into steam water and other gases. The methane gas is generated in the fluid outer core and seeps outward to lower pressure regions of the crustal and mantle rock masses.

Professor Z.Q. Yue was invited by HKIE Civil Division and delivered a technical seminar via zoom meeting (play back format) on June 24, 2019. The seminar title is "MiC Based Unconventional Approach for Land Reclamation in Hong Kong". Land reclamation over the sea in Hong Kong has been carried for many years. Various approaches and methods have been developed and adopted for better and environmental-friendly land reclamation in Hong Kong. Due to the shortage and/or increasing cost of sand fills, however, the conventional approaches have encountered challenges. In this seminar, Professor Yue first reviewed the past or current reclamation approaches in Hong Kong and their issues. He then presented a modular integrated construction (MiC) based unconventional approach for land reclamation and urban development over sea in Hong Kong. This MiC based approach have no dredging, no deep cement mixing of marine muds under seawater and no filling of sands and/or public fills in seawater. He further introduced some specific new technologies to better, more cost-effectively and rapidly realize the MiC based unconventional approach in Hong Kong with controllable quality. About 411 people attended this seminar.



News

Professor S.C. Wong

- was appointed as a member of the Panel of Advisors of the Land Sharing Pilot Scheme, The Government of HKSAR, for the period from May 1, 2020 to October 31, 2023.

- was reappointed as a member of the Advisory Committee on Post-service Employment of Civil Servants, The Government of HKSAR, for two years with effect from September 1, 2020.

- was reappointed as Chairman of the Manpower Development Vetting Sub-Committee, Construction Innovation and Technology Fund, for two years with effect from September 1, 2020.

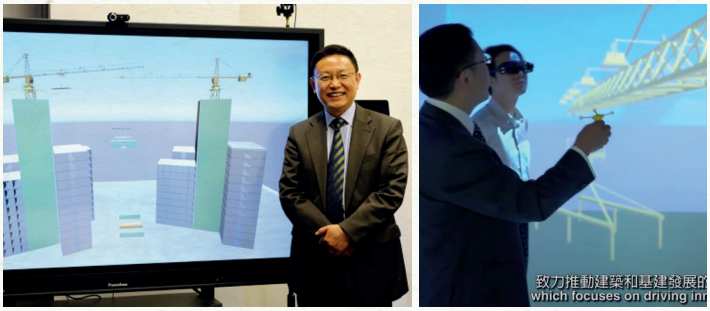
- was elected as Chairman of the Logistics and Transportation Division Committee of the Hong Kong Institution of Engineers for the term 2020-2021.

Research Highlights

Modular Integrated Construction 2.0+ (Professor W. Pan)

Modular construction is an innovative building approach with three-dimensional units that enclose usable space and form part of the completed building or structure. Modular Integrated Construction (MiC) builds on but develops further from the modular construction approach by emphasizing the integration of advanced production technologies into reengineered building design and construction processes. MiC has been adopted as a new policy initiative in the Policy Address 2017 and 2018 of the Chief Executive of the HKSAR to

promote innovative construction for enhanced productivity and competitiveness. MiC is defined in the MiC Strategy Paper written by Professor W. Pan and his team in 2019 with support from the Development Bureau as *"a game-changing innovative approach to transforming fragmented site-based construction of buildings and facilities into integrated value-driven production and assembly of prefinished modules."*



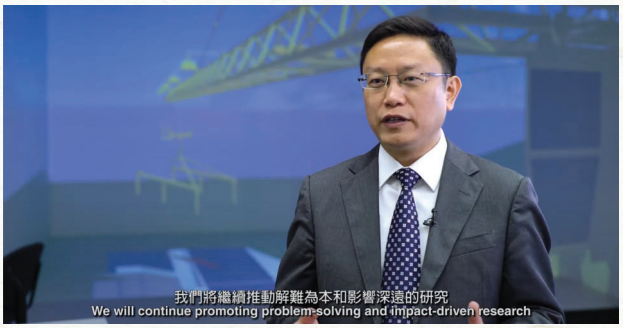
MiC 2.0+ Leader: Professor W. Pan at the Construction Informatics Laboratory.

MiC 2.0+ is a breakthrough of the MiC initiative by integrating advanced structural engineering for developing robust optimal structural solutions for tall buildings, innovative building materials for enhanced constructability, sustainability and durability of buildings, and smart project delivery. MiC 2.0+ is led by Professor W. Pan in collaboration with a team including Dr. K.L. Su, Professor F.T.K. Au, Professor S.C. Wong, Professor T.S.T. Ng, Professor George Huang, and Dr. S.H. Lee of HKU, Professor Ben Young (previously of HKU now of HK PolyU), and Professor Christopher Leung of HKUST. MiC 2.0+ is supported by the Hong Kong Research Grants Council under a five-year (2019-2024) Research Impact Fund project (with a total budget of HK$14.3million) and a range of government bureaus and departments and industry organizations, as well as a worldwide network of scholars and practitioners specialized in modular construction and innovative technology.

The MiC 2.0+ project has already made significant headway. On ***MiC 2.0+ advanced concrete structural engineering and materials,*** structural analysis of concrete MiC high-rise residential buildings has been conducted, which has led to the development of an innovative lateral force resisting system for concrete MiC high-rise buildings, an innovative earthquake-resilient hybrid coupled wall (HCW) system, and finite element models for HCW and reinforced concrete wall (RCW) systems. On ***MiC 2.0+ advanced steel structural engineering and materials***, a feasible structural design solution for high-rise buildings using steel MiC system has been proposed, which was examined using a student residential building of HKU redesigned as a steel MiC case. An innovative module-to-core wall connection using anchor rods was also designed to be used for high-rise buildings without impairing the sections of frame members. Under the sliding scenario, the critical material properties are well performed, and the ductility of the developed connection is significantly improved by adopting the "strong beam weak column" design principle. Besides, hot-rolled high strength steel columns of grades S690 (with nominal yield strength of 690MPa) or even S960 will be considered for the manufacturing of steel-framed modules to study the feasibility of tall steel MiC buildings. On ***MiC 2.0+ smart project delivery***, the fundamental science and analytical methods of an integrative platform have been investigated. A novel methodological framework has been designed, which consists of four layers: sensor and data collection, data storage and analysis, data visualization, and decision making. This four-layer hierarchy clarifies the dataflow and functions for developing the integrative platform for MiC 2.0+ smart project delivery. Technologies and innovative methods, such as automation and robotics, digital twin and local position technologies, have also been explored to support the smart delivery of MiC projects.

Several research workshops were held in late 2019 and early 2020, each involving various professionals and stakeholders from academia, government, and industry in Hong Kong and also overseas. Visits were also organized to relevant MiC factories and suppliers located in the Greater Bay Area (GBA) in late 2019 to collect information on the connection design and prefabrication process of modules. The factories and suppliers visited included Unicon in Dongguan for concrete modules and China International Marine Containers (CIMC) in Jiangmen for steel modules.

The research team has already achieved a number of publications in established academic journals including Engineering Structures, Structures, Journal of Building Engineering, The Structural Design of Tall and Special Buildings, and Automation in Construction. The research team has also contributed to relevant conferences internationally such as the International Symposium on Automation and Robotics in Construction (ISARC) and locally, and has trained up a team of research students. The MiC 2.0+ Leader Professor W. Pan commented *"This MiC 2.0+ project will bring in significant impact on both scientific research of modular tall buildings and practical delivery of high-quality and efficient residential buildings in dense urban areas".*



Research Team:

MiC 2.0+ is led by Professor W. Pan of The University of Hong Kong (HKU), with a team of academics from HKU, HK Polytechnic University, and HK University of Science and Technology.

Partners & Supporters:
MiC 2.0+ is supported by the Research Grants Council Research Impact Fund (Project Number: R7027-18), and the Development Bureau, Transport and Housing Bureau, Architectural Services Department and Buildings Department of the HKSAR government, Hong Kong Housing Authority, Hong Kong Housing Society, Paul Y. Engineering Group Ltd., Maristar Modular Building Co. Ltd., Unicon International Holding Ltd., and a wide network of scholars and practitioners.



Visit to Unicon factory in Dongguan.

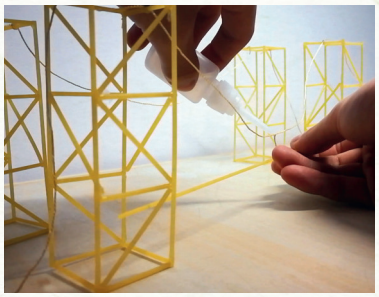
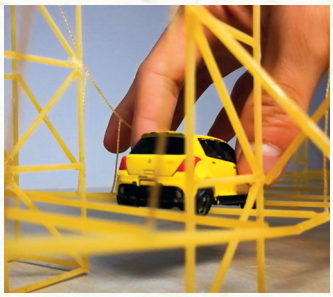
Visit to CIMC factory and mock-up in Jiangmen.

Student Awards

Ms. Levinna Natalia (Civ June 2020 Graduate) was awarded the LPM Scholarship Award 2020 by HKIE Geotechnical Division on June 24, 2020 for her outstanding performance in Geotechnical Engineering.

Mr. Wu Yulun (Civ June 2020 Graduate) had received an award by the Faculty of Engineering for his video being selected to represent HKU Engineering in joining the international ASEE Student Video Contest.

This short video tells the story of "Engineering and You" by asking: why engineering? The video shows how engineers design and model a suspension bridge, and bring their design to reality. The first part of the video features the process of designing and making a model bridge using spaghetti and nylon ropes -- a practice done by many civil engineering students. The second part shows how the model could one day be transformed into an actual bridge in the city, serving thousands of vehicles and pedestrians. The end of the video answers why many of us want to be an engineer: we want to make things happen. Accomplishing human-made masterpieces and bringing concrete solutions to real-world problems are the ways engineers serve society and achieve our dreams.

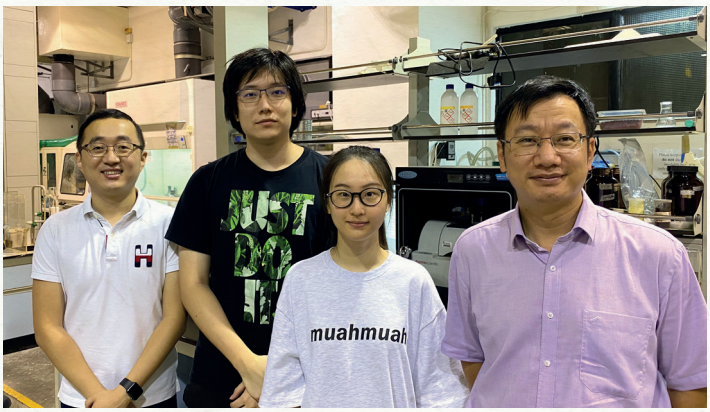
The study entitled "The solutions of decoupled matrix formulation and closed-form singularities for a group of three-dimensional problems of classical elasticity in vertically heterogeneous media" was nominated for the 6th Science and Technology Award, in the category of natural science, of the Chinese Society of Theoretical and Applied Mechanics (CSTAM). On April 1, 2020, the nomination was successful in the preliminary evaluation, which was announced publicly at the Society's website https://www.cstam.org.cn/article/202035.html. The study used the mathematical tools of classical integral transforms and matrix operations in linear algebra and derived the discoveries of the solutions in both Cartesian and Cylindrical coordinate systems. They are the breakthroughs of originality in the mathematical formulations and analytical solutions of the governing partial differential equations of the classical theories of elasticity, thermo-elasticity and poroelasticity, where the material parameters can be variable in space along one direction. The study was carried out by Professor Z.Q. Yue and his research collaborator Professor Hongtian Xiao of Shandong University of Science and Technology. Professor Xiao was a PDF of the Department of Civil Engineering from 2000 to 2003. CSTAM is a non-profit scientific organization in China with the largest membership of more than 20,000 engaged in the promotion of science and technology in mechanics. Since its inauguration in 1957, CSTAM has made remarkable contributions to the development and prosperity of mechanics, to the popularization of mechanics among the public, to the emerging professional talents in this community and to the economic and social development of China.

Water Filter Technology for Rapid Treatment of Contaminated Water

The Civil Engineering team, Mr. Junwei Zhang (3rd year student), Ms. Yan Tung Lo (final year student) and Dr. Hao Guo won the ***HKIE Outstanding Paper Award for Young Engineers/Researchers 2020*** with their paper entitled 'One-step Removal of Lead from Water Using an Electricity-Free and Sustainable Membrane Filtration'. The work was under

the supervision of Professor C.Y. Tang. The two undergraduate students have been supported by the Dean's Fund for Research Path Exploration. Mr. Zhang also receives the HKU Undergraduate Research Fellowship.

The work reports a gravity-driven membrane separation process for the rapid and effective removal of lead from contaminated water. A 10 cm water height could drive the membrane separation to achieve >95% lead removal with a large volumetric loading up to 3000 L/m^2. The used membrane can be regenerated via citric acid washing to enable sustainable reuse. This work further strengthens the group's portfolio on the patented Rapid Water Filter Technology, which has previously received a number of prestigious awards, including Gold Medal at the 2019 Geneva International Exhibition of Inventions and the 2019 Innovators Under 35 for Asia Pacific by MIT Technology Review. Mr. Zhang (first author), Dr. Guo (co-corresponding author), and Professor Tang (corresponding author) will attend the award ceremony held in JW Marriott Hong Kong on October 9, 2020. Mr. Zhang will give a public presentation to introduce the award-winning work at the HKIE Headquarter in December.



The winning team of the HKIE Outstanding Paper Award (from left: Dr. Guo, Mr. Zhang, Ms. Lo, and Professor Tang). The work was performed in the Membrane-based Environmental & Sustainable Technology (MembEST) Group.

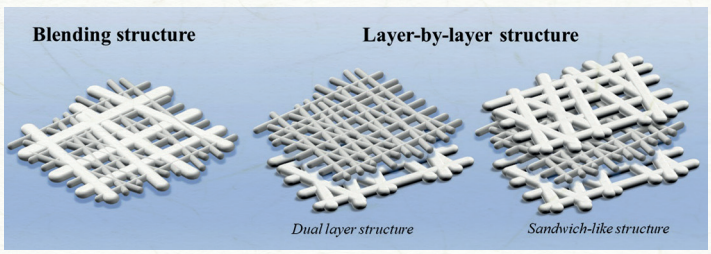
Fight COVID-19: HKU Engineering student team invents reusable nanofibrous face mask

A team of undergraduate students, led by Mr. Junwei Zhang and Ms. Yan Tung Lo and under the supervision of Professor C. Tang and Dr. Hao Guo at the Department of Civil Engineering at HKU, has successfully developed reusable face masks with novel air filters. The filters, having a nanofibrous structure prepared by electrospinning, show significantly higher particle removal efficiency compared to existing filter materials used for face masks. Moreover, the filters are reusable after simple rinsing and drying. Amid the COVID-19 pandemic, the team made the invention to enhance the reusability of masks and reduce secondary environmental pollution caused by mask disposals. The project is supported by the COVID-19 Action Seed Funding and the Dean's Innovation and Entrepreneurship Fund provided by the Faculty of Engineering at HKU.

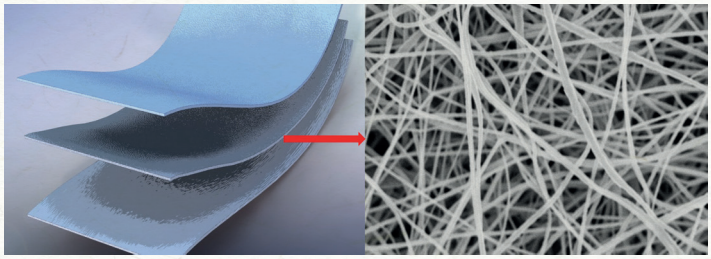
Nanofibrous face mask prototype developed by the student team from HKU's Department of Civil Engineering.

Existing face masks mainly use melt-blown fibers as the core filter material. But the lack of uniformity and functional durability of the material poses a critical challenge to the removal of fine particulates including viruses and bioaerosols. To address the issue, the research team uses the electrospinning technique to fabricate nanofibrous filters with improved uniformity and enhanced filtration capability. The novel filters consist of numerous nanofibers with diameters at the nanometer scale, which is much smaller than the melt-blown fibers at the micrometer scale. The filters possess high porosity (e.g., > 80%), which effectively reduces their air filtration resistance.

The interconnected nanofibrous network also ensures a high removal efficiency of air pollutants due to its fine structure and tailored surface chemistry. In the preliminary experiments, the team designed a novel sandwich-like structure, composed of two hydrophobic skin layers and an inner functional layer, to further enhance the mechanical strength and filtration performance of the filters. The skin layers consist of nanofibers with a large dimension (e.g., 800-1000 nm in diameter), which can provide sufficient mechanical strength. Meanwhile, their hydrophobic nature can effectively prevent the wetting and penetration of water and thus protect the inner functional layer. The inner layer consists of small nanofibers of 100-400 nm in diameter, whose fine filter pore size allows more effective capture and retention of air pollutants.

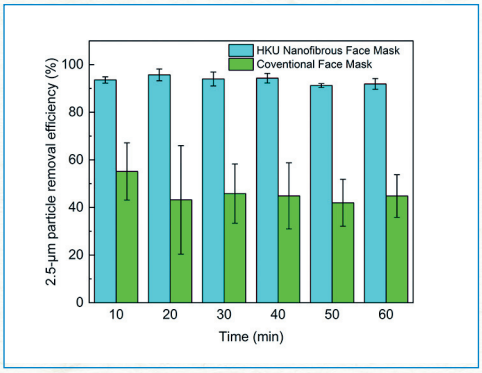


Different assembling strategies for nanofibrous air filter.



Electron microscope image of nanofibrous air filter.

Air filtration results show that the novel nanofibrous filters have significantly higher removal efficiency for 0.3-, 2.5-, and 10-μm particles compared to that of single use face masks. For example, the nanofibrous filter can have a removal efficiency ≥ 90% for 0.3-μm particles while the single use face masks only have an efficiency < 50%. To address the concern of secondary pollutions associated with single use masks, the team has designed the filters to be ethanol-washable to enable filter disinfection, regeneration, and reuse. After a simple ethanol rinsing and heat drying, the regenerated filters are shown to effectively maintain their filtration efficiency. This reusable feature means improved sustainability and reduced burden on the environment. Currently, the team is optimizing the functions of the nanofibrous filters and developing original product prototypes.



Filtration efficiency of 2.5-μm particles by nanofibrous and conventional face masks.

The team has filed for an US Provisional Patent with assistance from the Technology Transfer Office of HKU. It has received a Gold Medal, a 'Top 20 Best Invention Award' and a 'Special Award by Toronto International Society of Innovation & Advanced Skills (TISIAS)' in the 5th International Invention Innovation Competition in Canada. The work is shown by the Membrane-based Environmental & Sustainable Technology Group (MembEST), a specialty group led by Professor Tang that focuses on membranes and filters. The novel air filter technology adds to the group's existing invention portfolio, which aims to provide integrated solutions for the control of water and air pollution to safeguard public health. The group is exploring potential collaboration with industrial partners to commercialize the technology.

The team (from left: Professor Tang, Ms. Lo, Mr. Zhang and Dr. Guo) won a Gold Medal, a 'Top 20 Best Invention Award', and a 'Special Award by Toronto International Society of Innovation & Advanced Skills (TISIAS)' in the 5th International Invention Innovation Competition in Canada (iCAN).

Mr. Chan Chak Kwan (CivE 2, 19-20) was awarded the AECOM Civil/Structural Engineering Scholarship 2019-20.

Mr. Chan Ki Chun (CivE 2, 19-20) was awarded the Chun Wo Foundation Scholarship 2019-20.

Mr. Chan Lai Hei (CivE 2, 19-20) was awarded the The HKU Civil Engineering Departmental Scholarship 2019-20 and the Kai Chong Tong Scholarship 2019-20.

Mr. Chen Jiajun (CivE 3, 19-20) was awarded the Leung Ting Kui Scholarship 2019-20.

Mr. Chu Tsz Wai (CivE 3, 19-20) was awarded the Civil 77 Scholarship 2019-20.

Mr. Fok Pak Hei (CivE 3, 19-20) was awarded the AECOM Geotechnical Engineering Scholarship 2019-20.

Mr. He Qiande (CivE 2, 19-20) was awarded the Professor YK Cheung Scholarship 2019-20.

Mr. Hung Ching Lung (CivE 2, 19-20) was awarded the Kai Chong Tong Scholarship 2019-20.

Mr. Kwan Tim Chung (CivE 2, 19-20) was awarded the AECOM Environmental Engineering Scholarship 2019-20.

Mr. Lam Hiu Fai Arthur (CivE 2, 19-20) was awarded the Arup Scholarship in Civil Engineering 2019-20.

Mr. Lee Guang Yang (CivE 4, 19-20) was awarded the Reaching Out Award under the HKSAR Government Scholarship Fund 2019-20.

Mr. Li Chung Kin and Mr. Yeung Chin Hou (CivE 4, 19-20) were awarded the Hui Yin Hing Scholarship 2019-20.

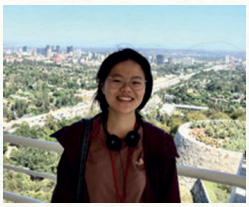
Mr. Mak Pak Long (CivE 4, 19-20) was awarded the HKU Centenary Scholarships for Civil Engineering Students 2019-20.

Mr. Mang Chi Ho (CivE 3, 19-20) and Miss Yiu Tsz Kiu (CivE 4, 19-20) were awarded the Western Harbour Tunnel Scholarship 2019-20.

Mr. Siu King Hay (CivE 3, 19-20) and Miss Tsang Cheung Yu (CivE 4, 19-20) were awarded the Talent Development Scholarship 2019-20.

Mr. Wan Lap Yin (CivE 2, 19-20) was awarded the Hang Seng Community Service Scholarships 2019-20 and the Western Harbour Tunnel Scholarship 2019-20.

Mr. Yang Wai Kin (CivE 3, 19-20) was awarded the Lawrence Lui Pinky Poon Scholarship 2019-20.



Ms. Zhang Hemiao (CivE 3, 19-20) was awarded the Mr. Armin and Mrs. Lillian Kitchell Scholarships and the Professor YK Cheung Scholarship 2019-20.

Updates on Project Mingde

About Project Mingde

Project Mingde was established by the Department of Civil Engineering in 2004. It provides an open platform for nurturing our students to acquire not only hard skills, but also to possess soft skills, such as a sense of social responsibility, by participating in real-world on-going civil engineering projects in remote impoverished regions in China and other Asian countries. We have a slogan "We grow as we build" and that is the core value of Project Mingde. Project Mingde attracts not only Civil Engineering students, but also students from other disciplines and institutions to participate in this meaningful programme. We hope that students would have personal growth through this experiential learning opportunity and participation in various real-life projects; and also education in impoverished localities in China could be provided. For more information about Project Mingde, please visit our official website at http://www.civil.hku.hk/mingde/.

Alumni are welcome to join Project Mingde and if you are interested to be part of us, please contact Dr. C.P. Wong at cpwryan@hku.hk (for projects) or Dr. K.H. Law at adalaw@hku.hk (for communications).

Restoration and Expansion of Guigang Duling Primary School

The site formation and ground investigation works of the proposed composite building (with kindergarten for early childhood education and teacher dormitory) were conducted in March. Moreover, the architectural design was completed and approved by the local authority. Students are finalizing the structural design and preparing the contract documents. The construction works are planned to commence in early next year.

Ground investigation for the proposed composite building.

Feasibility Study for a Low Impact Water Supply System at a School Site in Dagon Seikkan Township, Yangon

Twenty HKU students went on a 3-week trip led by Professor C.K. Mak, Dr. T.F.M. Chui and Dr. C.P. Wong to study the water supply situation in Myanmar. They were invited to join a water supply project proposed by Community Care Myanmar, an NGO based outside of Yangon City to help the impoverished communities, to design a water supply system for a new

Your gift – of any amount – will make a difference to the students in the Department of Civil Engineering "WE GROW AS WE BUILD"

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kindergarten-cum-primary school with about 80 students in the Dagon Seikkan Township in east-central part of the city of Yangon. The school is situated in a populated slum area with about 10,000 residents, most of them living in wooden huts. The area is basically not covered by any water supply network.

Upon completion of the Myanmar trip, students took part in a follow-up activity during their 10-week summer break in Hong Kong. Despite COVID-19, they held on-line meetings, collated and assessed information, developed and appraised hypothetical virtual schemes, and consolidated their findings and recommendations into a Feasibility Study on a Low-impact Water Supply System for the school. The design comprises a 140-meters deep well to extract groundwater from the deep aquifer as a new source of water. The students established the yield from the well, prepared storage and plumbing schemes and recommended water quality tests to ensure the groundwater is suitable for consumption.

Poor living conditions with which the slum area residents have to deal.

Students designed the water supply system for this newly built school.

Group photo of Professor C.K. Mak and students participated in this project.

Name of students who joined the visit trip to Myanmar:

CHAN Ho Man, CHAN Yik Hei, CHEUNG Wang, CHUI Ling Kit Marco, Edric JULIAN, LI Hon Yuen, LI Tsz Chun, Louis BRIGHTON, LUK Kwong Yun, Mikael Ken SLAMET, SZETO Tsz Ki, YEUNG Yat Chung, Daryl KEVIN, CHAN Tsun Yin, CHAN Chin Kai (Mechanical Engineering), Iqra ABBASI (Engineering Science), JIN Yaqi (Science), HUANG Qiming (Social Sciences), JIANG Zhuoer (Social Sciences) and TIAN Yunqian (Social Sciences).

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