

MESSAGE FROM CEE ACTING HEAD

4 July 2016

Dear CEE colleagues, students, alumni and partners,

Another regular semester has ended and our students have completed their examinations. It is time for staff and students to recuperate, energize, look back to see how things were and strategize for the road ahead. The academic year has indeed breezed through with a new one fast approaching. To our graduating students who will be celebrating their commencement on 11 July, my heartfelt congratulations for a degree well-earned and obtaining a valuable passport for an exciting journey ahead. I wish you a good start to your next phase of life and do remember that the CEE Department and its staff are around to continue working with you.

It is time for me to provide you updates of our department, most of which are provided at the end of this message. The major ones may be summarized as follows:

THE NUS Faculty of Engineering's "Civil and Structural Engineering" and "Environmental Sciences" have maintained our ranking at 3rd and 10th position in the world, based on the London-based education consultancy Quacquarelli Symonds (QS) subject ranking for 2016. This premier position is the results of contributings from our students, alumni, industrial partners, present and former academic and support staff, as well as support from higher administration. For this, my sincere thanks. You may read more about NUS ranking in

http://news.nus.edu.sg/highlights/10181-global-top-10-for-13-

<u>subjects?utm_source=newsmailer&utm_medium=email&utm_campaign=Global%2Btop%2B10</u>
%2Bfor%2B13%2Bsubjects

From AY 2016, students under the Master of Science in Hydraulic Engineering and Water Resource Management degree programme [MSc (HEWRM)] as well as the Master of Science in Offshore Technology [MSc (Offshore)] may spend a semester at TU Delft to take courses related to the programme to fulfill graduation requirements. The agreement for graduate level student exchange is signed between the Faculty of Civil Engineering and Geoscience at TU Delft and the Faculty of Engineering at NUS. More information is available at the following link at http://www.eng.nus.edu.sg/cee/programmes/PostGraduate.html

Headed by CEE faculty, Prof Ng How Yong as Director, the Sembcorp-NUS Corporate Laboratory was launched on 20 Apr 2016 by DPM Teo Chee Hean. This is the sixth Corporate Laboratory @University supported by the National Research Foundation (NRF), and the third by a Singapore company. NUS, Sembcorp and NRF have jointly invested \$\$60 million in this set up, which focuses on the research and development of sustainable and cutting-edge technologies in three areas - power generation, industrial wastewater treatment and water reuse, as well as the transformation of waste into high value products. The collaboration will create 45 new positions for research fellows and engineers, and train 24 PhD students in 5 years.

A Memorandum of Understanding (MOU) between the NUS and the Land Transport Authority (LTA) to collaborate on future mobility research through the setting up of the NUS-LTA Transport Research Centre was signed on 18 Nov 2015 at the Marina Bay Sands Expo and Convention Centre during the inaugural LTA Future Mobility Symposium. The centre is jointly led by Prof Lee Der-Horng and Prof Meng Qiang as co-Directors from NUS and by Mr Goh Kok Hun and Mr Yip Chun Seng as co-Directors from LTA. It plans to conduct research and trials on innovative

Faculty of Engineering

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policies, technological applications and sustainable practices focusing on areas such as green mobility, transport network optimisation, and geotechnical and structural engineering issues related to our transportation system. It aims to develop intelligent solutions that harness the latest technology to create a well-connected and people-centric transport system.

Since Jan 2016, our academic staff has secured 14 new research grants with a total budget value of about \$7 million, of which close to \$1 million are from MOE. Congratulations to the Principal Investigators and collaborators, and may they continue to produce high quality, impactful and useful output.

The Department is grateful to the industry for their donations to support our educational efforts. The recent donations are received from:

- a) PUB, with a gift of \$15,000 for awards to top students in their 2nd, 3rd & 4th year pursuing the B.Eng.(Civil) programme; and
- b) Anjali Iyer Private Limited, who made a gift of \$150,000 in Oct 2015 to the Department of Civil & Environmental Engineering for the purpose of establishing an endowed scholarship named "S D Iyer Scholarship" for students in MSc (Offshore Technology).

To widen our support for students, the Department welcomes any amount of gift so that we can consolidate them to form scholarship awards and/or book prizes. We also welcome suggestions on how to move forward on this aspect so as to continue to strengthen our support for capable as well as needy students.

The department is preparing for the EAB Accreditation of the two undergraduate programmes; B. Eng (Civil) and B. Eng. (Environmental). The surveys to gather feedback on Employers, Supervisors and Alumni have been sent out in May 2016. The Department needs your assistance to complete the survey as this is an essential part of the accreditation process. I thank you in advance for your cooperation in this exercise.

In case some of you are wondering, our Head Search is progressing well and hopefully a suitable candidate can be announced soon to steer our department over the next few years.

The vibrancy, collegiality and productivity that we are experiencing now is a healthy and fulfilling in many ways, a sign that we are moving in the right direction. I hope that the Department and its educational and research programmes will continue to remain attractive to top JC and polytechnic students to join us as undergraduates and for those with a Bachelor degree to join us as postgraduate students. To our alumni and industry partners, please continue to work together with us to help groom our future civil and environmental engineers and steer our profession proudly forward. In closing, I wish everyone a healthy, happy and enlightening journey.

Professor Quek Ser Tong Acting Head & Professor Department of Civil and Environmental Engineering, NUS

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Updates on CEE Department matters

Promotion

Congratulations to **Ng How Yong** on his promotion to full professorship and **Goh Siang Huat** on his promotion to Associate Professor effective Jan 2016.

Congratulations also to the following non academic CEE colleagues on their recent promotions:

- i) Ms Charulatha D/O Vengadiswaran to Senior Executive;
- ii) Mr Tan Lye Heng to Laboratory Technologist 2; and
- iii) Mr Stanley Wong Kah Wai (Huang Jiawei) to Laboratory Technologist 2.

Retirement

Ms Kathy Yeo has retired from the Department on 30 Apr 2016. We thank her for her dedication and long years of service to the department.

Departure

Prof Martin Reinhard, Research Professor and **Asst Prof Jason Blake Cohen** has left NUS on 30 Apr 2016 and 30 Jun 2016, respectively. We thank them for their contributions during their tenure at NUS.

Appointment

Prof Lee Der-Horng and **Prof Meng Qiang** has been appointed as Co-Directors of NUS-LTA Transport Research Centre for three years from 26 May 2016.

Prof Ng How Yong has been appointed as Director of Sembcorp-NUS Corporate Laboratory, a joint investment of S\$60 million by NUS, Sembcorp, and the National Research Foundation (NRF) under NRF's Corporate Laboratory@University Scheme. The laboratory launched on 20 Apr 2016 will look at developing cost-effective, sustainable solutions in power generation, water treatment and waste management.

Dr. Lee King Yin, Alex has joined the department on 10 Jun 2016 as an Assistant Professor. He obtained his B.Eng, M.Phil and Ph.D in Chemical Engineering from the Hong Kong University of Science and Technology. He pursued his postdoctoral research at the Department of Chemistry, University of Toronto from 2009 to 2016. His current research focuses on formation, multiphase processing and characterization of carbonaceous aerosol particles in the atmosphere and their potential impacts to human health, regional air quality and global climate through both laboratory experiments and field studies. Alex has been a scientific member of many large-scale field campaigns, including ground-based measurements in urban, industrial and biogenic regions in North America and cruise and aircraft measurements in Canadian High Arctic. He also actively involves the development of real-time mass spectrometry techniques for single particle characterization.

Academic Staff Achievements and Recognition

Prof Ong Say Leong has been recognized as one of the Outstanding Engineers for the NEWater, one of the top 50 projects with the highest number of public votes at Engineering Feats @ IES-SG50, a national competition to seek out and recognise the top 50 engineering achievements across the various fields of engineering deemed to have made the greatest economic, infrastructural or societal impact to Singapore since 1965. The projects were recognised at the IES Golden Jubilee Dinner graced by Prime Minister Lee Hsien Loong on 1 Jul 2016.

University Level Annual Teaching Excellence Award (ATEA) 2014/2015

Dr Lefebvre Olivier Patrick received the Annual Teaching Excellence Award on 12 May 2016.



Faculty Level Innovative Teaching Award 2015

A/Prof Chin Hoong Chor (Gold), Dr Chew Soon Hoe (Gold), Dr Chian Siau Chen (Silver)

Faculty Teaching Honors List 2015

Dr Chian Siau Chen, Dr Lefebvre Olivier Patrick, A/Prof Harry Tan Siew Ann

Faculty Teaching Commendation List 2015

A/Prof Vladan Babovic, Prof Koh Chan Ghee, A/Prof Yu Liya, Dr Raymond Ong Ghim Ping, Dr Yuan Jing.

Prof Meng Qiang received the **Outstanding Alumni Award** of Department of Civil and Environmental Engineering at The Hong Kong University of Science and Technology in Apr 2016.

Dr Lefebvre Olivier Patrick supervised two students Huang Weiqi Victor and Foong Yan Kai Brandon from NUS High School (SCIENTIA programme) and they won the "**Singapore Science and Engineering Fair Gold Award**" and the "**SSEF 2016 Special Award for Environmental Engineering**" organised by MOE and Agency for Science, Technology and Research (A*STAR). The students represented Singapore at the International Science and Engineering Fair from May 8-13, in Phoenix Arizona. The Project title was: "Designing a photo-electrio-catalytic reactor with transparent electrodes for advanced wastewater treatment".

Plenary/Keynote/Invited Lectures

A/Prof Vladan Babovic received invitation from School of Environmental Science and Engineering at the Southern University of Science and Technology, China to present the Nan shan Distinguished Lecture between 12 - 14 Apr 2016. The Lecture was held in conjunction with International Panel of Experts Workshop for Coastal Climate Adaptation Study.

Professional Recognitions

A/Prof Rajasekhar Balasubramanian has been invited to become a member of the research network of the Regional Partnerships for Enhanced Engagement in Research in Southeast Asia (PEER-SEA) and be a discussant for the topic on ""Toward integration of air quality and climate change policies" in an international workshop to be held at the Asian Institute of Technology in Jun 2016. PEER-SEA is sponsored by the U.S. Agency for International Development (USAID) and the National Science Foundation (NSF).

A/Prof Rajasekhar Balasubramanian has been appointed by Building & Construction Authority (BCA) as a member of the taskforce for outdoor air in the Green Mark Criteria for Residential Scheme in recognition of his expertise in air quality from Jun 2016 to Dec 2017. In this capacity, A/Prof Bala will work closely with representatives from BCA, NEA, HDB and SDE in NUS. BCA Green Mark is a benchmarking scheme which incorporates internationally recognized best practices into the environmental design and performance of buildings. The purpose of the task force is to identify and recommend suitable criteria for providing ventilation in environmentally-friendly buildings.

A/Prof Vladan Babovic has been invited to join Editorial Board of Journal of Korea Water Resources Association on 5 May 2016.

A/Prof Rajasekhar Balasubramanian is a Lead Author of the Chapter 2 dealing with the Atmosphere-Air and Climate in The United National Environmental Programme (UNEP)'s sixth Global Environment Outlook (GEO-6) report published in May 2016. This regional assessment report provides a comprehensive picture of the environmental factors contributing to human health and well-being at Asia and the Pacific region.



A/Prof Rajasekhar Balasubramanian has been appointed by the United Nations Environmental Programme (UNEP) in Mar 2016 to be a member of the Asia Pacific Clean Air Partnership (APCAP) Science Panel in recognition of his established reputation in the international research and scientific arena. The Science Panel will help to create an epistemic community for atmospheric science and will be engaged in synthesizing scientific knowledge for policy making and promoting an integrated approach for air pollution control.

Prof Meng Qiang was selected as a member of scientific committee for the International Conference on Traffic Engineering (ICTE'16) which was held in Prague, Czech Republic from 30 – 31 Mar 2016.

Prof Chow Yean Khow has been selected as the Outstanding Reviewer for the journal: Computers and Geotechnics (ISSN: 0266-352X) based on the quantity and quality of submitted review reports. Announcement at http://www.journals.elsevier.com/computers-and-geotechnics/news/reviewers-of-excellence-selected-by-the-editors/. 28 Mar 2016.

Prof Choo Yoo Sang has been recognised as an excellent scientist has been invited to renew his cooperation with Shota Rustaveli National Science Foundation (SRNSF) and continue peer-review of the grant proposals of upcoming calls in Feb 2016. SRNFS is the Legal Entity of Public Law operating under the egis of the Ministry of Education and Science of Georgia.

Prof Tan Kiang Hwee has been re-appointed as Member, Investigation Panel, Professional Engineers Board, Singapore, from 1 Feb 2016 – 31 Jan 2018. Prof Tan is also a member of the following establishments:

- i) Editorial Board, Journal of Asian Concrete Federation (Sep 2015 present)
- ii) Advisory Board, TCA Journal, Thailand Concrete Association (Feb 2016 present)
- iii) International Scientific Committee, 7th International Conference on Fibre-Reinforced Polymer (FRP) Composites in Civil Engineering (CICE 2016), Hong Kong, China, 14-16 Dec 2016
- iv) International Steering Committee, and Member, International Scientific Committee, XIV DBMC Durability of Building Materials and Components, Ghent, Belgium, 29-31 May 2017 and
- v) International Scientific Committee & Organizing Committee, 6th Asia-Pacific Conference on FRP in Structure (APFIS2017), Singapore, 19 21 Jul 2017.

A/Prof Hu Jiangyong was elected as Board Member to International Ultra Violet Association from Jan 2016.

Prof Meng Qiang was appointed the Associate Editor of Transportation Research Part B in Jan 2016 (Top transportation journal).

Non Academic Staff Awards

The team (Turbo Charge), which included our laboratory colleague Adrian Tan Seck Wei represented the Faculty of Engineering in the Inter-Faculty/Department Bowling Tournament on 10 Apr 2016 organized by Wellness Centre and won the challenge trophy with a total team pin fall of 2159.

Students Awards

Ruzanna Binte Alwi (EVE) and Peng Le (CVE) undergraduate students are recipients of FOE 30th Innovation & Research Award 2016. The annual Innovation & Research Award previously called the Faculty of Engineering FYP Innovation Award, was set up in 1987 to recognize and appreciate innovative talents for their project achievement.



Goh Sin Zhi, Research Engineer with **A/Prof Hu Jiangyong** and a CEE M. Eng. student supervised by **Prof Ong Say Leong** has received the best student paper award for the 5th Annual International Conference on Sustainable Energy and Environmental Sciences (SEES) on 22 - 23 Feb 2016.

Xu Yang (PhD student supervised by Prof Ong Say Leong and A/Prof Hu Jiangyong) was awarded Springer Thesis Award 2016 in Mar 2016.

Alumni

A Best Paper Award is granted to the research work entitled "Photocatalytic Building Coatings for De-pollution and Sustainability" authored by **Dr Padmaja Krishnan**, **Prof Zhang Min-Hong** and **A/Prof Liya E. Yu** at the 4th international conference in countermeasures to urban heat islands on 1 June 2016. The award was selected from more than 190 papers presented at the conference. The work presented in the conference is part of the PhD thesis of Dr Padmaja Krishnan advised by Profs Zhang and Yu. Dr. Krishnan is now a research fellow in the department of Civil & Environmental Engineering at NUS working on the SinBerBEST project funded through NRF CREATE program.

Civil Engineering Alumni **Mr Sebastian Lee Tzyy** Tong (M.Sc.(Civil Engineering) 2008 & B.Eng.(Civil) 2003), Associate, Transport & Resources at Arup received the ACES Young Consulting Engineer Of The Year award at The Association of Consulting Engineers Singapore (ACES) 45th Anniversary Dinner in Mar 2016.

PhD alumnus 2006 **A/Prof Wenhui Duan** has been appointed Director of the Industrial Transformation Research Hub at Monash University, Australia. The hub based at Clayton campus was awarded \$5 million by the Australian Research Council to advance the development of construction materials. The Hub also secures another \$6 million from the industry and will develop novel construction materials including binders, cement additives, high performance concrete materials, concrete structural systems, polymer composites, and pavement materials. It aims to drive advances in nanotechnology, cement chemistry, concrete technology and develop extreme engineering solutions, with the support from the next generation construction technology like 3D printing.

<u>Upcoming Events</u>

Heartiest Congratulations to the Graduating Class of 2016! The Commencement ceremony for Civil and Environmental Engineering will be held on 11 July 2016 10am at the University Cultural Centre (UCC), NUS.

The department is preparing for the EAB Accreditation of the two undergraduate programmes; B. Eng (Civil) and B. Eng. (Environmental). Surveys on selected modules have been conducted every semester. The survey to gather feedback on Employers, Supervisors and Alumni have been sent out in May 2016.

Starting from the cohort AY2014 onwards, B Eng. (Civil) and B. Eng(Environmental) students will be required to fulfill a six months compulsory internship programme; Industrial attachment. The exceptions made are for students who have enrolled in: Double Degree Programme (DDP), Concurrent Degree Programme (CDP), Chemical Sciences Programme (CSP), Global Engineering Programme (GEP). Polytechnic-direct intake students are also exempted.



Past Events

Public Talks

Seminar entitled "A Unified Route Choice Model With Context-Dependent Value Of Time" by **Chair Prof Hai Yang**, Department of Civil & Environmental Engineering, The Hong Kong University of Science and Technology held on 12 May 2016 was hosted by Prof Meng Qiang.

Seminar entitled "Smart Industrialised Building Systems - more diversity, quality, sustainability and adaptability" by **Prof Roger-Bruno Richard**, Université de Montreal held on 4 Mar 2016 was hosted faculty Prof Richard Liew who also spoke on "'Innovation and Research in Prefabricated Prefinished Volumetric Construction".

Seminar entitled "Earthquake Simulation Testing Methods for Large – Scale Structural Columns by **Prof Xiao Yan**, Thousand-talent National Expert, Professor and Dean, College of Civil Engineering, Nanjing Tech University, China on 8 Feb 2016 was hosted by Prof Richard Liew.

Seminar entitled "Design and Technology Innovations for Better Living" by invited Speaker: **Dr Cheong Koon Hean**, Chief Executive Officer, Housing & Development Board and Deputy Secretary (Special Duties), Ministry of National Development was held on 29 Jan 2016. Dr Cheong is also a member of the NUS Board of Trustees.

Prof Fwa Tien Fang hosted a Seminar "Some Promising New Technologies for Smart Mobility and Smart Cities" by **Professor Chris Hendrickson** of Hamerschlag University, Director of the Traffic 21 Institute at Carnegie Mellon University, member of the National Academy of Engineering and Editor-in-Chief of the ASCE Journal of Transportation Engineering on 23 Feb 2016.

Student Events

Final Year Project Poster Session – The event on 12 May 2016 was held for students who have done well in their final year projects in demonstrating new research ideas and/or attaining achievements of practical or research significance. They are encouraged to participate in the Poster Session for an additional round of examination by a panel of both internal and external examiners and they will be eligible for a grading of A+, A or A. Environmental Engineering Students joined this session for the first time. A total of 94 posters were presented with 50 from Civil Engineering (CVE) and 44 from Environmental Engineering (EVE).

EVE Graduation Night (Hawaiian Night) – The Students Club organised the event for the graduating batch of Environmental Engineering students on 15 May 2016 at CSC at Changi.

B. Eng. (Environmental) Final Year Project Symposium- The symposium was held successfully on 18 Mar 201, attended by 30 industry partners. 59 projects represented six research areas; i) Air Pollution & Climate Change, ii) Environmental Monitoring & Assessment, iii) Biological Systems & Processes, iv) Physico-chemical Systems and Processes, v) Waste and Biomass Valorization and 6) Full-Scale Technologies & Applications.

The guest speakers included Ms Chong Mien Ling, CVE Graduate 2002, Acting Deputy Director, Technology, PUB, Mr Ong Gin Keat, Director of Uniflow Power Singapore Pte Ltd and Mr. Hakim BOUHALI, Engineering Director, Veolia Water Solutions & Technologies (SEA).

The department also held an outreach exercise to all Junior Colleges, Polytechnics and IB schools. 15 students participated the in a special outreach programme in the same afternoon hosted by A/Prof Hu Jiangyong and students from the Environmental Engineering Student Club to share with them more about learning opportunities with the department.



Staff Events

The Faculty Dinner – The faculty dinner at Raffles City Convention Centre, Fairmont Hotel Singapore held on 8 Apr 2016 was well attended by CEE staff.

Barbeque Night with Alumni – To foster a closer relationship among staff and alumni, the department held the first CEE Staff and alumni BBQ gathering at Kent Vale on 15 Apr 2016.

Department Dinner - The department had a sumptuous buffet dinner at the Aquamarine at Marina Mandarin Hotel on 11 Mar 2016 for the department's annual function.

Chinese New Year Celebration – The department had a "Lohei" Lunch on 12 Feb 2016 to welcome the year of the Monkey after the Department Meeting.

Engagement with Industry

With the support of industry partners, faculty and academic staff, the following site visits with the companies took place. More site visits will be arranged in the next semester.

Company	Date of visit
Surbana Jurong Consultant	11 Mar 2016
HSL Constructors Pte Ltd	4 Mar 2016
JTC	1 Mar 2016
PUB	22 Jan 2016

HDB Career Talk was held on 18 Feb 2016 which attracted more than 60 students in attendance.

BCA-NUS Networking Session 2016 - Student Clubs from CEE and SDE, together with BCA organised the annual BCA-NUS Networking session at EA Foyer on 29 Jan 2016 from 11am to 5 pm. The event attracted more than 300 students from both undergraduate and postgraduate students to register for the event. 25 companies participated with 6 companies giving a talk. Students were provided opportunities to understand the industry better and make better choice for Industrial Attachment and Career. Companies were keen to promote their organisations to recruit students for internship, scholarships and job placements. Following the event, a survey was conducted for the students to feedback. Likewise BCA also conducted a survey to the participated companies and the response was encouraging. The companies who presented included the following:

Company	<u>Topic</u>
LTA	Downtown Line 3 Trackwork
ВСА	Scholarship / Sponsorship opportunities in BCA and the Built Environment Sector
Witteveen+Bos SEA	Proud to be Witteveen+Bos
PUB	Opportunities in PUB, the national water agency
Lightrus Pte Ltd	DfMA and Prefabrication using Lightrus Steel System
Woh Hup (Private) Limited	Woh Hup - The Professional Engineer (PE) Perspective



Outreach Events

NUS Open House was held on 12 Mar 2016. The department received good responses from the public as well as good team support from the faculty, non academic staff and students throughout the event. The department launched the new CEE Undergraduate Brochure with the tagline "Change The World" "Build Your Dream" at the event.

Faculty of Engineering Open House held on 14 May 2016 was organised by the External Relations Office and supported by all engineering departments. The event was for students who have been offered a place in the faculty.

The Department Consultative Committee members met on 25 Feb 2016 for a sharing and discussion session. The members of the current committee can be viewed at http://www.eng.nus.edu.sg/cee/people/DCC.html.

Visits to CEE

A/Prof Hu Jiangyong hosted a visit by River Engineering and Urban Drainage Research Centre - USM (REDAC) Universiti Sains Malaysia, (USM) and University of Brawijaya, Indonesia to NUS on water management on 12 May 2016. The delegates comprised 8 Lecturers, 8 Research Officers and 19 postgraduate students led by Dr Foo Keng Yuen, Senior Lecturer in REDAC.

NUS President Tan Chorh Chuan and **Deputy President Professor Ho Teck Hua** (DPRT) visited the Engineering Faculty on 22 Apr 2016. The team looked at the facilities in Engineering Workshop 1 where the Structures and Hydraulic laboratories are housed. The Department intends to seek support to redevelop both laboratories. Earlier, DPRT and the Dean of Engineering has given approval to build a new Geotechnical Centrifuge in view of its importance in maintaining our international reputation in centrifuge activities and its relevance to USS, L2NIC and defence related research.

A/Prof Balasubramaniam, A/Prof Gary Ong, Prof Meng Qiang, A/Prof Vladan Babovic and Dr Darren Chian hosted the visit by delegation of 9 academics and 149 students of **Norwegian University of Science and Technology (NTNU)** on 15 Mar 2016.

A/Prof Balasubramaniam hosted a visit by delegation of 13 academics and administrative Staff of Far Eastern Federal University (FEFU), Russia on 15 Mar 2016.

A/Prof Balasubramaniam hosted a team of 161 Undergraduate Students from the Department of Civil Engineering from Institut Teknologi Sepuluh Nopember, Surabaya led by Dr Tavio on 3 Feb 2016. Dr Tavio also gave a guest lecture on "Recent Development and Applications of WRG in Seismic-Resistant Concrete Structures in Indonesia—Proposed Requirements and Design Procedures for The Upcoming Indonesian Building Code For Structural Concrete (SNI 2847:201X): PHASE II-RC Columns".

A/Prof Pang Sze Dai and Dr Yuan Jing hosted a team of postgraduate students from **Tsinghua University** on 26 Jan 2016.