AM.NUS, 3D-PRINTING CENTRE FOR BIOMEDICAL APPLICATIONS

The National University of Singapore’s Centre for Additive Manufacturing (AM.NUS), which has its laboratories based at the NUS Kent Ridge campus, will develop and apply 3D-printing technology in the biomedical and healthcare fields.

Launched on 21 July 2017, the new centre is jointly supported by the National Additive Manufacturing Innovation Cluster (NAMIC) and the Singapore Economic Development Board (EDB). With an initial funding of S$18 million from NUS, NAMIC and EDB, AM.NUS will develop and apply ground-breaking 3D-printing technology in the biomedical and healthcare fields. The new centre will also leverage NUS’ multi-disciplinary expertise from the Yong Loo Lin School of Medicine, NUS Engineering, Faculty of Science, Faculty of Dentistry and School of Design and Environment, to boost the University’s capabilities in AM-enabled technologies.

AM.NUS comprises two laboratories – one is located at NUS Engineering, and the other at the Yong Loo Lin School of Medicine. The facilities are equipped with the latest AM equipment, including powder-, plastics- and liquid-based printers, 3D scanners, CAD image processing and design software, as well as testing and validation facilities. Graduates will learn and gain hands-on experience in AM processes, materials technologies and design for AM principles. The centre will also run AM-related courses for post-graduate students, enlarging the local talent pool within this field to enhance the quality of customised products and services, and increasing the productivity of various sectors.

AM.NUS WILL DRIVE AM R&D ALONG FIVE KEY THRUSTS:

Restorative repairs and implants
Researchers from NUS Engineering are exploring functional printing, as well as developing ceramic and metal AM materials and processes, in order to bring novel and more biocompatible implants to market.

Developing surgical instruments, simulators and prosthetics
Led by the Division of Industrial Design from the School of Design & Environment, the team aims to create customisable surgical tools and simulators for educating the next generation of doctors or simplifying difficult clinical tasks. It will also design functional prosthetics using AM technology.

3D printing-enabled customised medicine
Researchers from the Department of Pharmacy are exploring the use of AM-enabled drug formulations and individualised control of dosage/drug release.

Bio-printing for tissue repair
Scientists from the Yong Loo Lin School of Medicine will be studying new solutions to regenerate and replace damaged tissues by using advanced materials and scaffold printing techniques, combined with tissue engineering.

Oral health and craniofacial applications
The Faculty of Dentistry will lead educational efforts in advanced computer-aided oral surgery and surgical planning, and conduct research on the use of AM in dental implant design and tissue engineering.

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The NUS Centre for Additive Manufacturing will play a critical role in supporting Singapore’s vision of becoming a leading AM hub. Through this inter-faculty pooling of expertise, we hope to boost technology capabilities as well as advance intellectual property development and commercialisation of AM-enabled biomedical technologies.

Prof Jerry Fuh Ying-Hsi, Co-Director of AM.NUS, Thrust Lead of Restorative Repair & Implants, and from NUS Mechanical Engineering

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AM.NUS will work closely with industry partners to develop and transfer AM technologies for biomedical applications. During the launch, the following industry partners signed collaboration Memoranda of Understanding (MOUs) with AM.NUS:

**Creatz3D**, a local small-medium enterprise (SME), will partner AM.NUS to develop next-generation medical training and educational simulation.

**Dou Yee Enterprises**, a pioneering mid-sized local company with established manufacturing bases in Asia, which uses metal injection moulding technologies. They will collaborate with AM.NUS to develop the capability for 3D-printed precision parts.

**Forefront Additive Manufacturing**, a local precision engineering company, will leverage AM.NUS’ biomedical capabilities to grow their business in the healthcare sector.

**Osteopore International**, which specialises in AM, will partner AM.NUS in the design, development and clinical trials of 3D-printed bioscaffolds for orthopaedic applications.

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*To prepare for future manpower requirements in the AM-related industries in Singapore, the centre provides an integrated learning environment for students interested in pursuing a career in this field. In the new AM specialisation programme, students are trained in new technologies. While doing their research projects, they will have hands-on experience through using a wide range of state-of-the-art AM equipment. Some of these student research projects involve industry/hospital collaboration and have good potential to develop into new products and intellectual property.*

Assoc Prof Lu Wen Feng, NUS Mechanical Engineering

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The AM.NUS Laboratory at NUS Engineering is helmed by Prof Jerry Fu Ying-Hai, Co-Director of AM.NUS, Thrust Lead of Restorative Repair & Implants, and Assoc Prof Lu Wen Feng. Both Prof Fu and Assoc Prof Lu are from NUS Mechanical Engineering.
AMONG THE TOP 10 ENGINEERING SCHOOLS IN THE WORLD

According to the 2018 Best Global Universities Ranking by U.S. News and World Report, NUS Engineering is among the Top 10 engineering schools in the World. The University was ranked second.

According to the Times Higher Education (THE) World University Rankings by subject 2018, NUS Engineering is ranked 8th in the world for Engineering and Technology.

NUS ENGINEERING RESEARCHERS ON THE 2017’S HIGHLY CITED RESEARCHERS LIST

Six faculty members have been named in the latest 2017 Highly Cited Researchers report published by Clarivate Analytics. They were among the 13 researchers from NUS who are in the 2017 report. Five of the Faculty’s researchers, listed in the 2016 report, are among the top again.

These researchers have earned this distinction by publishing a high number of scientific papers that are ranked among the top one per cent most cited for their subject field in the year of publication.

NUS ENGINEERING ALUMNI RECEIVE HONOURS AT THE NUS ALUMNI AWARDS 2017

At the prestigious biennial NUS Alumni Awards 2017 held on 23 November, 15 alumni were recognised for their outstanding achievements and contributions. Among the 15 Eminent Alumni Award and the Outstanding Young Alumni Award recipients, four were NUS Engineering alumni.

Mr Wong Ngit Liong (Chief Executive Officer and Chairman of Venture Corporation, former chairman of NUS Board of Trustees from 2004 to 2016) was conferred the Eminent Alumni Award for alumni who have distinguished themselves nationally or internationally by exceptional and sustained contributions and achievements in public and community service; in arts, sports, culture or entrepreneurship; or in a profession or scholarly field. Mr Wong is honoured for his achievements in the industry, his spirit of public service, as well as his exemplary service to NUS and the University’s larger alumni community.

This year, NUS presented the Outstanding Young Alumni Award to a team for the first time. The recipients were the co-founders of Carousell: Mr Lucas Ngoo Cheng Han (NUS Engineering alumnus), Mr Quek Siu Rui and Mr Marcus Tan Yi Wei (NUS Business alumni). Ms Betty Tsai, Associate Scientist, R&D, Procter & Gamble, and Mr Jeffrey Tong Jee Hui, Founder and CEO of PatSnap Pte Ltd, were two other Engineering alumni honoured for their achievements and outstanding contributions in their chosen fields.
NUS ENGINEERING RESEARCHERS RECEIVE THE BEST PAPER AWARD AT THE WORLD ENGINEERS SUMMIT

Assoc Prof Chua Kian Jon Ernest and his team, comprising Prof Chou Siaw Kiang and Dr Md Raisul Islam from NUS Mechanical Engineering, were conferred the Best Paper Award at the World Engineers Summit – Applied Energy Symposium and Forum, held in Singapore (18–21 July 2017).

The NUS researchers were recognised for their work on ‘Integrating Composite Desiccant and Membrane Dehumidifier to Enhance Building Energy Efficiency’. Compared to existing commercial desiccant dehumidifiers, the hybrid system requires a lower regenerating temperature, while producing air of very low humidity. The proposed hybrid solution involves a composite desiccant and membrane to work hand-in-hand to achieve enhanced moisture removal efficiency and improved energy efficiency by up to 40% compared to the best grade commercial dehumidifier. This work has been highly impactful in the area of air conditioning in megacities. When widely deployed, this game-changing disruptive hybrid dehumidification technology will raise the quality of life of citizens, via improved thermal comfort and reduced energy consumption, making cities become more distinctively globally green.

TOP AWARDS FOR NUS CHEMICAL & BIOMOLECULAR ENGINEERING EXPERTS

Assoc Prof Praveen Linga and Dr Ponnivalavan Babu from NUS Chemical and Biomolecular Engineering received significant awards at the 9th International Conference on Gas Hydrates (ICGH9), held in Denver, USA (25–30 June 2017). Assoc Prof Linga was presented with the 2017 Donald W. Davidson Award, in recognition of his research on gas hydrate technology for carbon dioxide capture, while Dr Babu won the inaugural outstanding PhD thesis award in the area of "gas hydrate fundamentals".

Assoc Prof Linga also received the inaugural Energies Young Investigator Award, in recognition of excellence in the field of energy-related scientific research and technology development. The Award consists of 2,000 CHF (Swiss Francs), an offer to publish a paper free-of-charge without a fixed deadline in Energies, and an engraved plaque.
ACCOLADES

WINNERS OF THE MERIT AWARD AT THE MINISTER FOR NATIONAL DEVELOPMENT’S R&D AWARDS 2017

Assoc Prof Lee Hoow Pueh and Assoc Prof Lim Kian Meng, both from NUS Mechanical Engineering, won the Merit Award at the Minister for National Development’s R&D Awards 2017, for the LTA-NUS project “Jagged Edge Profile for Cantilevered Noise Barriers”. This project was lauded for reducing perceivable noise levels by up to 30%, compared to LTA’s conventional noise barriers. Besides being able to lower noise levels, the innovative design also allowed LTA to achieve better coverage in terms of noise reduction by up to 3 times the height of the noise barrier. This cost-effective and easily scalable design has already been implemented at LTA work sites along the East Coast stretch of the Thomson-East Coast Line.

BUMBLEBEE AUTONOMOUS SYSTEMS RANKS THIRD AT ANNUAL INTERNATIONAL ROBOSUB COMPETITION

The Bumblebee Autonomous Systems team emerged third at the 20th Annual International Robosub Competition held in San Diego, USA (24-30 July 2017). They competed against teams from the United States, Russia and China, to complete a series of difficult visual and acoustic-based tasks in the many facets of underwater activity.

TRIPLE WINS AT THE 3RD ANNUAL AICHE SINGAPORE LOCAL SECTION AWARD CEREMONY

At the 3rd Annual American Institute of Chemical Engineers (AIChe) Singapore Local Section Award Ceremony held on 18 May 2017, Prof Zeng Hua Chun won the Outstanding Researcher Award, while Assoc Prof Praveen Linga and Asst Prof Zhao Dan were winners of the Outstanding Young Faculty Award.

IES PRESTIGIOUS ENGINEERING ACHIEVEMENT AWARD 2017

Asst Prof Yeow Chen-Hua, Raye and his student, Yap Hong Kai, from NUS Biomedical Engineering were presented the IES Prestigious Engineering Achievement Award 2017 at the World Engineers Summit on 20 July 2017. They won in the Applied Research category for the Soft Robotic Glove, which helps stroke patients with hand assistive and rehabilitation tasks. Two other students, Low Fanzhe and Gokuia K. Ramachandran, won awards in the IES Young Creators category for the Soft Robotic Sock and the Soft Robotic Nose, respectively.
PROF PHILIP LIU RECEIVES INAUGURAL “HAMAGUCHI AWARD”
Prof Philip Liu Li-Fan, Vice President for Research and Technology, and a distinguished professor from NUS Civil & Environmental Engineering, was presented the inaugural “Hamaguchi Award” for his outstanding achievement and contribution to tsunami and coastal disaster resilience technology.

THIRD “GCL CUP” OF THE INTERNATIONAL COLLEGE GREEN ENERGY TECHNOLOGY INNOVATION AND ENTREPRENEURSHIP COMPETITION
Prof Ng How Yong, Prof Ong Say Leong and their team of researchers, from the Centre for Water Research (CWR) in NUS Civil & Environmental Engineering, clinched First Prize at the Third “GCL Cup” of the International College Green Energy Technology Innovation and Entrepreneurship Competition held in Suzhou, China (20-21 October 2017). Led by Dr Shi Xueqing and Dr Low Siok Ling, the NUS Engineering team’s submission titled “Algae Fuel”, focused on an integrated technology system for wastewater treatment and biodiesel production.

NUSGEM TEAM SCORES GOLD AT THE iGEM COMPETITION
The NUSgem team, led by Assoc Prof Poh Chueh Loo from NUS Biomedical Engineering, clinched gold at the International Genetically Engineered Machine Competition (iGEM), held in Boston, USA (9-13 November 2017). The team, comprising students from NUS Biomedical Engineering, NUS Electrical and Computer Engineering, as well as from other NUS Faculties, were up against more than 300 teams from around the world. Despite it being their first participation at iGEM, the team worked hard and won the gold medal.

The iGEM Competition is a recognised platform for undergraduates interested in the field of synthetic biology to design and showcase innovative ideas aimed at tackling world issues.

TOP WINS FOR THE NUS UAV TEAM AT IMAV 2017
The NUS UAV team emerged top in both outdoor and indoor categories at the 2017 International Micro Air Vehicles (IMAV) Competition, held in Toulouse, France (18-22 September 2017). Despite stiff competition, the NUS UAV team, led by Prof Ben M. Chen from NUS Electrical & Computer Engineering, did incredibly well against teams from Beijing, Germany, Netherlands and Spain.
ACCOLADES

NUS ENGINEERING STUDENTS TOOK TOP PRIZES FOR THEIR PAPERS AT THE FOLLOWING CONFERENCES:

Ms He Miao, supervised by Prof Hu Jiangyong from NUS Civil & Environmental Engineering, won the Best Student Poster Presentation Award for her poster paper titled “Evaluation of catalytic effect in a hybrid system of ozone/ceramic membrane” at the 8th International Water Association Membrane Technology Conference and Exhibition for Water and Wastewater Treatment and Reuse in Singapore (5-9 September 2017).

Mr Liu Xiaochen and Ms Chen Yi Wei, also supervised by Prof Hu, received the Best Presentation Awards at the 26th Joint KKNK Symposium on Environmental Engineering in Korea (5-8 July 2017) for their papers titled “Investigation of the mechanisms involved in deactivation of sulphonamide resistance Sul1 genes by sequential UV/chlorination process”, and “Photoelectrocatalytic degradation of acetaminophen in reverse osmosis brines using TiO2/ Ti photoanode” respectively.

NUS ENGINEERING TEAM BAGS THE GOLD AWARD AT EMEC GLOBAL 2017

A team led by Asst Prof Ren Hongliang, from NUS Biomedical Engineering, won the gold award at the Engineering Medical Innovation Global (EMedic Global) Competition 2017 (30 September 2017) for their design of an Adaptive and Compliant Transoral Robotic Surgery system.

NUSS PROFESSORSHIP FOR PROF LIM CHWEE TECK

Prof Lim Chwee Teck from NUS Biomedical Engineering is the first full-time professor to be conferred the NUS Society (NUSS) Professorship. Prof Lim is also a Principal Investigator at the NUS Mechanobiology Institute and Faculty Fellow at the Singapore-MIT Alliance for Research & Technology.

RECEPIENT OF THE 2017 ENGINEERING IN MEDICINE & BIOLOGY SOCIETY (EMBS) ACADEMIC CAREER ACHIEVEMENT AWARD FROM IEEE

Prof Nitish Thakor, from NUS Electrical & Computer Engineering and NUS Biomedical Engineering, received the 2017 Engineering in Medicine & Biology Society (EMBS) Academic Career Achievement Award from the IEEE, in recognition of his lifelong achievements in the field of biomedical instrumentation and signal processing, neuroprosthesis and neuroengineering, demonstrated through awards, publications, translational activities and leadership in the society’s conferences and editorial activities.

THE FOLLOWING FACULTY MEMBERS RECEIVED NATIONAL DAY 2017 AWARDS:

Prof Lee Jim Yang
NUS Chemical & Biomolecular Engineering

Prof Faroq, Shamsuzzaman
NUS Chemical & Biomolecular Engineering

Prof Xu Jianxin
NUS Electrical & Computer Engineering

Prof Gong Hao
NUS Materials Science & Engineering

Prof Lu Li
NUS Mechanical Engineering

Assoc Prof Tan Kay Chuan
NUS Industrial Systems Engineering & Management

THE FOLLOWING FACULTY MEMBERS WERE ELECTED AS FELLOWS:

Prof Lee Der-Horng, NUS Civil & Environmental Engineering, was elected as a Fellow (FSEng) of the Academy of Engineering Singapore (SAEng).

Prof Tan Kiang Hwee, NUS Civil & Environmental Engineering, was elected a Fellow of the Japan Society of Civil Engineers.

PROF JAMES GOH ELECTED AS AN AAET FELLOW

Prof James Goh, Head of NUS Biomedical Engineering, was elected an AAET Fellow on 10 June 2017. The Fellowship of the ASEAN Academy of Engineering and Technology (AAET) is awarded to eminent individuals from academia, research institutes, industry, and government who have demonstrated successful leadership or outstanding contributions to engineering and technology, and play an important role in the overall development of the ASEAN region.
WINNING THE ACS SUSTAINABILITY CHEMISTRY & ENGINEERING LECTURESHIP AWARDS

Asst Prof Yan Ning won the ACS Sustainable Chemistry & Engineering Lectureship Awards for pioneering the “Waste Shell Biorefinery” concept, including catalyst and process development for converting chitin-based materials, as well as lignocellulose and waste cooking oil, into fuels and chemicals.

Asst Prof Yan, from NUS Chemical & Biomolecular Engineering, was among the three recipients who received the awards from the ACS Sustainable Chemistry & Engineering, the ACS Industrial and Engineering Chemistry Division (I&EC), and the ACS Cellulose and Renewable Materials Division (CELL). These awards recognise the research contributions of scientists, working in green chemistry, green engineering and sustainability in the chemical enterprise, who have completed their academic training within the past 10 years. The winners will be honoured at an I&EC/CELL Division symposium held in conjunction with the 25th ACS National Meeting in New Orleans, USA (18–22 March 2018).

CLINCHING FIRST PLACE AT FALLING WALLS LAB SINGAPORE 2017

Dr Siti Zarina Zainul Rahim’s project on reversing antibiotic resistance clinched first place at the Falling Walls Lab Singapore 2017. She represented Singapore and competed at Falling Walls Lab Berlin from 8–9 November 2017.

A Research Assistant with NUS Civil & Environmental Engineering, Dr Siti works with Assoc Prof Karina Gin, and Prof Ariel Kushmaro and Prof Robert Marks from Ben Gurion University. They developed a group of chemicals called Silence Bac, which blocks bacterial communication to stop turning on the genes responsible for antibiotic resistance.

Dr Siti has travelled to Israel to conduct experiments on Silence Bac and strains of bacteria that doctors have found commonly resistant to antibiotics. The team is thinking of pre-clinical studies and applying to make Silence Bac a drug.

THE IStructE BEST RESEARCH PAPER PRIZE FOR PROF RICHARD LIEW AND STUDENTS

Prof Richard Liew from NUS Civil & Environmental Engineering and his PhD students won the Best Research Paper Award 2017 from the Institution of Structural Engineers (IStructE), UK. The team clinched a new prize, ‘Best Research Paper’, which recognises the best work in the Institution’s new research journal, Structures.

The prize was judged by the IStructE Research Panel, and sponsored by Elsevier. Prof Liew received the award at the IStructE People and Papers Awards Ceremony held in London on 8 June 2017. The winning paper, “Design of concrete filled tubular beam-columns with high strength steel and concrete”, was co-authored by J Y Richard Liew, Mingxiang Xiong and Dexin Xiong, and was published in Structures, Volume 8, Part 2, November 2016, pages 213-226.
AN INTEGRATED 4-IN-1 SMART UTILITIES PLANT FOR THE TROPICS

Assoc Prof Chua Kian Jon Ernest and team from NUS Mechanical Engineering achieved a research breakthrough that could pave the way for a more environmentally friendly and cost-effective way of producing key essentials for daily living in tropical countries – electricity, water, air-conditioning and heat.

The unique smart quad-generation plant system produces all four key utilities simultaneously using a single, integrated system. Energy efficiency is optimised by maximising the recovery of waste energy generated. It offers greater energy and cost savings, and is space-efficient. The system can significantly reduce carbon dioxide emission by more than 30% while meeting the various needs of electricity, water, cooling and heating.

The smart system, which uses natural gas to power micro turbines to produce electricity, is able to recover waste energy. Waste heat generated is efficiently recovered and channelled back to power chillers to produce chilled water, which is required to cool and dry air for air-conditioning. Non-potable water, such as rain water and water discharged from showers and wash basins, is recycled to produce drinking water. It also uses waste heat generated from the system to produce hot water or steam.

A dual-dehumidification unit increases the efficiency of air-conditioning provision, removing up to 50 to 60% of moisture from air, optimal for human comfort, to enable cooling to take place faster. The system cools air with water that is chilled to just 13-18°C, instead of the usual lower temperature of 4-7°C, which enhances the overall efficiency, as an increase in the temperature of chilled water by 1°C translates into energy savings of about 3.5 to 4%. Smart features, such as real-time tracking of power consumption, and controlling valves and pumps remotely, have also been incorporated into the system.

Supported by the National Research Foundation (NRF) Singapore’s Competitive Research Programme, the team hopes to explore opportunities to commercialise and test-bed some of their patented technologies that have been developed from this project.
**DR KENRY, LUSH PRIZE YOUNG RESEARCHER ASIA AWARD RECIPIENT**

Dr Kenny, a Research Fellow from NUS Chemical & Biomolecular Engineering, is one of the 2017 Lush Prize Young Researcher Asia Award recipients. He received the Prize for the development of an in-vitro model to replace the use of animal models in antithrombotic therapy testing. This is the first time the Lush Prize has been awarded to a researcher from NUS Engineering since it was launched in 2012.

**NUS ENGINEERING RESEARCHERS ON THE “INNOVATORS UNDER 35” ASIA 2018 LIST**

Dr Jiashi Feng, Asst Prof from NUS Electrical & Computer Engineering, and Dr Wesley Guangyuan Zheng, Adjunct Asst Prof from NUS Chemical & Biomolecular Engineering, as well as the Institute of Materials Research and Engineering, A*STAR, are in MIT Technology Review’s “Innovators Under 35” Asia 2018 list.

The young innovators honoured are trailblazers in their fields, and are leading the next generation of technological breakthroughs. Dr Feng is recognised for his work on “Enabling computers to grow learning ability with dynamic neural networks”; while Dr Zheng’s research focuses on “Developing high energy density lithium batteries for automotive, aerial and renewable storage applications”. Dr Feng and Dr Zheng will automatically become candidates and potential finalists for the global “Innovators Under 35” list, celebrated in the fall of 2018 in Boston, USA.
CELEBRATING FRIENDSHIPS AND ALUMNI ACHIEVEMENTS

The NUS Engineering Alumni Gala Dinner is an annual occasion to celebrate the renewing and strengthening of friendships and close ties formed, as well as the tireless efforts of our alumni volunteers.

As with tradition, key honours, in the form of the Distinguished Engineering Alumni Award (DEAA) and the Engineering Alumni Service Honours (EASH), were presented to alumni, to honour their accomplishments in various aspects of engineering, and for their significant contributions and support to the Faculty and society. This year, the Faculty recognised three recipients of the EASH, and one recipient of the DEAA.

The 2017 DEAA recipient, Mr Chua Chong Kheng, Deputy Chief Executive of the Land Transport Authority (LTA), graduated from NUS with a First Class Honours Bachelor of Electrical Engineering in 1985. He began his career with LTA, and in 2012, became its Deputy Chief Executive, overseeing Infrastructure & Development. Mr Chua fulfills a key responsibility in actualising the vision of the Singapore Land Transport Masterplan, which is essentially to make public transport the preferred mode of travel for commuters. As passionate as he is about Singapore’s transportation systems, Mr Chua is equally zealous about serving the community at large. He chairs the Whampoa Citizens Consultative Committee, and is an executive committee member of the Civil Service Club.

Ms Wan Siew Ping, from the Mechanical Engineering Class of 1982, and who also obtained her Master of Science in Engineering in 1989, is one of the three EASH recipients honoured this year. Ms Wan, a Senior Manager with the Singapore Institute of Manufacturing Technology (SIMTech), believes in giving back to her alma mater. She has donated regularly towards bursary funds to help needy students, as well as given talks to undergraduates, on the application of engineering in industry, constantly encouraging them to do their best.

Dr Liu Moubin, a Professor at the College of Engineering, Peking University, received his PhD degree from NUS in 2003. In 2012, he took on the role of Chairman of the NUS Engineering Alumni Beijing Chapter, a leadership position which he continues to serve in. Dr Liu has been key in promoting interaction and bonding among NUS Engineering alumni in the Beijing area, and between them and the Faculty.

Dr Wang Xiangqi, a Vice President of Trivest, a finance-related company in China, received his PhD degree from NUS in 2007. In 2014, Dr Wang assumed the appointment of Chairman of the NUS Engineering Alumni Shanghai Chapter, and continues to lead the Faculty’s alumni there. Despite a busy career in the financial industry, he serves as a key liaison person, linking alumni living in and near Shanghai with their alma mater.
A*STAR, NUS AND GLOBAL PHARMA COMPANIES INK MOU TO DEVELOP PHARMA MANUFACTURING INDUSTRY

On 5 September 2017, the Agency for Science, Technology and Research (A*STAR) and the National University of Singapore (NUS) signed a Memorandum of Understanding (MOU) with three leading pharmaceutical companies to mark the launch of an initiative to develop the country’s pharma manufacturing sector. Named the Pharma Innovation Programme Singapore (PIPS), the initiative involved pioneer partners GSK, MSD International, and Pfizer Asia Pacific.

PIPS will focus on areas such as continuous manufacturing, bio-catalysis, process analytical technology and advanced process control, bringing together Singapore’s public sector research capabilities and the domain expertise of key players in the pharma industry to improve and transform the manufacturing operations and technologies of this industry.

NUS AND PSA COLLABORATE TO DEVELOP HUMAN CAPITAL TO SUPPORT THE GROWTH OF THE PORT INDUSTRY

The National University of Singapore (NUS) and PSA Corporation Limited (PSA) inked a Memorandum of Understanding (MOU) on 24 November 2017 to develop Human Capital in advanced port technologies and intelligent systems, to support the growth of the port industry.

The new Tuas port will leverage automation technologies and intelligent interconnected systems to enhance terminal productivity and optimise processes. To build up the competencies required, PSA will jointly develop curriculum and programmes with the NUS Engineering and NUS School of Computing, where students will have opportunities to advance their knowledge in a wide range of areas, including data analytics, cyber security, automation and intelligent systems. Problem statements and case studies provided by PSA will help NUS students better understand how new technologies and intelligent systems are applied to modern port operations and equipment. In addition, PSA will provide and strengthen its support for NUS’ Global Engineering Programme, Innovation and Design-Centric Programme, and Co-Operative Education Programme.
NEWS

A SPIRIT OF UPGRADING AND LIFELONG LEARNING

26 students, who completed the Graduate Certificate in Geotechnical Engineering, received their certificates at the inaugural graduation ceremony on 25 September 2017. Spanning ten months, this specialised programme supported by SkillsFuture Singapore initiatives, provided the graduates a niche in solving complex geotechnical engineering problems. They are now trained to tackle challenges related to geotechnical investigation, monitoring, ground improvement, deep excavation, pile foundation and tunnelling.

The graduates’ spirit for lifelong learning and pursuit for success is commendable. Recent graduate Mr Ngan See Pyng, Director of First Engineers Consultants Pte Ltd, shows that even at the peak of one’s career, updating one’s knowledge is important. “From a design engineer’s perspective, this programme is relevant, up-to-date, practical and applicable. All professors have deep knowledge and understanding of the subject matter. Every lecture was fast, intense and exciting, and always with the aim to complete the notes without compromising the quality of lecture. Important topics are always emphasised multiple times.”

Eleven graduates will continue to pursue the Master of Science (Geotechnical), while one will pursue the Master of Science (Civil) in NUS Engineering. Alena Fournier-Carrie, a current student with the programme, shared, “It feeds the life-long learning needs of people like us. We are so fortunate to be taught by such good Faculty members. We really enjoyed the interactive lectures of our professors, especially when they were punctuated with jokes. It sustained our attention even when we had long busy days. I believe diversity is key to tackling complex engineering challenges that we are facing. People with different backgrounds and experiences bring various perspectives, and the healthy diverse mix of students makes us more innovative, as we have seen during our group projects.”

“I have greatly benefitted from this programme. It has helped me deepen my understanding of geotechnical engineering & technology, tunnelling and deep excavation. There are many situations for which the interaction between super structure and sub structure have to be considered. The programme has also bridged the gap between structural and geotechnical design concepts.”

Mrs Ayingaran Shivajini, Recent graduate of Graduate Certificate in Geotechnical Engineering

Prof Chua Kee Chiang, NUS Engineering Dean (front row, seventh from left), and Prof Quek Ser Tong, Head of NUS Civil & Environmental Engineering, at the inaugural graduation ceremony of the Graduate Certificate in Geotechnical Engineering.
On 1 August 2017, NUS Engineering established its Faculty Advisory Board. Its role is to:

- Advise on strategic directions of NUS Engineering
- Advise and assist in outreach to industry, public and professional bodies to advance Engineering research and education
- Advise and assist in promoting Engineering as an exciting, appealing and meaningful career
- Act as honorary ambassadors to promote NUS Engineering’s interests and perspectives to industry and Government networks

Chairman, Mr Peter Ho
Senior Advisor, Centre for Strategic Futures, Prime Minister’s Office

Dr Cheong Koon Hean
Chief Executive Officer, Housing Development Board

Mr Gan Seow Kee
Chairman & Managing Director, ExxonMobil Asia Pacific

Mr Edwin Khew
President, The Institution of Engineers Singapore

Prof Low Teck Seng
Chief Executive Officer, National Research Foundation

Mr Quek Gim Pew
Chief Defence Scientist, Ministry of Defence

Mr Seah Moon Ming
Chairman, SMRT Corporation Ltd

Mr Russell Tham
Corporate Vice President & Regional President (SEA), Applied Materials Inc.

Dr Raj Thampuran
Managing Director, A*STAR
Since 1955, NUS Engineering has nurtured thousands of Engineer-Leaders with a global perspective, many of whom lead in technology through high-impact research. Read what two of our alumni are doing to impact Singapore and the world.

**SAMUEL CHONG**

“As an engineer at the Energy Efficiency & Conservation Department (EECD) at the National Environment Agency (NEA), my job is to improve the energy efficiency of the manufacturing industry sector to reduce carbon emissions as part of our national effort to lower such emissions to meet our pledge under the Paris Agreement. This includes conducting site inspections, reviewing the energy consumption of industrial facilities and even developing policies and programmes to further improve energy efficiency. It’s fulfilling to know that my efforts can help lessen Singapore’s carbon emissions and bring us one step closer to solving the greatest challenge of our generation – climate change! My time at NUS Engineering has certainly prepared me well for my current job. In fact, the technical rigour of my education has placed me in good stead to meet the challenges I face daily and provided me with a firm foundation as I embark on a journey of continuous learning.”

**NEO LAY KIAT**

“I have always been interested in the construction industry. I often picture myself in my old age, pointing to a skyscraper in some part of the world and telling my granddaughter that I was involved in the construction of that building. Hopefully, she’d look at me in awe and think “that’s cool!” To me, it is very satisfying to be able to see the outcome of my hard work, and it helps that buildings last for a very long time. It is like getting constant affirmation of your hard work every time you see the structure or whenever you hear people talk about it.

My time at NUS Engineering has contributed positively to my career today. It has provided me with the technical qualifications to grant me entry into the construction industry. The education I got in NUS Engineering equipped me with fundamental technical understanding of how things are done on site, and that was extremely useful when I first started as a new Project Manager. I was able to apply discretion in construction sequences based on my background knowledge, and challenge contractors for a leaner, more time-efficient programme. This made me more credible and efficient as a Project Manager.

If you were to ask what I find most fulfilling about my job, I’d say knowing that my clients are happy and satisfied. Things can always go wrong in construction, and sometimes they are just beyond our control. I have always been critical and hard on myself, but I believe that as long as we do our best, manage our clients, and have them happy at the end; it is still a project well done and a project that I should be proud of. After all, even a bad experience can make for a good life experience. You just need to have an open mind and be excited to try, and enjoy new things.”