

DEPARTMENT OF

Civil Engineering

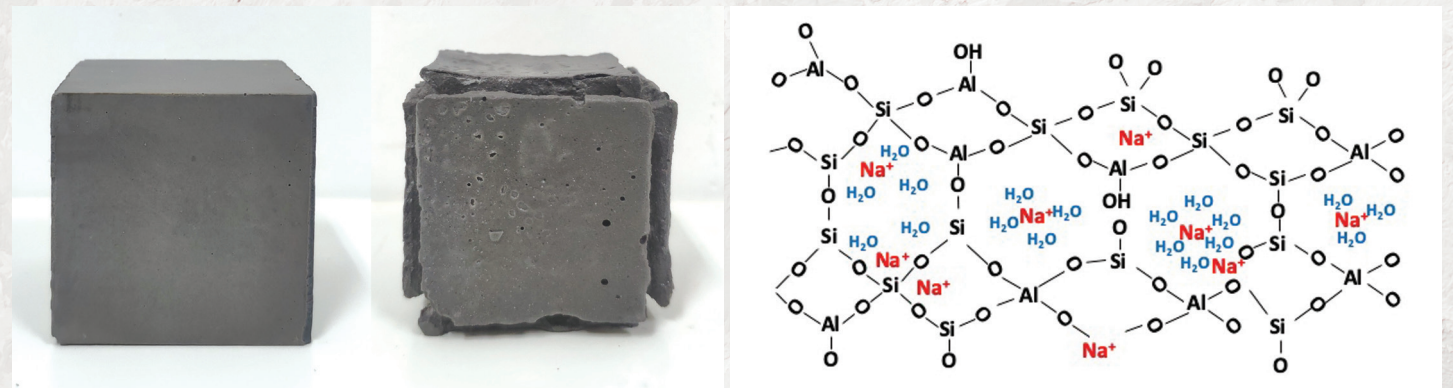
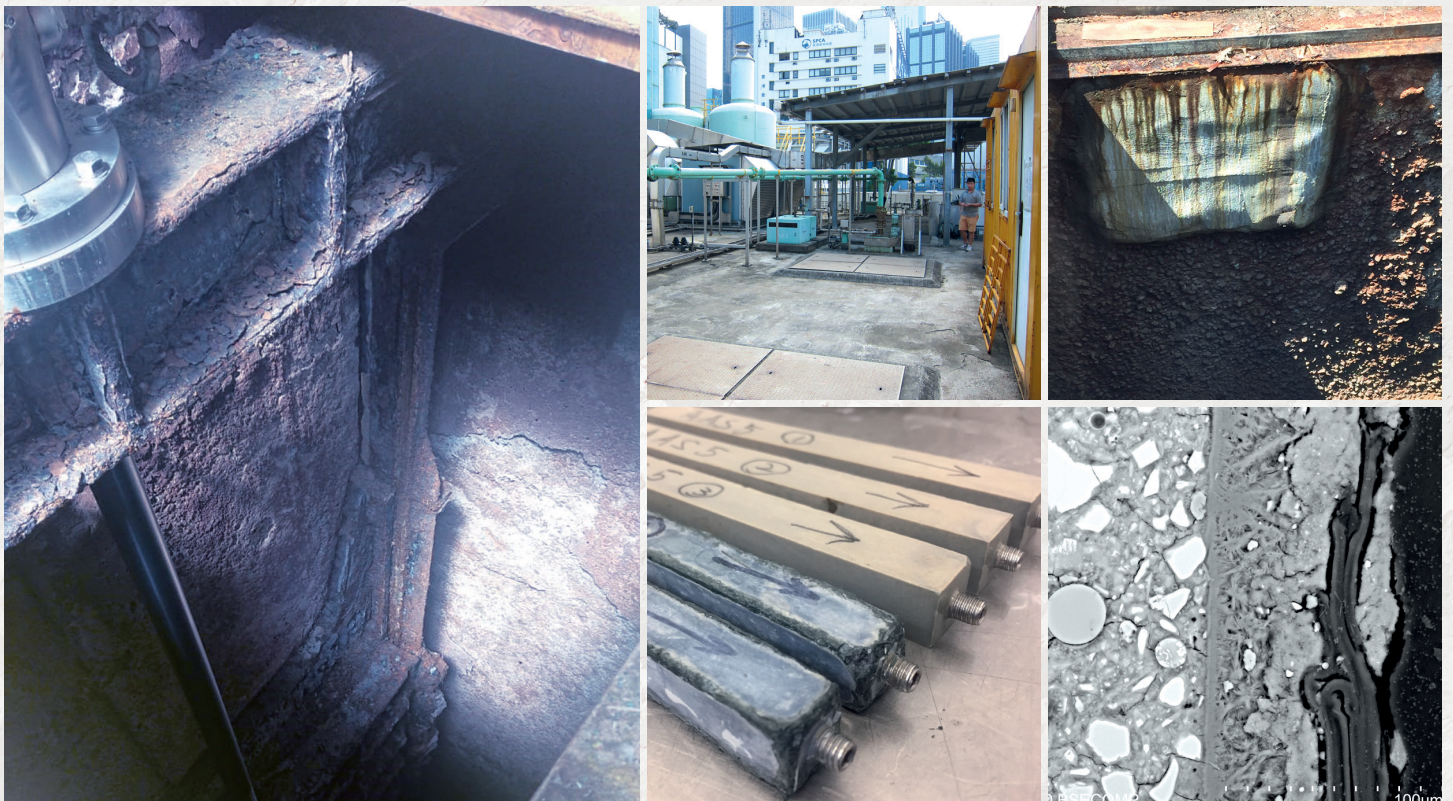
土木工程系 Newsletter

MARCH 2019 - AUGUST 2019



THE UNIVERSITY OF HONG KONG

Advanced Concrete Materials for Sustainable Urban Wastewater Infrastructure



Microbially induced concrete corrosion is the main degradation mechanism in urban wastewater infrastructure. The high cost of repairing and maintaining aging wastewater infrastructure raises an urgent demand for sustainable concrete materials that are far more durable than conventional concrete. In collaboration with the government department, innovative concrete materials and protective coatings with superior corrosion resistance are currently being evaluated in a long-term site test in Hong Kong.

Departmental Events



International Symposium on Recent Advances in Structural Design in Regions of Low-to-Moderate Seismicity was successfully held on June 28, 2019 at HKU's main campus. This symposium was jointly organized by The University of Hong Kong and Swinburne University of Technology. The welcoming speeches of the symposium was delivered by Professor Christopher Chao, Dean of Faculty of Engineering. Nine distinguished speakers from different parts of the world presented the recent advancement in earthquake resistant design in low-to-moderate seismicity regions. More than 100 delegates and speakers participated in the symposium. The in-kind supports from the Structural Division of the Hong Kong Institution of Engineers, The Institution of Structural Engineers, the Hong Kong Institute of Steel Construction and The Hong Kong Institute of Vocational Education are gratefully acknowledged.

Staff Awards

Dr. W. Pan has been awarded the "Distinguished Young Investigator of China Frontiers of Engineering" by the Chinese Academy of Engineering at the 2019 China-America Frontiers of Engineering Symposium held in San Diego, California, U.S.A. from June 20 to 22, 2019.



Professor C.Y. Tang and his team from the Department of Civil Engineering won Gold Medal at the 47th International Exhibition of Inventions Geneva held from April 10 to 14, 2019 in Geneva, Switzerland. The team invented highly porous nanofiber membrane filters and compact filter devices that can rapidly remove heavy metals (> 99.9% removal for lead, cadmium, chromium and zinc) and bacteria (> 6 log removal). These filters, with porosity of approximately 90% and pore size of approximately 200 nm, have extremely high

water permeability that allows the filters to operate under gravity-driven conditions without the need of mechanical pumping. The team is motivated to address the critical need for clean and drinkable water in the aftermath of major natural disasters. "After an earthquake or tsunami, there is often no reliable supply of clean water nor electricity," said Professor Tang, "so you need something practical for disaster relief. Our filter fits in very well. It delivers safe drinkable water in less than one minute, simple and reliable, and no electricity is needed." With a compact size that can easily fit into a packet, the magic filter also received great interests and attentions from travelers and adventurers bumping into the exhibition event.

Professor Tang's team has also developed an additional version of filter device for removing heavy metals such as lead from household tap water. In order to enhance lead removal, the surface of the filter is functionalized with ligands. It is further designed in such a way that the filter can be easily regenerated with vinegar to allow its repeated use over months.

This work is supported by two grants (ITF/079/14 and ITF/428/16) from the Innovation and Technology Commission. The team has patented the above filters and filter devices (PCT/CN2016/093965, US 16/323,022, and US 62/831,382). With the assistance of the Technology Transfer Office at the University of Hong Kong, the team is also actively exploring licensing and commercialization opportunities.



Portable water filters for rapid removal of heavy metals and microorganisms, developed by Professor C.Y. Tang and his research team from the Department of Civil Engineering, won Gold Medal at the 47th International Exhibition of Inventions Geneva. Photo (from left to right): Dr. Guo Hao, Professor C.Y. Tang, and Dr. Li Xianhui.

Further Information:

Principal investigator: **Professor Tang Chuyang**

Members: **Dr. Wang Jianqiang, Dr. Li Xianhui, Dr. Guo Hao, Dr. Yang Zhe, and Ms. Shi Xiaonan**

Contact person: **Professor C.Y. Tang** (tangc@hku.hk);

Dr. Guo Hao (guohao7@hku.hk)

Staff Activities



Professor S.H. Lo

In the week of April 8 – 14, 2019, Professor S.H. Lo attended the grand exhibition BAUMA in Munich, Germany. BAUMA is the world's largest and probably most important trade fair for the building industry. The trade fair presents a comprehensive international product range in the area of construction machinery, construction equipment and vehicles and mining machines. BAUMA is a hub for international business and an important venue for gathering information and establishing contacts, where building and construction experts from all over the world can inform themselves about the state-of-the-art technology.

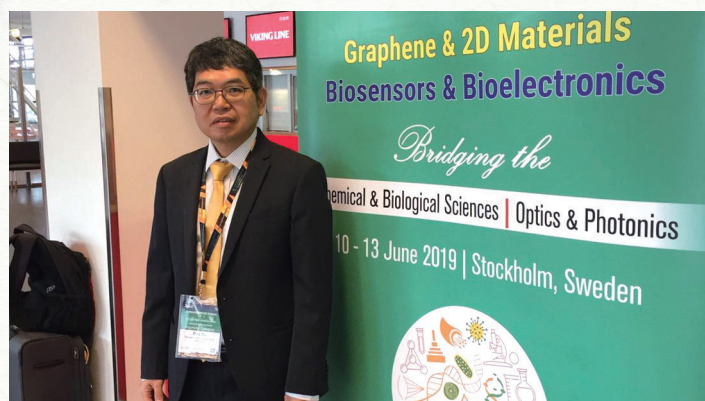
Dr. S.D.N. Lourenço

- delivered two seminars on the subject of Hydrophobic Coatings for Granular Materials at the Innotech Forum on Geotechnology in May 2019 and to the Association of Geotechnical and Geoenvironmental Specialists (HK) in March 2019.



Dr. R.K.L. Su

- delivered a keynote presentation entitled "Plate-reinforced composite coupling beam for modern building design" at the 26th Assembly Advanced Materials Congress organized by Institute of Advanced Materials in Stockholm, Sweden on June 11, 2019.



- delivered an invited presentation entitled "Composite actions in plate-reinforced composite coupling beams" for the public lecture organized by China (Hong Kong) Association of Architects and Engineers on July 8, 2019.



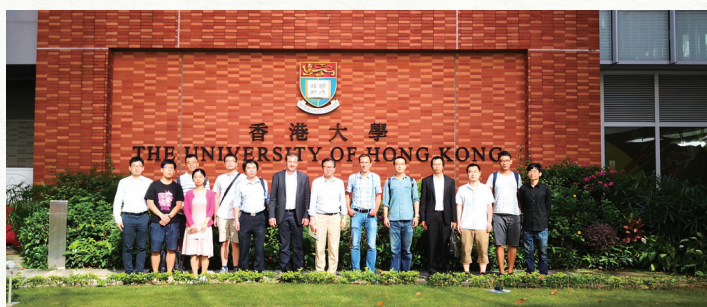
- delivered a keynote presentation entitled “Seismic design of transfer structures for Hong Kong condition” at the International Symposium on Recent Advances in Structural Design in Regions of Low-to-Moderate Seismicity jointly organized by Swinburne University of Technology and The University of Hong Kong in Hong Kong on June 28, 2019.

Professor C.Y. Tang

- delivered a plenary speech on “Membrane technology for potable water reuse” at the 3rd National Conference on Water Treatment and Reclamation during March 29 – April 1, 2019, Guangzhou, China.
- delivered an invited presentation on “Roughness in polyamide RO membranes: Its formation mechanism, control, and implications” at the 2019 North American Membrane Society Meeting, May 11 - 15, 2019, Pittsburgh, PA.
- delivered an invited presentation on “Applications of QCM-D for synthetic membrane research” at The 3rd International QCM-D Scientific Conference, August 22, 2019, Dalian, China.
- delivered a keynote speech on “Membrane technology based potable water reuse – A perspective” at the 12th International Desalination Workshop, August 29, 2019, Jeju, South Korea.

Professor J. Yang

A joint workshop between researchers from Technical University of Berlin (TUB) and from HKU was held on campus on June 29, 2019, under the RGC’s Germany-Hong Kong Joint Research Scheme. The joint project, led by Professor J. Yang (HKU) and Professor Frank Rackwitz (TUB), is aimed at a better understanding of the cyclic behaviour of monopile foundations for offshore wind turbines.



Professor Z.Q. Yue

Professor Z.Q. Yue participated in a scientific and geotechnical expedition to Svalbard Islands surrounded by the Arctic Ocean around the north pole of the Earth from August 6 to 18, 2019. The expedition was organized by the Chinese Society for Rock Mechanics & Engineering (CSRME). Its objective is to study geotechnical engineering, geology and polar glaciers on Svalbard Islands. The scientific delegates were from Norway, Japan, Hong Kong and the Mainland China, as well as personnel from a media company. The delegation took field trips for glaciers, metamorphic and sedimentary rocks along the western coastline of Svalbard Islands, roads, airports, building foundations, snow avalanche protection measures, the Global Seed Vault as well as coal mining in permafrost ground in towns of Longyearbyen, Barentsburg and Ny-Alesund.



Coal mining and ship transportation facilities at port of Barentsburg



Steep mountains formed with metamorphic (gnesis) rock and covered by glacier and ice at Magdalenefjorden





Sheerenburg Glacier



Building cracking
due to permafrost action
at town of
Longyearbyen

Staff News

Dr. R.K.L. Su has been elected to fellowship by the Hong Kong Institution of Engineers to recognize his significant contributions to structural engineering and the profession.

Professor S.C. Wong

- was reappointed as a member of the Road Safety Research Committee, The Government of HKSAR, for two years with effect from June 1, 2019.
- was elected as Deputy Chairman of the Logistics and Transportation Division Committee of the Hong Kong Institution of Engineers for the term 2019-2020.
- was elected as a committee member of the Chartered Institution of Highways and Transportation (Hong Kong Branch) for the term 2019-2020.

Student Awards

Mr. Au Cheuk Hang, Miss Natalia Levinna and Mr. Mo Chung Yu (CivE 3 18-19) were awarded the Reaching Out Award under the HKSAR Government Scholarship Fund 2018-19.

Miss Chan Wing Lam (Second Runner-up), Mr. Kiu Ling Ho (Merit), Mr. Li Kar Hang Davis (First Runner-up) and Mr. Sze Hiu Long Aaron (Champion) (Grad 2018) were awarded the Emerging Engineers Award 2018.

Mr. Cheng Man Kit and Mr. Mak Tsun Hang (CivE 4 18-19) were awarded the Hui Yin Hing Scholarship 2018-19.

Mr. Cheng Man Huen (CivE 2 18-19) was awarded the Chun Wo Foundation Scholarship 2018-19.



Mr. Kwok Tim Chung (CivE 2 19-20) was awarded the CMA and Donors Scholarship 2018-19.

Miss Lai Ka Yee, Mr. Li Cheuk Haang and Mr. Yang Wai Kin (CivE 2 18-19) were awarded the Kai Chong Tong Scholarship 2018-19.

Mr. Lee Chun Ngai Jason (CivE 4 18-19) was awarded the Endeavour Merit Award under the HKSAR Government Scholarship Fund 2018-19.

Ms. Meng Yue (CivE Jun 2018 Graduate) was awarded the HKIE Geotechnical Division Prize - AECOM Prize for Best Student of the Year 2018.

Mr. Wong Chun Kit (CivE Jun 2018 Graduate) was awarded the HKIE Geotechnical Division Prize - AECOM Prize for Best Final-Year Geotechnical Project 2018 (Second Runner up).

Mr. Yeung Jing Hou (CivE Jun 2018 Graduate) was awarded the HKIE LTD Best Student Papers Awards 2018.



Miss Zhang Hemiao (CivE 2 18-19) was awarded the Young Tsun Dart Scholarship 2018-19 and the YC Cheng Engineering Scholarship 2019-20.

Mr. Zhang Ziliang Eames, MSc (Eng) in Transportation Engineering, has been awarded The Chartered Institute of Logistics and Transport Scholarship 2018/19.



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

Dr. C.P. Wong led a visit trip to Guigang with six Project Mingde members (4 from Department of Civil Engineering, and 2 from Faculty of Education) on April 13-14 to observe the progress of the toilet construction works, and measure the dimensions of the existing primary school for preparing a classroom alteration proposal. In the proposal, the civil engineering students brought up the structural considerations of classroom layout plan, and the education students provided suggestions to better suit the teaching needs of the school. Furthermore, a meeting with Guigang government officials was arranged to discuss the application procedure of red line boundary extension to facilitate the construction works of the new composite building (with kindergarten for early childhood education and teacher dormitory).

In July, Dr. C.P. Wong, Dr. Alex Lau and three civil engineering students visited Guigang again to supervise the toilet construction works. The façade wall was completed, and the installation of water supply and flushing systems were in progress. The students also carried out land surveying works for preparing as-built drawings.



Construction of toilet in progress.



An innovative design of façade wall to allow natural lighting and ventilation.

Wangdong Footbridge

In March, Professor L.G. Tham and Ir Robin Yip led a visit trip to Wandong and five students joined the trip. They met the local contractor, Boss Wei, in Rongshui to discuss about the structural design and construction procedure of the proposed suspension footbridge.

Ten civil engineering students joined the summer internship training program to Dabao and Wangdong from July 29 to August 11, supervised and advised by Dr. Alex Lau and Dr. Ivan Lau. First, they went to Mingde Pan Cultural and Community Centre to evaluate the current condition of the building. Based on their observations and interview with the local villagers and students, they found some cracks on the walls, broken skyline windows, damaged bamboo façade wall panels, insufficient lighting for the classrooms, and uneven ground of the basketball court. They prepared a maintenance proposal and provided some solutions to the identified problems. They also paid visits to some construction sites in Rongshui, and supervised the construction works of Wangdong Footbridge. The footbridge is expected to be finished by November this year.



Dr. Ivan Lau and the students participated in the summer internship training at the construction site of Wangdong Footbridge.



Students enjoyed some traditional foods in Rongshui.

Trung Dung Secondary School Swimming Pond, Vietnam

This summer, Project Mingde continued collaborating with Faculty of Social Sciences, Department of Comparative Literature and World Vision Vietnam to launch a Vietnam Summer Internship Program from June 10 to July 26. 16 undergraduates (10 from

Department of Civil Engineering, 5 from Faculty of Social Sciences and 1 from Department of Comparative Literature) participated in this program, which consisted of three components: (1) Participating in the construction works of swimming pond; (2) Voluntary teaching to Vietnamese school children; and (3) Conducting needs assessment at local villages.

A rounded-edge rectangular swimming pond (32.5 meters times 25 meters in dimension) was built to enhance the safety and sanitation of the existing natural pond for facilitating swimming education for Trung Dung commune and supporting the child drowning prevention scheme. With the knowledge learnt in-class, our students put understandings into practice. Throughout the construction, they gained some hands-on experiences, had a full understanding of the entire construction procedure, and played a role as resident site staff to communicate with different stakeholders of the project. In addition, they offered six child injury prevention lessons to the local school children, and conducted an assessment of the library we built last year to evaluate how it improved students' reading habit.



Some children were attending their swimming class in the new swimming pond.



Group photo of HKU students and Trung Dung Secondary School students.

Summer Camp

The annual social service summer camp 2019 was arranged in Wangdong from May 26 to 31. There were total 20 students from various faculties (engineering, science, law, social sciences, arts and education) participating in this summer camp. This 6-day 5-night trip aims to deepen HKU students' understandings to rural development, culture and lifestyle, as well as broaden the horizon of rural school students. Our students organized ice-breaking sessions and interaction-oriented exploration activities, and delivered teaching classes on English, art and science to Primary-3 and Primary-4 students at Wangdong Town Center Primary School. Moreover, numerous rural experience activities were arranged for the participants, such as farming, visiting Mao villages, and sightseeing at Shuang Long Gou Park.



Group photo of local students and the participants of social service summer camp.



Our students were delivering a voluntary teaching class to local school children at Wangdong Town Primary School.

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

Name (Mr. / Mrs. / Ms. / Dr.): _____
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Correspondence Address (for receipt issuance): _____

Contact Phone No. : _____ Email Address : _____

Amount of gift : HK\$ _____ Cheque Number: _____
☐ Cross Cheque Enclosed (Payable to “The University of Hong Kong”)

Please send this form together with the cheque to Department of Civil Engineering, HW6-18A, Haking Wong Building, The University of Hong Kong, Pokfulam Road, Hong Kong

Thank you for your gift!

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Name of students joined the site visits for various projects:

March 2-3 (Wangdong):

NG Tsun Yu, SIU Ming, TSOI Yu Tung, TAM Sai Kei, WONG Hon Sum

April 13-14 (Guigang):

HO Yuk Pui, TAM Sai Kei, TSOI Yu Tung, NG Pak Lun, YIP Wing Yee (Education), YIP Yee Shan (Education)

May 26-31 (PMSA Summer Camp):

CHAN Wing Pang, TAM Sai Kei, FOK Wai Chun, CHAU Hok Hei Ryan (Engineering), LAU Yat Long (Engineering), LUI Ming Wai (Engineering), FU Hoi Lam (Engineering), CHAU Long Yu (Engineering), TO Hiu Ying (Engineering), SO Tsz Yan (Science), TING Wing Ki (Law), YIP Yee Shan (Education), YIP Wing Yee (Education), HO Hoi Yi (Education and Science), HO Yik Lung (Education and Science), IP Chun Yam (Education and Science), FUNG Yat Him Edison (Education and Science), CHAN Yuk Yi (Arts and Education), KWOK Wai Yin (Arts and Law), LUI Ka Yau (Education and Social Sciences)

July 4-5 (Guigang):

TAM Sai Kei, HO Yuk Pui, LI Hon Yuen

June 10 – July 26 (Vietnam):

CHAN Shuk Ting, CHAN Wing Pang, HE Yongsan, HO Kai Fung, LAW Tin Yau, LEUNG Chun Hei, LUK Kwong Yun, WONG Kei Chun, YEUNG Kai Mang, HUI Kuen Yiu Nelson, Nadia ADELINA (Social Sciences), LEUNG Janice Sin Yu (Social Sciences), HO Cheuk Ki (Social Sciences), LEE Seo Jin (Social Sciences), TSE Lok Sang Rosand (Social Sciences), Clarita REGINA (Comparative Literature)

July 29 – August 11 (Dabao and Wangdong):

CHAN Man Pong Ronald, LEE Cheuk Hei Alvin, CHAN Kwun Wang Caffrey, CHEUNG Wai Hong Harry, CHIU Chak San Jackson, CHOI Yuen Ying Candice, FUNG Cheuk Kit Jason, PANG Ho Him Kenny, WONG Hoi Tung Jimmy, WONG Kam Leung Peter

CIC BIM Competition 2019

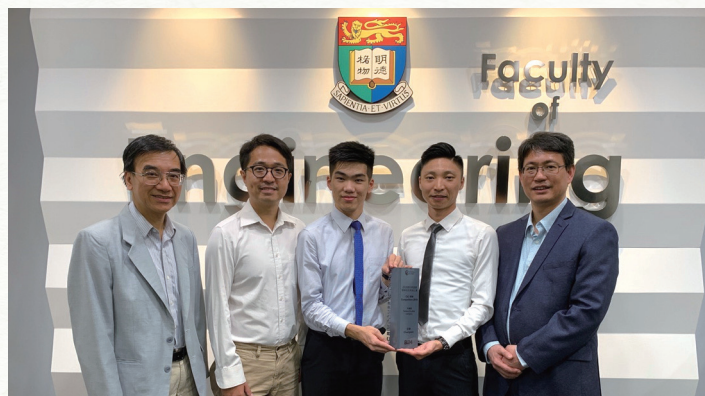
Our undergraduate students, Mr. Lee Wai Chung and Mr. Siu King Hay with three other students from Faculty of Architecture (BuslMan Team) won the championship of CIC BIM Competition 2019 (Tertiary Student Category) organized by Construction Industry Council on June 15, 2019. This competition aims to promote Building Information Modelling (BIM) technology to the students and practitioners in Hong Kong through a collaborative and competitive learning approach. The context of the competition was to redevelop a campus using BIM. There were two competitive rounds, in which the latter one required the team to work on-site for 12 hours and present their final model in front of professional judging panels.

CIC BIM Competition 2019 Award Presentation Ceremony

<https://www.bim.cic.hk/en/highlights/detail/32?back=%2fen%2fhighlights%3fpast%3dy&past=y>

CIC BIM Competition 2019 (Tertiary Student Category) - 2nd Round Competition

<https://www.bim.cic.hk/en/highlights/detail/33?back=%2fen%2fhighlights%3fpast%3dy&past=y>



Lee Wai Chung and Siu King Hay won the championship of CIC BIM Competition 2019.

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Dr. X.W. Deng



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