

ANNEX – NUS UNIVERSITY AWARDS 2017: ACHIEVEMENTS OF RECIPIENTS

Outstanding Service Award

Professor Choo Chiau Beng

- Programme for Management Development (Harvard Business School); Doctor of Civil Law, MSc, BSc (University of Newcastle upon Tyne)
- Provost's Chair and Professor (Practice), Department of Civil and Environmental Engineering, NUS Engineering; Department of Management and Organisation, NUS Business School
- Chairman, Centre for Maritime Studies, NUS
- Board Member, Institute for Engineering Leadership, NUS Engineering
- Rector, Residential College 4, NUS
- Chairman, M1 Limited; NRF Holdings Pte Ltd; Raffles Institution Board of Governors
- Advisory Board Member, Centre for Liveable Cities; Board Member, National Research Foundation; Member, GIC Investment Board

“Whatever contributions that I can make is a privilege and I hope NUS can continue to grow in strength and be at the forefront in teaching and nurturing students to be caring and passionate professionals for the public and private sectors. In the various research and postgraduate institutes, I hope that students and researchers can contribute not only to Singapore, but to Asia and the rest of the world.”

LIFETIME ACHIEVEMENTS

Prof Choo had an industrious 42-year career with Keppel Corporation, as its CEO, as well as Chairman and CEO at Keppel Offshore & Marine Ltd (Keppel O&M). He placed Keppel Group at the forefront of the marine and offshore sector, moulding it into a leaner and stronger organisation. Following his retirement, he stayed on as Senior Advisor, providing strong guidance to successors who benefited from his wellspring of knowledge and wealth of global networks.

His vision and leadership at Keppel O&M cemented the company's position as a world leader in the construction and engineering of jackup rigs and floating rigs for deep water, as well as the conversion of floating production storage and offloading vessels.

Prof Choo was appointed as Chairman, M1 in 2015. During his watch, M1's customer base saw a steady increase, numbering 2.18 million at end 2016. Under his capable leadership, the telecommunications company partnered with leading security companies to launch a comprehensive suite of managed cyber security solutions for corporate clients.

SERVICE TO NATION AND INTERNATIONAL COMMUNITY

Prof Choo actively promotes offshore engineering education and R&D in Singapore. In 2002, as Chairman and CEO of Keppel O&M, he was instrumental in the establishment of the Keppel Professorship in Ocean, Offshore and Marine Technology, which led to the creation of the Centre for Offshore Research and Engineering in NUS.

The formation of the Keppel-NUS Corporate Laboratory, in collaboration with the National Research Foundation, was spearheaded by Prof Choo. The Laboratory aims to nurture engineering students for the offshore industry, offering them hands-on experience with valuable practical exposure.

Prof Choo is committed to improving the lives of the Singapore community. At Keppel O&M, he partnered with the National Trades Union Congress to initiate a job creation programme as well as the re-employment of older employees. While at M1, the company launched a fund to provide supplementary assistance to schoolgoing children from low-income households and provided high-speed broadband to these households.

Prof Choo served as Singapore's Non-Resident Ambassador to Brazil from September 2004 to December 2016.

AWARDS

- Corporate Social Responsibility Award, CNBC 11th Asia Business Leaders Awards (2012)
- Meritorious Service Medal, Singapore (2008)
- May Day Medal of Commendation (Gold), National Trades Union Congress, Singapore (2007)
- Public Service Star, Singapore (2004)

FUTURE ASPIRATION

"I expect NUS to produce the next generation of engineers and leaders who are independent, yet team players, compassionate and generous, innovative and entrepreneurial. They will create new industries and businesses in Singapore, the region and globally, carrying Singapore forward in the next 50 years."

Outstanding Service Award

Professor Leo Tan Wee Hin

- Hon DSc (Loughborough University); PhD, BSc (University of Singapore)
- Professorial Fellow, Department of Biological Sciences; Lee Kong Chian Natural History Museum
- Chair, Advisory Committee, NUS-Science Centre Singapore, Science Communication Programme
- Chairman, National Youth Achievement Award Council; Singapore Garden City Fund; Science Sub-Commission, Singapore National Commission for UNESCO; Temasek Foundation Innovates
- Vice-Chairman, Singapore Environment Council
- Trustee, Wildlife Reserves Singapore Conservation Fund; Singapore University of Social Sciences
- Board Member, Mandai Park Holdings

“When I chose our only university over other well-established ones abroad for my graduate studies in 1969, many thought me foolish. However, I believed that this institution would one day be counted among the world’s best. That faith was well placed. Today I am justifiably proud to be an alumnus of this highly respected, global university centred in Asia.”

LIFETIME ACHIEVEMENTS

A dedicated educator at heart, Prof Tan brought about transformational changes as Director of National Institute of Education (NIE) through championing educational reform in teacher education, school leadership and both content and pedagogical research. He played an instrumental role in growing NIE into an internationally acclaimed institute of education for teachers.

As Director and CEO of Science Centre Singapore, he revolutionised the Centre into a vibrant institution for disseminating knowledge in science and technology not only to students and teachers but to all sectors of the community. This was done through skilful packaging of scientific concepts made comprehensible to the public.

His pivotal role in the establishment of the Lee Kong Chian Natural History Museum demonstrates his vision and leadership, as well as the deep lasting impact he has created in education and research. He supervised all aspects of the project, including fundraising, design and relocation of the existing collection from the former Raffles Museum of Biodiversity Research.

SERVICE TO NATION AND INTERNATIONAL COMMUNITY

Prof Tan was Chairman of the National Museum Development Committee that saw the birth of the National Heritage Board. During his term as Chairman of National Parks Board, the Gardens by the Bay was initiated. As a passionate advocate for the environment, he championed *Encyclopaedia of Singapore Biodiversity*, a seminal compendium of the nation’s biodiversity. He played an instrumental role in the project, including securing \$1.2 million in donations.

Prof Tan was actively involved in two major research projects — regeneration of mangroves and undertaking surveys of the flora and fauna of the mangroves, intertidal zone and seagrass beds following the creation of Singapore’s first landfill at Semakau; as well as a comprehensive marine biodiversity survey of Singapore’s coastal environment.

Prof Tan is Board Member of Mandai Park Holdings, which oversees the development of a new eco-attraction for Singapore. As a consultant for the Mandai Environmental Impact Assessment Study, he evaluates the project's impact on the environment and considers protective measures.

As the Asia-Europe Foundation Governor for Singapore, Prof Tan upholds the aims of the Foundation, which include strengthening Asia-Europe ties and exploring opportunities for cooperation. He is lauded internationally for his expertise in science and education, and was an Honorary Visiting Professor at the National College for School Leadership in Nottingham, UK. He has also been invited to serve as Education Consultant by World Bank and Madagascar's Ministry of National Education and Scientific Research.

AWARDS

- Meritorious Service Medal, Singapore (2016)
- President's Award for the Environment, Singapore (2007)
- Public Administration Medal (Gold)(Bar), Singapore (2007)
- National Order of Merit (Officer), France (2002)
- Public Service Star, Singapore (2001)
- National Science and Technology Medal, Singapore (1999)
- Public Administration Medal (Gold), Singapore (1988)

FUTURE ASPIRATION

"Universities must evolve to stay relevant to society and I know NUS will persist in adapting and changing to continually meet the aspirations of our lifelong learning nation."

Outstanding Educator Award

Dr Adrian Lee

- PhD, MA, BA (University of Cambridge)
- Department of Chemistry

“The ubiquity of technology in the modern world obliges us as educators to integrate technology into the education of our students. The provision of an education that does not integrate technology lacks authenticity.”

CURRENT TEACHING PORTFOLIO

- Atmospheric Science
- Quantum Chemistry
- Spectroscopy
- Statistical Thermodynamics

TEACHING ACHIEVEMENTS

- A pioneer in technology-enhanced education, he successfully implemented the flipped classroom pedagogy for CM2101 Physical Chemistry 2, which features online lectures and quizzes; narrated screencast solutions to problem sets; individualised homework assignments; and reimagined classroom time that focuses on active learning
- Introduced innovative teaching methods, including interactive Excel-based visualisations to illustrate concepts; interactive Flash-based animations; and peer grading system with qualitative feedback for term papers
- Developed the Integrated Chemistry Laboratory Manual, a collaboration between Department of Chemistry and Centre for Instructional Technology, that prepares students for laboratory classes with a variety of multimedia including videos of laboratory techniques and interactive photographs of laboratory equipment; and contributed to the development of the Environmental Chemistry Minor Programme with the University of Toronto; and the MSc in Science Communication with Australian National University
- Introduced the revamped Integrated Science Curriculum into the Special Programme in Science

TEACHING STRENGTHS

- Passionate, engaging and effective educator who has garnered highly positive feedback from students
- Provided an abundance of alternative materials to enable students to better understand the module and achieve intended learning outcomes
- Demonstrated clearly the capability of teaching a range of modules across various levels and to different groups of students
- Generous with his time and knowledge, he shares his experience in flipped classroom and technology-enhanced education across NUS

PUBLICATION CREDITS

- Published four joint articles on the learning outcomes of the Special Programme in Science and a joint article on the implementation of an academic development course on blended learning at educational conferences

- Published over 30 disciplinary articles in international journals, including *Science* and *Physical Review*
- Contributed articles on teaching to university publications

INTERNATIONAL STANDING

- Chaired or co-chaired chemistry and materials education workshops and symposia as part of international conferences
- Co-chaired the 7th International Conference on Teaching and Learning in Higher Education
- Invited to give talks and workshops on flipped classroom and teaching leadership in Malaysia, the Philippines and the UK.
- Given disciplinary presentations at meetings, workshops and conferences worldwide

AWARDS AND ACCOLADES

- Annual Teaching Excellence Award, NUS (2014/15, 2013/14, 2012/13)
- Faculty Teaching Excellence Award Honour Roll, NUS Science (2015/16)
- Faculty Teaching Excellence Award, NUS Science (2014/15, 2013/14, 2012/13, 2007/08)
- German Institute of Science and Technology—Singapore National Institute of Chemistry (SNIC) Award in Chemistry Education, SNIC (2012)

TEACHING ASPIRATION

“To achieve a form of redundancy by inspiring students to become autonomous learners independent of me as their teacher. To view learning more as a process rather than a product so my students achieve the necessary metacognitive skills to become lifelong learners.”

Outstanding Educator Award

Dr Christopher McMorran

- PhD, MA (University of Colorado Boulder); BA (Central College, Iowa)
- Department of Japanese Studies

“I recognise students’ raw talent, curiosity and restlessness, then aim to create a learning environment that fosters self-discovery, synthesis of knowledge and effective communication.”

CURRENT TEACHING PORTFOLIO

- Field studies in Japan
- Home
- Introduction to Japanese Studies
- Japanese political economy

TEACHING ACHIEVEMENTS

- Successfully achieved intended learning outcomes of encouraging self-discovery, synthesis of knowledge, and effective communication, while developing skills and knowledge that transcend the discipline of Japanese Studies
- Selectively Incorporated innovative techniques targeted to reach the desired learning outcomes, including flipped lectures, in-class student response systems, online collaborative research tools, peer review, role play, and field-based learning, among others
- Principal Investigator for a Centre for Development of Teaching & Learning Teaching Enhancement Grant project on the impacts of grade-free learning, stimulated by the University’s implementation of the grade-free system

TEACHING STRENGTHS

- Engaging, passionate teaching style that connects extremely well with students
- Versatile educator who uses different teaching activities such as lecture-tutorial format, small group seminars, student response systems, and fieldwork to cater for high and low student enrolment
- Generously shares with colleagues across faculties his experiences of using student response systems, preparing students for fieldwork, incorporating technology-enhanced collaborative learning, and integrating peer review into undergraduate writing
- Reflective educator who is always honing his craft and making contributions beyond NUS through research publications on the Scholarship of Teaching and Learning (SoTL)

PUBLICATION CREDITS

- Published 18 (and two forthcoming) journal articles, book chapters and book reviews, including eight pieces related to SoTL
- Co-edited *Teaching Japanese Popular Culture* (with Assoc Prof Deborah Shamon)
- Presented seven papers on SoTL at international academic conferences, including annual meetings of the American Association of Geographers and the Association for Asian Studies
- Contributed articles on teaching to university publications

INTERNATIONAL STANDING

- Reviewer for journals in Geography, Japanese Studies and SoTL, including *Area*, *Journal of Geography in Higher Education*, *Education About Asia*, *Mobilities*, *Social Science Japan Journal*, *Transactions of the Institute of British Geographers* and *Tourism Geographies*
- Co-organised Teaching Japanese Popular Culture conference in 2012

AWARDS AND ACCOLADES

- Annual Teaching Excellence Award Honour Roll, NUS (2016 - 2020)
- Annual Teaching Excellence Award, NUS (2013/14, 2012/13, 2011/12)
- Faculty Teaching Excellence Award, NUS Arts and Social Sciences (2015/16, 2013/14, 2012/13, 2011/12)
- Innovation Award, NUS Arts and Social Sciences (2011/12)
- Secured over \$200,000 in external funding to offset student expenses for field studies in Japan module

TEACHING ASPIRATION

“I do not want students to feel free to participate in the co-production of knowledge; I want to create spaces and opportunities in which they feel an obligation to do so. Self-learners are lifelong learners.”

Outstanding Researcher Award

Professor Liu Xiaogang

- PhD (Northwestern University); MSc (East Carolina University); BEng (Beijing Technology and Business University)
- Department of Chemistry

“I strongly believe that being a researcher requires inspiration, imagination, a lot of small innovations and not settling for mediocrity. Sometimes it is important to recognise the benefits of failure in your work, knowing that a new opportunity is just beginning.”

RESEARCH INTERESTS

- Bioinorganic chemistry
- Materials science
- Supramolecular chemistry

RESEARCH ACHIEVEMENTS

- World recognised leader in lanthanide-doped nanoparticle research, which aims to develop methodologies for synthesis and characterisation of novel optical nanomaterials and to promote their broad utility in biomedical imaging, molecular sensing, photodynamic therapy, energy conversion and anti-counterfeiting
- Pioneered technologies for fine-tuning upconversion emission colour, realising true full-colour volumetric 3D display, and enabling a general, scalable synthetic method for high efficiency upconversion nanocrystals with potential applications in stem cell differentiation, optogenetics and cancer therapy
- Demonstrated photon upconversion through a new pathway — energy migration upconversion, which can be realised for a wide range of lanthanide activators without long-lived intermediary energy states
- Experimentally verified Einstein’s prediction made in 1907 that the instantaneous Brownian velocity is independent of particle size and shape under infinite dilution conditions

RESEARCH STRENGTHS

- Broad scientific knowledge
- Ability to work on long-term projects and identify gaps that are ripe for new investigation

PUBLICATION CREDITS

- Consistently featured in top international journals including *Nature*, *Nature Materials* and *Nature Nanotechnology*, with over 5,000 citations in the past two years
- Published more than 100 papers including 19 in *Nature* and its sister journals, with one paper attracting more than 1,400 citations, as well as three book chapters
- Named among the world’s most prominent scientific minds in Clarivate Analytics’ (formerly Thomson Reuters) Highly Cited Researchers 2015 and 2016 lists, signifying high quality of research and impact

INTERNATIONAL STANDING

- Board member for five international journals - *Advanced Optical Materials*, *ChemNanoMat*, *COSMOS*, *Nanoscale Horizon* and *Chemistry - An Asian Journal*

- Associate Editor for *Nanoscale*, *Journal of Luminescence* and *Science Bulletin*
- Reviewer for international journals including *Nature*, *Nature Photonics*, *Nature Chemistry*, *Journal of the American Chemical Society*, *Angewandte Chemie* and *Nanomedicine*
- Proposal reviewer for international agencies including US National Science Foundation, American Chemical Society Petroleum Research Fund, Research Grants Council of Hong Kong, French National Research Agency and Swiss National Science Foundation

AWARDS AND ACCOLADES

- President's Science Award, Singapore (2016)
- Outstanding Scientist Award, NUS Science (2014)
- Chemical Society Reviews Emerging Investigator Lectureship Award, Royal Society of Chemistry (2012)
- Young Researcher Award, NUS (2011)

RESEARCH ASPIRATION

"To bring the excitement of the molecular world to the public."

Young Researcher Award

Associate Professor Praveen Linga

- PhD (University of British Columbia); MTech (Indian Institute of Technology Kharagpur); BTech (University of Madras)
- Department of Chemical and Biomolecular Engineering

“Developing simple solutions to practical problems through translational research is a fascinating journey.”

RESEARCH INTERESTS

- Clathrate (gas) hydrates
- Carbon dioxide capture, storage and utilisation
- Seawater desalination
- Liquefied natural gas cold energy utilisation

RESEARCH ACHIEVEMENTS

- Built an internationally recognised research programme that aims to bridge the gap between theory and practical applications in the area of gas hydrates
- Pioneered the hydrate-based gas separation process for carbon dioxide capture, demonstrating kinetic feasibility and separation efficiency
- First to report that the presence of propane as a co-guest when in contact with water dispersed with sand can result in significantly enhanced kinetics, making the clathrate hydrate desalination process more effective in seawater desalination
- Pioneered a simple scalable method to rapidly produce methane hydrates using an unstirred reactor configuration with tetrahydrofuran as an additive
- Secured competitive peer-reviewed grants valued at close to \$9.5 million

RESEARCH STRENGTHS

- Consistently produces an extensive volume of high-quality research that addresses existing challenges in water, energy and the environment
- Ability to undertake innovative and creative multidisciplinary research to solve challenging problems related to gas hydrate research
- Dedicated mentor whose students have won awards for their research projects

PUBLICATION CREDITS

- More than 65 research articles published or accepted for publication in leading peer-reviewed international journals in engineering such as *Applied Energy*, *Chemical Engineering Journal*, *Chemical Engineering Science*, *Energy & Fuels* and *Industrial & Engineering Chemistry Research*
- Obtained over 3,000 citations in published papers with a Hirsch index of 31

INTERNATIONAL STANDING

- Associate Editor for *Journal of Natural Gas Science and Engineering*
- Reviewer for more than 25 leading chemical engineering and energy journals, including *Applied Energy*, *Chemical Engineering Journal*, *Chemical Engineering Science*, *Energy & Environmental Science* and *Energy & Fuels*
- Keynote speaker at about 30 invited talks and guest speaker at more than 20 seminars

AWARDS AND ACCOLADES

- Ranked among the top one per cent of scientists globally in the field of engineering, Thomson Reuters (2014 - present)
- Young Researcher Award, NUS Engineering (2017)
- Donald W. Davidson Award for outstanding contributions to the field of gas hydrates, International Conference on Gas Hydrates (2017)
- Most Cited Paper Award, *Energy* (2017)
- Highly Commendable Award for Research Project of the Year, IChemE Singapore (2016)
- Highly Cited Review Paper Award, *Applied Energy* (2016)
- Most Cited Paper Award, *Chemical Engineering Science* (2017, 2016, 2012)

RESEARCH ASPIRATION

“To develop next generation sustainable technologies strengthening energy-water nexus based on clathrate hydrate process.”

Young Researcher Award

Assistant Professor Prateek Saxena

- PhD (University of California, Berkeley); MSc (Stony Brook University); BEng (University of Pune)
- Department of Computer Science

“The science of adversarial reasoning asks whether a design can withstand an intelligent attack. It is a way of thinking about all our creations.”

RESEARCH INTERESTS

- Binary analysis
- Computer security
- Distributed cryptography
- Web security

RESEARCH ACHIEVEMENTS

- Pioneered “data-oriented” attacks which can defeat state-of-the-art control flow defence systems, long held to be immune against security attacks
- Holds ownership of two patents for secure sharding-based architecture for open blockchains and trusted data service for encrypted MapReduce computation respectively
- Developed web sandboxing techniques which have shaped the design of the Google Chrome extensions platform, Google App Store and Dropbox’s web infrastructure
- Secured funding from global technology giants such as Intel and Symantec, as well as other agencies, valued at close to \$2 million
- His research team has created several start-ups — he co-founded Anquan Capital which provides high security infrastructure to financial services, and is technical advisor to start-ups led by his students, namely Dexecute, which enables fast and self-optimising web applications; and SmartPool, a non-profit entity under creation that offers efficient decentralised mining pools for existing cryptocurrencies

RESEARCH STRENGTHS

- Consistently produces high-quality research that is wide recognised both for its scholarly impact and practical adoption
- Adept at galvanising students in discovering solutions to real-world problems, resulting in his students founding the first Y-Combinator Fellowship company from Singapore

PUBLICATION CREDITS

- Published close to 30 research papers in leading peer-reviewed conferences such as IEEE Security and Privacy, ACM Communication and Computer Security and , USENIX Security Symposium and the journal *IEEE Internet Computing*
- Obtained over 250 citations for papers

INTERNATIONAL STANDING

- Member of the Technical Program Committee for Usenix Security (2015, 2014, 2013)
- Member of the Technical Program Committee for IEEE Symposium on Security & Privacy (2016, 2015, 2014)
- Invited to speak at Symantec (2015) and Intel (2014)

AWARDS AND ACCOLADES

- Top 10 'Innovators Under 35' in Asia, *MIT Technology Review* (2017)
- Best Paper Award, 19th International Conference on Engineering of Complex Computer Systems (2014)
- Best Paper Award, Web 2.0 Security & Privacy (2014)
- Dean's Chair, NUS Computing (2012 - 2018)

RESEARCH ASPIRATION

"Computational intelligence will pervade our lives in unforeseen ways. Securing computer systems is not just an investment in our safety as humans, but will yield new insights into the complexity of these systems."

Young Researcher Award

Assistant Professor Thomas Yeo Boon Thye

- PhD (Massachusetts Institute of Technology); MSc, BSc (Stanford University)
- Department of Electrical & Computer Engineering

“Machine learning will revolutionise scientific discovery, just as it will transform many industries.”

RESEARCH INTERESTS

- Big data
- Brain imaging
- Machine learning
- Neuroscience and mental disorders

RESEARCH ACHIEVEMENTS

- Internationally recognised for devising elegant algorithms to analyse large-scale magnetic resonance imaging data sets
- Provided fundamental insights into the heterogeneity of Alzheimer’s disease using hierarchical Bayesian models
- Contributed to deeper understanding of the structure of human cognition by hierarchical Bayesian modelling of thousands of published neuroimaging studies
- Research is extremely influential in the brain imaging community, with his atlases of brain networks — drawn from analysis of 1,000 human subjects — being distributed as part of the most current brain image analysis software released by Harvard Medical School and the US-based National Institutes of Health’s Human Connectome Project
- Garnered competitive research grants valued at \$10 million from Ministry of Education, National Medical Research Council, National Research Foundation and NUS

RESEARCH STRENGTHS

- Excels in interdisciplinary research that skilfully integrates computer science with neuroscience to obtain a more profound comprehension of how brain systems support cognition
- Dedicated mentor to students, with one student publishing his final year project on Alzheimer’s disease in *Proceedings of the National Academy of Sciences*, and others receiving awards and a postdoctoral fellowship

PUBLICATION CREDITS

- Published more than 30 research articles and commentaries in leading scientific journals such as *Proceedings of the National Academy of Sciences*, *Nature*, *Nature Neuroscience*, *Cerebral Cortex*, *NeuroImage* and *Journal of Neurophysiology*
- Obtained over 4,500 citations for research
- Invited to pen reviews and commentaries for *Nature* (2016), *Nature Neuroscience* (2017, 2015, 2013) and *Neuron* (2017)

INTERNATIONAL STANDING

- Keynote speaker at University of California, Berkeley’s Brain Imaging Center Research Day and invited speaker at several international events, including University of Washington

St. Louis NIAC Seminar Series; Launching Symposium of KAIST Institute of Health Science and Technology; Brain Connectivity Workshop; and Whistler Workshop on Brain Functional Organization, Connectivity and Behavior.

- Member, Committee on Best-practices in Data-Analysis and Sharing, Organization for Human Brain Mapping
- Editor at top brain imaging journal *NeuroImage*
- Reviewer for leading journals, including *Nature*, *Nature Neuroscience*, *Proceedings of the National Academy of Sciences*, *NeuroImage*, *Cerebral Cortex* and *Journal of Neuroscience*

AWARDS AND ACCOLADES

- Singapore National Research Foundation Fellowship (2017)
- Young Researcher Award, NUS Engineering (2017)
- Young Investigator Award, NUS (2015)
- Best Journal Paper Finalist, *NeuroImage* (2015)
- Young Scientist Publication Impact Award, The Medical Image Computing and Computer Assisted Intervention Society (2011)

RESEARCH ASPIRATION

“Devise elegant probabilistic models exploiting large quantity of data in order to answer fundamental questions about human brain network organisation, cognition and mental disorders.”