

Conferment of the Degree of Doctor of Literature, *honoris causa* A Citation

Dr Chan Shuk-leung (Pak Suet-sin), GBS, DLitt (Hon)

In the classic play *The Peony Pavilion*, written by playwright, Tang Xianzu: 'Love comes out of nowhere, yet it goes far and deep.' Ms Pak Suet-sin, who once played the main character Du Liliang in *The Peony Pavilion* truly understands what this means. Her love and pursuit of greatness in the arts and her unwavering faith in relationships have certainly gone far and deep. She has had an accomplished career in the performing arts, full of splendours, and created some of the silver screen's immortal classic couples. Now in her nineties, she finds satisfaction in remembering all the beautiful moments in her past and her triumphs in Cantonese opera, and how they have all borne fruit in the brilliant operatic talents she has helped foster.

Born Chan Shuk-leung to a famed acting family, Ms Pak Suet-sin's ancestral home is Shunde, Guangdong. Her father was prominent actor Pak Kuiwing. At the age of 13, she began her apprenticeship under operatic legend Sit Gok-sin. She became principal actress in a troupe at the age of 16. Through her exceptional talent and professionalism, Ms Pak became a key driving force in revolutionising the performance of modern Cantonese opera. In 1956, Sin Fung Ming Opera Troupe was formed under Ms Pak and Ms Yam Kim-fai. They worked closely with famous Cantonese opera playwright Mr Tong Dik-sang, who is well-known for his adaptations of Chinese classical literature, including dramas of the Yuan dynasty, operas of the Qing dynasty and other legends. His beautifully written lyrics and *kou bai* (narration) blended perfectly with traditional minor keys, creating many fascinating plays. The troupe's prominent operas have all become household names – *The Dream of the Red Chamber*, *Princess Cheung Ping*, *The Legend of Purple Hairpin*, *The Regeneration in the Red-Plum Chamber*, *The Dream in the Peony Pavilion*, *Butterfly and Red Pear Blossom* and *The Fairy of Nine Heavens*. It was a perfect marriage of the operatic performing arts and Chinese classical literature, and cemented Sin Fung Ming's leading status in the development of Cantonese opera.

Under Ms Pak's leadership, the Sin Fung Ming Opera Troupe incorporated performing styles, body movements and choreography from Peking opera and Kunqu into Cantonese opera, while improving upon the costumes, stage settings, music, and lighting effects of traditional Cantonese opera, with the aim of elevating the quality of Cantonese opera as well as its audiences' standards of appreciation. By adapting Peking opera and Kunqu, Ms Pak found a way to enrich the characters and performances in her troupe through dancing, while staying faithful to the scripts and choreography. In order to play the martial scene in *Legend of the White Snake* successfully, Ms Pak was introduced by Lady Sun Yangnong, Hu Ying, to the renowned Peking opera teacher Zhang Shuxian. Under Zhang's tutelage and through vigorous training, Ms Pak improved both her footwork and her performance. As well as constantly striving to improve the troupe's performance aesthetic on the stage, Ms Pak got involved in the backstage work. 'I even managed the setup and props myself', said Ms Pak when she recalled how she succeeded in performing *The Dream of the Red Chamber*. She would also conduct in-depth research before tackling a scripted character in an opera, to make sure she understood the character thoroughly. Before she played Du Liliang in *The Peony Pavilion*, she insisted on reading the original literary texts, so Lady Sung gave her a copy of *Yumingtang's Peony Pavilion*. From studying this, Ms Pak gleaned her character's appearance and personality. She realised while Du Liliang had thin lips, she was not a weak person. She then shared her thoughts on how to play her character with Mr Tong Dik-sang. A perfectionist and a passionate operatic artist, Ms Pak never stopped honing her skills. Her vocal style – known as the Sin Style – was one of a kind, and reflected her belief that vocal styles should vary across plots and characters. To highlight Ms Pak's eloquent nature and vocal style, Tong Dik-sang tailored many roles for her, including Siu To Hung in *Red Cherries and a Broken Heart*, Yeung Chun Heung in *Triennial Mourning on the Bridge* and Fuk Siu Yuk in *The Legend of Purple Hairpin*. These operas feature a great deal of *kou bai* and *siu kuk* (fixed tunes), and showcased Ms Pak's talents to the fullest.

Ever graceful and exceptionally talented on the stage, Ms Pak also became a versatile actress on the silver screen, excelling in both period and modern characters. She started her career in the movies in 1947 in *Wife in the Morning*, *Sister-in-law at Night*, the play of Sun Sing Opera Troupe. From 1947 to 1968, she starred in almost 200 movies, including classics such as *Red and White Peonies*, *Romance of Fuji Mountain*, *The Purple Hairpin*, and *Princess Cheung Ping*, enjoying favourable reviews and tremendous popularity.

Ms Pak Suet-sin's life-long partnership and collaboration with Ms Yam Kim-fai is one of the most popular and storied tales amongst opera and movie lovers. They were deemed a match made in heaven both on stage and on the silver screen, moving countless audiences with their consummate performances, from romantic love stories to heart-breaking tragedies. They met in 1945 while performing with the Sun Sing Opera Troupe, launching an epic era featuring two of Cantonese opera's brightest stars. Ms Yam and Ms Pak typically played *sang* (male character) and *dan* (female character), respectively. Of like minds and ideals, they extended their partnership from the stage into reality by establishing the Chor Fung Ming Opera Troupe in 1963 so as to pass their knowledge and passion for Cantonese opera onto younger generations. Ms Yam Kim-fai passed away in 1989. In remembrance of her best friend, Ms Pak quoted a verse from an ancient classic poem, *Yellow Bird* from *Shijing*, *The Odes of Qin*: 'Could his life be redeemed, I would have given a hundred lives for him' to show her deepest grief. Ms Pak later set up the Yam Pak Charitable Foundation to continue to support Ms Yam's will. The Foundation specialises in promoting Cantonese operatic culture and supporting research and study of the traditional dramatic arts, while also benefitting the community by sponsoring the construction of medical, educational, and elderly care facilities. In 2001, the Foundation was honoured with the 'Montblanc de la Culture Arts Patronage Award' in recognition of its contribution to society.

Continuing her support for education in the arts, Ms Pak donated generously to CUHK Department of Music in 1993. At the same time, she lent the University a vast collection of more than 6,000 items from the Sin Fung Ming Opera Troupe, including transcripts, promotional materials and photos, to assist in the study of Hong Kong's Cantonese opera development. In 2016, the Yam Pak Charitable Foundation permanently donated this collection to the University Library, benefitting the education sector enormously.

An accomplished artist and legendary figure in the Cantonese opera circuit, Dr Chan Shuk-leung is revered by all. In 1996, she was conferred an Honorary Fellowship by The Hong Kong Academy for Performing Arts, and in 1997 was named an Honorary University Fellow by The University of Hong Kong (HKU). In 2001, she received a Lifetime Achievement Award at the 20th Hong Kong Film Awards. In 2004, HKU honoured her again as a Doctor of Letters, *honoris causa*. In 2006, the International Society for the Performing Arts conferred upon her a Distinguished Artist Award and, in ensuing years, she also received an Honorary Award from the Hong Kong Arts Development Council and a Gold Bauhinia Star from the HKSAR Government. In 2014, Shue Yan University awarded her a Doctor of Letters, *honoris causa*.

Mr Chairman, let us congratulate an affectionate artist and pay tribute to her life-long passion for Cantonese Opera, her unswerving pursuit of operatic greatness, her dedication to her life partner, and her commitment to her charitable work. Her unique voice and masterly stage movements have created lots of classic characters, leaving audiences with countless unforgettable moments. It is my great pleasure to present to you Dr Chan Shuk-leung for the award of the degree of Doctor of Literature, *honoris causa*.

Conferment of the Degree of Doctor of Social Science, *honoris causa* A Citation

Mr Lee Chien, BS, MS, MBA

World class Universities, such as The Chinese University of Hong Kong, depend for their success on a rich complexity of vision, insight, scholarship, compassion and the pursuit of excellence. Many of these ingredients are supplied by the professors, teachers and researchers, and, of course, the students. But the scholarly community cannot paint the whole picture. Universities such as this one depend on those who, outside the lecture hall, the laboratory and the library devote themselves to supporting and advancing the cause of education – both for its own sake, and for the myriad benefits that it brings to society as a whole. Our University is indeed fortunate to number amongst its supporters Mr Lee Chien.

Mr Lee has for many years been actively engaged in supporting education in and beyond Hong Kong, both in his personal capacity, as well as in his capacity as a Governor of the Lee Hysan Foundation and as Chairman of the Bei Shan Tang Foundation. In this regard he follows the footsteps and tradition of his family whose support for this University dates back to the days of its very foundation, and physical evidence of which surrounds us today.

Mr Lee's education and career have a strong international theme. His early school years were at St Paul's Co-Educational College (where, he frankly and rather modestly admits, 'he was a very average student'). After Primary Six he went to boarding school in Switzerland, at Le Rosey and then to Phillips Academy in Andover in the United States where he completed his secondary school education.

His university education was undertaken entirely in the United States, and, indeed, in one university – Stanford – where he took his Bachelor's degree in Mathematical Sciences, his Master's degree in Operations Research and his MBA, which he completed after two years at Price Waterhouse in San Francisco. Following completion of his MBA in 1979, he joined the corporate finance department of Morgan Stanley in New York. He returned to Hong Kong in 1983 to join

his family's business beginning with an appointment with its hotel operations, Lee Gardens International, working on the development of the business in mainland China. Thereafter he was involved in a diverse range of investment activities.

Mr Lee's business career in a sense belongs to an earlier stage in his life. For many years now he has devoted himself to the work of a number of not-for-profit organisations, and more especially the promotion of education in and beyond Hong Kong. His contribution to The Chinese University of Hong Kong has been generous, sustained and distinguished. He has served on, and in many cases led, more University Committees than it would be fair to ask anyone to entertain. His contribution has been especially important in the area of Governance, and he has served as Vice-Chairman of the University Council, as a Member of the Executive Committee of Council, and on many of the Council's Committees and Sub-Committees. He has not flinched from taking on sensitive tasks, such as the search for and selection of our new Vice-Chancellor, or the difficult question of reorganising the structure and composition of the Council. In recent years he has been a strong protagonist of the development of The CUHK Medical Centre, a significant player in the Task Force that led to its establishment, and now serves as Chairman of its Board of Directors. His commitment to this project is driven by his personal recognition that medical services in Hong Kong – currently divided between public health provision and private health provision – desperately need a 'third way' that, by combining public and private resources, will offer a new model of health care provision for the people of Hong Kong.

The Chinese University of Hong Kong is not the only beneficiary of Mr Lee's commitment to education and public service. He is especially supportive of his old school, St Paul's Co-Educational College, where he is the Supervisor and a Trustee of The Council of St Paul's Co-Educational College Charitable Trust.

Outside Hong Kong he is fully engaged with Stanford University where he served as a Trustee from 1995 to 2000. He currently serves as a member of the Board of Stanford Health Care and has also served as a member of the Board of the Stanford Alumni Association. He has also been a member of many of the University's Advisory Councils, including the Advisory Council of the Graduate School of Business, the Graduate School of Education, the School of Engineering and the Freeman Spogli Institute of International Studies.

At Phillips Academy he is a Charter Trustee and a member of their Asia Council, having also served as a member of Andover Development Board and as an Alumni Admissions Representative.

A particular passion for Mr Lee is his involvement with the Outward Bound movement. As an organisation – both locally and internationally – Outward Bound's mission is 'to help people discover and develop their potential to care for themselves, others and the world around them, through challenging experiences in unfamiliar settings.' Mr Lee has worked with Outward Bound in several capacities over the years, including 10 years as Chairman of the Executive Committee of Outward Bound Hong Kong and subsequently 10 years' service as Vice Chairman of Outward Bound International. Today he is especially committed to the Outward Bound Center for Peacebuilding, of which he is founding Chairman. Since 2009, the Center has been developing Experiential Peacebuilding by using the Outward Bound approach of experiential learning in the outdoors to challenge and inspire leaders in divided societies to build peace. His involvement in the Outward Bound international movement derives from his abiding interest in education. As he says, bringing young people together in 'the outdoors' is not the objective; it is the medium through which they can come to realise their own potential and to get to really know themselves as well as others. And through that realisation will hopefully come fulfillment of their full potential and development of compassion for others.

So, what is it that drives Mr Lee's commitment to education? He shares a respect for education, learning and scholarship in its own right, which derives from his Chinese heritage. But there is another dimension. When the great Medieval and Renaissance Universities of Europe were being established, their founders (typically the Church) would commonly identify why learning was a noble purpose. They certainly saw the acquisition of knowledge as showing the way to live well and happily. But even more important was their understanding that learning had the capacity to raise up to distinction those that were born in the humblest of circumstances. It is this capacity of education – in its many forms – to promote social mobility which appears to inspire his commitment.

For his commitment to the improvement of society through education, Mr Lee has received many honours and awards, both in Hong Kong and beyond. He is an Honorary Fellow of this University, as well as of The Open University of Hong Kong and The Education University of Hong Kong. He was, in 2000, the recipient of Stanford University's 'Gold Spike Award' which is that University's highest honour for volunteer service, and is offered to only two awardees each year. And in 2011 he received the Kurt Hahn Award from Outward Bound USA.

In light of his many contributions to the public good in Hong Kong, and beyond, it is very fitting that this University should further recognise by the award of this Honorary Degree. Mr Chairman, it is my privilege to present to you Mr Lee Chien, for the award of the degree of Doctor of Social Science, *honoris causa*.

This citation is written by Professor Christopher Gane

Conferment of the Degree of Doctor of Social Science, *honoris causa* A Citation

Mrs Lee Yick Hoi-lun Helen

As Liu Xiang of the Western Han Dynasty wrote in *Garden of Stories*, those who do good never ask for anything in return, and those who are beneficiaries never forget to return goodness. One of Hong Kong's notable charitable foundations has operated under this philosophy for decades, making generous donations to help the needy and poor, and benefiting countless numbers of people across the city. From Hong Kong to Kaiping, Shanghai and Beijing, with efforts ranging from establishing schools and medical services to donating generously to disaster relief, this foundation has devoted itself to help poor students and victims of diseases and illnesses to relieve their hardship. 'Wei Lun Foundation Limited' was founded by and named after the late Dr the Honourable Sir Lee Quo Wei, a Hong Kong dignitary and Grand Bauhinia Medallist, and his wife Mrs Lee Yick Hoi-lun Helen, the very accomplished philanthropist here on our stage today.

Mrs Lee Yick Hoi-lun Helen and Dr Lee Quo Wei were married in 1947. For over 60 years, the couple enjoyed a harmonious marriage full of respect and support. As a prominent figure in Hong Kong's political, economic and educational sectors for over half a century, Dr Lee made great contributions to the city. After joining Hang Seng Bank in 1946, he helped the institution thrive by introducing retail banking services to the masses. In 1969, the bank debuted the Hang Seng Index, which has remained a key stock market index of Hong Kong's economy. In 1983, as a member of the Executive Council, he was very much involved in establishing the Linked Exchange Rate System, which helped stabilise the economy and maintain Hong Kong's currency during its critical period of financial development. The system pegged the Hong Kong dollar against the US dollar at HK\$7.80, a fixed rate that has been maintained to date. The next year, after becoming the first Chairman of the Education Commission, he devoted himself to drawing up a master plan for the city's tertiary education. After the Stock Market Crash of 1987, when the then Governor Sir David Wilson decided to reform the stock market based on the recommendations of the *Ian Hay Davison*

Report, Dr Lee assisted by restructuring the HKEX and serving as its president, a move that helped the stock market rebuild confidence. In 1993, as a member of the Exchange Fund Advisory Committee of the newly established Hong Kong Monetary Authority, he offered his wisdom and insight to guide the development of the city's financial services. Throughout his half-century career, he won the respect of all sectors in the community by dedicating himself to the city's future, and to helping the city recover from multiple financial crises. His contributions were immeasurable. But his wife is a woman of equally impressive character who provided Dr Lee with tremendous support and took good care of their family. When Dr Lee suffered from a stroke in his later years, Mrs Lee spared no effort in looking after him. Her determination and perseverance deserve the highest regard. Over their decades together, the venerable Lees were a paragon of marital devotion, supporting each other through success and adversity.

In 1989, the Lees established Wei Lun Foundation Limited, of which Mrs Lee now serves as Chairman. One of the foundation's primary focuses has always been education, and it has made enormous donations to institutions of higher education to support their scientific research, campus, and educational development. Its beneficiaries include The Chinese University of Hong Kong (CUHK), The University of Hong Kong, The Hong Kong University of Science and Technology, Hong Kong Baptist University, Hang Seng Management College, Li Po Chun United World College of Hong Kong, and Tsinghua University, among others. The Foundation has also made contributions to help the construction and development of Wuyi University and more than 70 primary and secondary schools, and has donated to more than 100 cultural and educational projects in Wuyi, Jiangmen, Dr Lee's hometown. In addition, the Lees have paid close attention to mainland China's development. Through the Foundation, they financially supported local infrastructure, education, and healthcare facilities in Beijing, Shanghai, Guangzhou, Kaiping and Jiangmen, including the large and well-equipped

Kaiping Central Hospital. In 1994, the Lees joined together with Dr S. H. Ho, Dr Leung Kau-kui, and Dr Ho Tim to establish the Ho Leung Ho Lee Foundation, which recognises outstanding scientists in mainland China who have reached the top international academic levels. Since its inception, the foundation has honoured many Chinese scientists, helping to propel the mainland's scientific development forward.

Over the years, the Lees maintained a long and close association with CUHK. Dr Lee played an active role in CUHK right from the University's planning stages. In 1963, he was appointed Founding Treasurer of CUHK by the government. In his 20-year tenure in this position, he laid a solid foundation for the institution and profoundly impacted its development. From 1982 to 1997, Dr Lee served as Chairman of the University Council. Under his leadership, the University quickly developed into one of the city's major educational institutions, paving a prosperous path for the University to soar to new heights. For more than half a century, the Lees went hand-in-hand with CUHK. Their continuous support and remarkable contributions to this University will always be remembered.

The Lees have earnestly promoted CUHK's academic and research development. For years, they sponsored many academic projects to benefit the University, including the Wei Lun Visiting Professorship Programme, Wei Lun Professorship in various disciplines and Lee Quo Wei Professor of Neurology, as well as the establishment of such facilities as Lee Shu Pui Hall at Chung Chi College, the Lee Quo Wei Law Library, the G. H. Choa Cardiovascular Centre, the CUHK-PWH Lee Quo Wei Cardiovascular Intervention Centre, and Lee Quo Wei Hall at S. H. Ho College. Meanwhile, to encourage students' development, the couple established multiple financial aid and international exchange scholarships. As CUHK celebrated its 50th anniversary, Mrs Lee made another generous donation in 2012 to set up the 'Lee Quo Wei CUHK Golden Jubilee Scholarship Endowment Fund' for assistance to students who excel.

Over the past fifty years, CUHK has continuously advanced its research and academic standards among the international academic community, thanks in part to the Lees' generous support. CUHK's teachers and students are greatly indebted to their contributions.

Over the years, Dr Lee received numerous honorary degrees from many local and overseas institutions, and the Lees were awarded honorary citizenships by a number of cities and provincial governments in mainland China. Their philanthropy and prominent contributions also won them an award for their outstanding contribution for the promotion of Kaiping. In addition, Mrs Lee had conferred upon her an Honorary Fellowship of Hang Seng Management College this past May.

Mr Chairman, on behalf of countless beneficiaries, let us express our greatest gratitude to Mrs Lee, a benevolent woman and life-long philanthropist who has made enormous, selfless contributions to education in our country and Hong Kong. It gives me great pleasure to present to you Mrs Lee Yick Hoi-lun Helen for the award of Doctor of Social Science, *honoris causa*.

Conferment of the Degree of Doctor of Science, *honoris causa* A Citation

Professor Arie Warshel, BSc, MSc, PhD Nobel Laureate in Chemistry

Professor Arie Warshel is an Israeli-American scientist who, along with Professor Michael Levitt and Professor Martin Karplus, was awarded the Nobel Prize for Chemistry in 2013 for 'the development of multiscale models for complex chemical systems'. We will return to that rather opaque description in a moment or two since it requires some explanation, at least to those of us who are not familiar with the fields of computational chemistry and computational enzymology – to the development of which Warshel made foundational contributions in a scientific career spanning more than five decades.

Warshel was born in 1940 in Kibbutz Sde Nahum in the north of what was then pre-independence Israel. By his own account, his childhood in the kibbutz provided a 'relatively happy environment'. In the kibbutz children spent most of the time together, and children from the same class slept together in the 'kids house', spending relatively little time – around two hours per day – with their parents, the idea being that the time children and parents spent together would be 'quality time'. Although some have been critical of this kind of arrangement, Warshel 'actually found it to be a very reasonable as well as enjoyable way of growing up in a kibbutz'.

In 1958 he began his military service, and since he had not followed a schooling programme that would prepare him for university entrance examinations, he undertook these studies in the field during his service in an infantry division, and later during night breaks, while serving in the headquarters of the Chief of Staff of the Israel Defense Forces. Taking the examination in an external way (and not getting the proper hints), led grades that were below those required to be accepted to The Hebrew University of Jerusalem, but was successful in taking what he has described as 'the dreaded entrance examination' of the Israel Institute of Technology (Technion). After a successful undergraduate career at Technion, Warshel pursued graduate study at the Weizmann Institute of Science under the (originally reluctant) supervision of its Scientific Director Shneior Lifson. He began his studies there in 1966,

initially as an Master of Science candidate, transferring after less than a year to PhD studies. This rather meteoric progress was interrupted, however, by the outbreak in 1967 of the Six-Day War between Israel and its Arab neighbours (Egypt, Jordan and Syria), during which Warshel served as a tank battalion communications officer.

Despite this interruption he completed his PhD in two years (1967 – 1969) where he and a young pre-doctoral student, Michael Levitt developed a computer programme that was the basis for many subsequent simulation works. In the next step, he took up a post-doctoral position with Martin Karplus at Harvard University, refining the work that started in the Weizmann Institute and adding to quantum features. He returned to Israel and the Weizmann Institute in 1972, just in time to undertake further military service for his country in the Yom Kippur War in 1973. By this time, Michael Levitt, had completed his PhD at the UK Medical Research Council (MRC) and returned to the Weizmann.

In his turn, Warshel moved to the UK (again, the MRC) working again with Levitt until 1976. The work done with Levitt and Karplus led ultimately to the Nobel Prize.

Warshel moved in 1976 to the University of Southern California where he remains today as Distinguished Professor of Chemistry and Biology, and holds the Dana and David Dornsife Chair in Chemistry.

Some scientific discoveries or breakthroughs are relatively easy for us all to understand. Their significance and impact beyond the laboratory or the seminar room can be readily appreciated, especially when the link between theoretical exploration and practical application is relatively short. Others, such as the work of Warshel, need a little more explanation, at least for the lay audience.

Professor Warshel's work is profoundly interdisciplinary, embracing and combining the fields of chemistry, biology and computer science, and it has been central to the development of the systems

and methodologies that underlie modern computer simulations of biomolecular processes. In his own words, his research 'involves the introduction and utilisation of computer models for simulating the function of biological systems, as well as advancing the current understanding of how such systems work'. Or, in the words of the Royal Swedish Academy of Sciences when announcing the award of the Nobel Prize in Chemistry to Warshel and his colleagues:

'Chemists used to create models of molecules using plastic balls and sticks. Today the modelling is carried out in computers. In the 1970s, Martin Karplus, Michael Levitt, and Arieh Warshel laid the foundation for the powerful programmes that are used to understand and predict chemical processes. Computer models mirroring real life have become crucial for most advances made in chemistry today.'

The methods developed by Professor Warshel and his colleagues allow for the precise description and prediction of how actual events in nature occur.

One of Warshel's earlier contributions, in this regard, was the decoding of the precise molecular dynamics that occur during the process of vision. In 1976, Warshel presented computer simulations of the process which predicted correctly what happens in the first picosecond (that is one millionth of a millionth of a second) after light strikes the human eye. This prediction was subsequently confirmed experimentally and provides an illustration of the predictive power of microscopic simulations. (This achievement subsequently featured on an Israeli postage stamp during the United Nations Year of Light in 2015.)

The academic world, for all its commitment to vision, to challenging accepted ideas and testing the boundaries of knowledge and understanding can be a rather conservative, or at least cautious world. Professor Warshel has testified directly to this: 'The gradual acceptance of my work has

not been a simple ride ... The referee reports were almost always very hostile and my fight with referees became legendary and some people assumed that I actually enjoyed these fights.' There will be many in this hall who will empathise strongly with these comments. But very few of us will have had the pleasure of confounding the referees so decisively as Professor Warshel.

For all his distinction, Professor Warshel is a modest man, happily acknowledging the contributions of his colleagues – especially those who shared the Nobel Prize – his students and his postdoctoral associates. And he is a man for whom family, too, means a great deal – acknowledging in his Biographical Note at the time of his Nobel Prize the contribution of his wife, Tamar, through her support for him in his scientific and personal life.

Arieh Warshel has been the recipient of many awards and distinctions in addition to the Nobel Prize. He is an Honorary Doctor of the Faculty of Science and Technology of Uppsala University; an Honorary Doctor of the Israel Institute of Technology; an Honorary Fellow of the Royal Society of Chemistry; a Fellow of the American Association for the Advancement of Science; Elected Member of the National Academy of Sciences of the United States of America, and a recipient of the Gold Medal of the Israel Chemical Society, to name just a few.

Today, The Chinese University of Hong Kong counts itself among the bodies and institutions that have recognised his outstanding contribution to Chemistry. It is especially fitting to do so since Professor Warshel has recently become the Honorary Director of the Arieh Warshel Institute for Computational Biology at The Chinese University of Hong Kong (Shenzhen).

In recognition of his outstanding contribution to chemistry, it gives me great pleasure, Mr Chairman, to present to you Professor Arieh Warshel, for the award of the degree of Doctor of Science, *honoris causa*.

This citation is written by Professor Christopher Gane

Conferment of the Degree of Doctor of Science, *honoris causa* A Citation

Dr Zhou Jianping, MEng, PhD

Asparas soar through the heavens in the ancient murals of Dunhuang. Legend tells of Chang'e and her flight to the moon. China's space dream has spanned thousands of years. Recently, with Shenzhou and Tiangong, it has finally come true.

Flying through space and visiting the moon has always been a collective dream for the Chinese. It has been expressed again and again in mythology, literature, and the arts, as generation after generation has stared up into the starry sky and longed to go there. One such dreamer was Zhou Jianping, born in 1957 in Changsha, Hunan, who has turned out to be a key player in propelling the country to fulfil a dream that has spanned thousands of years.

Dr Zhou Jianping is an outstanding scientist of contemporary China, specialising in spacecraft design as well as theoretical and applied solid mechanics. He is a part-time professor and tutor of doctoral students at the National University of Defense Technology (NUDT) and Beihang University and an honorary member of the National Committee of the China Association for Science and Technology. Since 1999, Dr Zhou has devoted himself to the general design and technical management of China's manned space engineering programme. He was one of the key designers of and contributors to China's unmanned spacecraft Shenzhou-1 and its manned missions.

Shortly after Dr Zhou was born, in 1957, the Soviet Union stunned the world by blasting off the world's first artificial satellite, sparking a space race between the US and the Soviet Union. As a teenager in 1970, Dr Zhou witnessed China's successful launch of its first space satellite, Dongfanghong-1, which raised the curtain for China's own space programme and fuelled his passion and ambitions to participate in the cause.

In 1981, Dr Zhou graduated from the NUDT. Three years later, he obtained his master's degree from Dalian University of Technology, and went on to obtain a Doctor of Philosophy from NUDT in 1989. He furthered his studies overseas in 1993, acting as a mechanics

researcher and visiting scholar at the University of Southern California. When he returned to China in 1995, he became the chief engineer of the Department of Astronautical Science and Engineering at NUDT. In 2002, Dr Zhou became the general engineer of Jiuquan Satellite Launch Centre, as well as general designer of the launch site system for China's Manned Space Programme. In 2004, he was appointed vice chief designer of China's Manned Space Programme, and since 2006 he has been its chief designer. In that role, Dr Zhou oversaw the missions for Shenzhou-7's extravehicular activities and the docking and rendezvous of the Tiangong-1 space station with Shenzhou 8-10 spacecraft, the technical work of Shenzhou-11, and the Tiangong-2 space laboratory and Tianzhou-1 cargo spacecraft missions, as well as the theoretical research and general design of China's space station project. China launched the unmanned Shenzhou-1 spacecraft in 1999, marking a huge leap forward in the development of China's space exploration programme. Ensuing years saw the successful launches of Shenzhou-2, Shenzhou-3 and Shenzhou-4. In October 2003, China celebrated its first successful manned flight with Shenzhou-5, which sent into space and safely returned astronaut Yang Liwei. In 2005, China achieved its first multiple-crew and multiple-day space mission with Shenzhou-6. In 2008, China's first spacewalk was accomplished with the Shenzhou-7 mission. Thereafter, the Shenzhou 6-11 spacecraft, the Tiangong-1 target module and the Tiangong-2 space laboratory were all launched into space successfully to carry out multiple docking activities and conduct science experiments in space. Over the past decade, China's space programme has witnessed rapid breakthroughs in its development. The tireless dedication of Dr Zhou and his fellow aerospace scientists and engineers has borne remarkable fruit, as evidenced by the outstanding accomplishments of the Shenzhou spacecraft and the Tiangong space laboratory. The team is now working on the development of China's large modular space station.

To ordinary people, space exploration seems like a romantic and mysterious affair. But Dr Zhou knows

that his lifelong passion requires diligence, stringency, caution, and concreteness. All work must be meticulous, careful and thorough, for there is no room for negligence. As Dr Zhou has observed, 'The space programme is a matter of life and death.' But, he adds, it is a mission with a grand purpose. 'It is an adventure by human beings to explore the known universe, which enables us to broaden our horizons. It's a mission full of danger, suitable only for the brave.' He encourages the next generation to follow in his footsteps. 'We as human beings, and more importantly, as Chinese should explore the vastness of space. If you wish to devote your career to the space sector, I wish for the younger generation who have set their eyes on this career to study hard and lay a solid foundation for their knowledge. Commit yourself to realising the dream of human beings conquering outer space. Devote yourself to fulfil the Chinese dream of a great revival of our strong nation.'

In addition to his design and management work in China's space engineering programme, Dr Zhou is also an exceptional physicist, boasting tremendous achievements in the research of solid mechanics. He developed the constitutive model of solid propellant, including chemical ageing and mechanical damage for viscoelastic mechanics of solid propellants, as well as the methodology for evaluating the solid propellant rocket's structural integrity. The application of his research has helped to extend the life span of the overused solid propellant engine and to develop new models. He also contributed to the establishment of the theoretic system of transfer function methods for a distributed parameter system. He proposed a standard arithmetic for the static and dynamic response, buckling and modal analysis for a complex structure composed of beams, bars, plates, and shells, which has an edge in the analysis of high frequency response and stress concentration issues.

In 1999, Dr Zhou was one of the recipients of the National Science Fund for Distinguished Young Scholars. Over the next few years, he won more accolades in science and engineering, including two first prizes and one first-

class award at the State Scientific and Technological Progress Award, as well as three first-class and seven second-class progress awards at provincial level. In 2012, he was honoured as one of China's Top Ten Outstanding Technological Workers; the next year, he received the Prize for Scientific and Technological Progress of the Ho Leung Ho Lee Foundation, in recognition of his remarkable contributions in mechanics research and aerospace engineering. In December 2013, he was elected an academican of the Chinese Academy of Engineering. In 2015, he was awarded the Guanghua Engineering Science and Technology Prize. Earlier this year, Dr Zhou received the National Innovation Pioneer Award.

In 2008, Dr Zhou led a delegation from the Shenzhou-7 Manned Space Mission to visit The Chinese University of Hong Kong, and delivered a seminar to share their aerospace experiences with some 500 tertiary teachers and students. At the seminar, Dr Zhou gave a comprehensive academic presentation of the Shenzhou-7 launch, spacewalk technology, and China's aerospace science development, during which a rare space flight documentary was screened. Dr Zhou led a second delegation in 2012 to Hong Kong in which he visited CUHK, schools and government agencies. That visit facilitated the organisation of the Space Science Experiment Design Competition for Hong Kong secondary school students. The winning experiments were eventually carried into space on board Shenzhou-11.

The capacity to fly into space and explore the moon and beyond is a testament to China's scientific developments and technological advances. It also symbolises the fulfilment of the Chinese dream of space. Dr Zhou has played a vital role in China's aerospace development, and has contributed immensely to the aeronautic and astronautic engineering of the Shenzhou and Tiangong projects. Mr Chairman, in recognition of his achievements in and contributions to China's space exploration, I have the great honour of presenting to you Dr Zhou Jianping for the award of the degree of Doctor of Science, *honoris causa*.