

President's Foreword



It is widely accepted that engineering has contributed significantly to Singapore's economic, infrastructural and social developments. The transformation to a developed nation took place largely in the last 50 years.

A recent publication by The Institution of Engineers, Singapore "50 years of Engineering in Singapore" highlights the engineering feats across a multitude of disciplines by a group of dedicated engineers. The topics include land transportation, water management and engineering, energy, electronics manufacturing, precision engineering, chemical and pharmaceutical engineering, housing, land use, air and sea hub, telecommunications, ICT and software. One can see the areas of contribution by engineers are wide ranging.

Looking forward, a major challenge in Singapore is the building up of young engineering talent and keeping abreast of changes in its practice. There are many other market opportunities like business, finance and law also looking for talent. We have to somehow get our young to

believe in their more important role of transforming Singapore into a modern state. The study in engineering can develop their analytical rigour, discipline and problem-solving skills. These skills can also be useful if they decide to widen their scope at a later stage of their career.

We are well aware that Automation, Artificial Intelligence and IoT will be the disruptive forces in our economy and life in the near future. To be on top of the "tsunami", there is the need of smart engineers to solve the problems. The Academy is in the right place to ensure Singapore will be ready.

Professor Cham Tao Soon

New Fellows

The Academy's fellowship currently stands at 93 strong with the election of five new fellows in 2016 and 2017.

We are pleased to welcome the following new Fellows to the Academy.



Mr Khoo Teng Chye

Executive Director, Centre for Liveable Cities,
Ministry of National Development

Mr Khoo Teng Chye is the Executive Director for the Centre for Liveable Cities, Ministry of National Development, Singapore. He was formerly the Chief Executive of PUB, Singapore's National Water Agency, Chief Executive Officer/Chief Planner at the Urban Redevelopment Authority, Chief Executive Officer/Group President of PSA Corporation, President and Chief Executive Officer of Mapletree Investments and Managing Director (Special Projects) of Temasek Holdings.

He sits on the Boards of the Tropical Marine Science Institute of the National University of Singapore (NUS), GDF Suez's (Engie) Urban Strategy and Innovation Council, the National University Health Pte Ltd, Temasek Foundation Ecosperity and Temasek Foundation Connects. He serves as a member of the Development Projects Advisory Panel set up by the Ministry of Finance and is also a member of the Advisory Committee to the Chief Minister for the formation of the New Capital for the state of Andhra Pradesh, India. He is an Adjunct Professor at the Nanyang Technological University's (NTU) School of Civil and Environmental Engineering, and at the Lee Kuan Yew School of Public Policy, NUS.

A President-cum-Colombo Plan Scholar, he is a Fellow of the Institution of Engineers, Singapore.

He was awarded the Public Administration (Gold) in 1996 and the Public Administration (Silver) in 1987 by the Singapore government. He was also conferred the Meritorious Service Award by the National Trade Union Congress in 2008 for his contributions to the Singapore Labour Movement.



Professor Lee Jim Yang

Director, Centre for Energy Research & Technology
and Professor, Department of Chemical &
Biomolecular Engineering, National University of
Singapore

Prof Lee Jim Yang is the Director of the Center for Energy Research & Technology and a Senior Principal Fellow of the Energy Studies at Institute at NUS. He was the former Head of Chemical & Biomolecular Engineering and co-Chair of the Singapore-MIT alliance program on Molecular Engineering of Biological & Chemical Systems.

Known for his research on materials for batteries and fuel cells, he has published more than 300 research papers and has been named a Highly Cited Researcher by Clarivate Analytics since 2014. He is an Associate Editor of *Industrial and Engineering Chemistry Research* and an Editorial Advisory Board member of *Energy Technology* (Wiley). He is a member of the American Institute of Chemical Engineers, American Chemical Society, Materials Research Society, Electrochemical Society, and a registered Professional Engineer. He also serves on the Technical Committee for Chemistry, Standards Development Organisation.

Prof Lee was awarded the Public Administration Award (Bronze) in 2017.

He is a member of the Board of Trustees of the Singapore Institute of Technology and the Engineering Accreditation Board of Singapore.



Professor Lee Der-Horng

Director, Transport Research Centre and Professor,
Department of Civil and Environmental Engineering,
National University of Singapore

Prof Lee Der-Horng is the Director of the Transport Research Centre jointly established by NUS and the Land Transport Authority (LTA). A transportation planner and engineer by training, Prof Lee's expertise includes analysis, planning, modeling and policy of transportation. He has been well received and recognised by transport academics through his research works. He has also been extensively quoted and consulted by media and various public and private organisations as a thought leader.

He is a Fellow of the Institution of Engineers, Singapore and a Chartered Engineer of transportation engineering.

He was an Honoree of the 2002 TR100 Award, now known as TR35 by MIT's Technology Review.



Dr Lim Khiang-Wee

Executive Director, CREATE (Campus for Research
Excellence and Technological Enterprise)

Dr Lim Khiang-Wee is the Executive Director of CREATE established by the National Research Foundation of Singapore. Prior to his current appointment, he had been the Executive Directors of the Singapore Institute of Manufacturing Technology, the Institute for Materials Research and Engineering, and the A*STAR Graduate Academy and was also a member of the founding leadership team at the Science and Engineering Research Council. He was the founding Executive Director of IPI-Singapore, setup to catalyse intellectual property intermediation activities.

He has held academic appointments at the University of New South Wales and at the National University of Singapore where he is now an Adjunct Professor of the Institute for Engineering Leadership.



Professor Liu Bin

Head, Department of Chemical & Biomolecular
Engineering, National University of Singapore

Prof Liu Bin is Head of the Department of Chemical and Biomolecular Engineering, National University of Singapore. Named among The World's Most Influential Minds and the top 1% of highly cited researchers in Materials Science by Thomson Reuters, Prof Liu specialises in bringing organic soluble materials into aqueous media, with a focus on the exploration of their unique applications in biomedical research, environmental monitoring and electronic devices. Prof Liu has made major contributions to the research field of organic nanomaterials with impacts on healthcare, environment, energy, and defense & security.

She is a Fellow of the Royal Society of Chemistry and Asia-Pacific Academy of Materials.

Prof Liu was conferred the President's Technology Award in 2016.

Seventh Annual General Meeting

The Academy of Engineering, Singapore held its seventh Annual General Meeting (AGM) in September 2017, at the Institution of Engineers, Singapore.

During the AGM, Professor Freddy Boey presented the Secretary's report to the meeting for comments.

Members noted that a paper on "Engineers For The Future" had been tabled in collaboration with SAEng by the special Task Force set up by IES College of Fellows for the project on study of policies and strategies to revive students' interest in engineering. The paper was adopted by the Academy and has since been uploaded on the Academy's website for comments by all Fellows.

They were also updated that the Ministry of Education (MOE) had approved the proposed Engineering doctorate programme by the NUS Faculty of Engineering and NUS plans to admit the first batch of EngD students in January 2018. In addition, NUS will visit industries to identify suitable companies where candidates can be recruited for the Engineering doctorate programme, as highlighted by Academy President Professor Cham Tao Soon.

Regarding the Academy Expert Groups, members acknowledged that the two pertaining to Cybersecurity and Land Transportation had identified the issues and proposed recommendations for which the respective papers had been uploaded in the Academy's website for comments by all Fellows. These are:

- Singapore's Cybersecurity Landscape by Dr Lee Shiang Long
- Improving Sustainability in Transport Systems for Singapore by Professor Lee Der-Horng

President Cham requested for comments and suggestions on the projects presented in the Secretary's report, for which the Fellows gave their endorsement without any amendment. The same was done for the Treasurer's report presented by Professor Chan Eng Soon.

Professor Brian Lee and Er. Tan Ee Ping will continue to serve as Honorary Auditors for a term of two years as endorsed by the members. Members also affirmed and approved the re-appointment of the current Executive Committee members for a term of two years, for which Professor Andrew Nee Yeh Ching will take over as Treasurer from Professor Chan.

To conclude, President Cham emphasised the importance of succession planning and introducing new blood to the Committee and requested that Fellows nominate young Fellows to be elected as Committee members.



Awards and Honours bestowed upon SAEng Fellows in 2017

Our heartiest congratulations to the following Fellows who had been bestowed with various prestigious honours and awards by the respective professional institutions and organisations.

Chua Chong Keng

- **Distinguished Engineering Alumni Award** conferred by the National University of Singapore for his significant contributions to the development of the land transport and Rapid Transit Systems in Singapore.
- **Alumni Achievement Award** conferred by the Nanyang Technological University for his outstanding career and key contributions in urban land transport infrastructure development and management in Singapore.

Er Meng Hwa

- **Doctor of Engineering (honoris causa)** conferred by the University of Newcastle, Australia in recognition of his illustrious list of achievements and his contributions to his field.

Lim Chwee Teck

- **Inaugural NUSS Professorship** conferred by the NUS Society in recognition of his outstanding scholarship and international leadership in the area of Biomedical Engineering.

Lee Jim Yang

- **The Public Administration Medal (Bronze)** conferred by the Government of Singapore for his excellent stewardship of the Department of Chemical & Biomolecular Engineering and his achievements as an internationally recognised highly cited researcher.
- **Highly Cited Researcher 2017** by Clarivate Analytics for ranking in the top 1% by citations for field and publication year in Clarivate's Web of Science database.

Tan Thiam Soon

- **The Public Administration Medal (Gold)** conferred by the Government of Singapore for his contributions in overseeing the establishment of Singapore Institute of Technology as a new Autonomous University pioneering applied learning pathways for students and working adults.

Wang Chien Ming

- **Special Mention Award** conferred at the Minister for National Development's R&D Awards for innovation in developing a modular floating wetlands system with unique interlocking solution, and creating freshwater-tolerant mangroves along the Waterway@Punggol to optimise space and improve liveability using urban greenery.

04 ► Contribution to the Academy

Making a Donation

The Academy of Engineering, Singapore (SAEng) is a not-for-profit entity registered in Singapore, funded by contributions from individuals and private organisations.

Your donations will enable the Academy to develop and sustain projects to attract aspiring engineers, encourage innovation, and provide support to advance and promote excellence in engineering, and also improve the public awareness and understanding of engineering in Singapore

To make a contribution to the Academy, please contact saeng@ntu.edu.sg.

Our Donors

The Academy has received a total of \$106,070 from organisations and individual donors thus far.

We would like to express our sincere gratitude to all generous individuals and organisations that have supported the Academy over the past seven years.

Here is our 2011-2017 Honour Roll of Donors:

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ISSN 2345-7589

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c/o Institution of Engineers
70 Bukit Tinggi Road,
Singapore 289758.
<http://www.saeng.sg/>