

# A Fellowship of Learning

— Research at CUHK —



香港中文大學  
The Chinese University of Hong Kong

## **Our Mission**

*To assist in the preservation, creation, application and dissemination of knowledge by teaching, research and public service in a comprehensive range of disciplines, thereby serving the needs and enhancing the well-being of the citizens of Hong Kong, China as a whole, and the wider world community.*

## **Our Vision**

*To be acknowledged locally, nationally and internationally as a first-class comprehensive research university whose bilingual and multicultural dimensions of student education, scholarly output and contribution to the community consistently meet standards of excellence.*

**To Combine Tradition with Modernity.  
To Bring Together China and the West.**

Choh-ming Li

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## Research Committee

### Composition

Chairman: Professor Henry N.C. Wong

Deputy Chairman: Professor Fanny M.C. Cheung

Members: *Dean of the Graduate School (ex officio)*  
Professor Wing-Shing Wong

*Associate Dean (Research) of each Faculty (ex officio)*

Professor Laurence K.P. Wong, Faculty of Arts

Professor Vernon N. Hsu, Faculty of Business Administration

Professor Alvin S.M. Leung, Faculty of Education

Professor Helen M.L. Meng, Faculty of Engineering

Professor Xingzhong Yu, Faculty of Law

Professor Dennis Y.M. Lo, Faculty of Medicine

Professor Raymond H.F. Chan, Faculty of Science

Professor Junsen Zhang, Faculty of Social Science

*Senior academic members of the University, who are not Faculty Deans,  
to be appointed by the Vice-Chancellor on an ad personam basis*

Professor Hsiang-Fu Kung

Professor Joseph W.Y. Lau

Professor Leslie N.K. Lo

Professor Billy K.L. So

Professor Samuel S.M. Sun

Professor Chi Wu

Professor Yangsheng Xu

Secretary: Mrs Cecilia Lam, Director, Research Administration Office

### Terms of Reference

- To look into research policy issues and make appropriate recommendations;
- To create conditions to stimulate quality research;
- To set up and maintain the mechanisms for research project selection and funding;
- To set up and maintain the mechanism for monitoring the quality of research projects;
- To compile an annual report on research projects at the University;
- To compile an annual report on research projects supported by University Grants Committee (UGC) funds for submission to the Administrative and Planning Committee (AAPC) and the University Senate and then to the UGC;
- To foster the development of multi-disciplinary research endeavours across Faculties, schools and departments; and
- To consider other research related matters as directed by the Vice-Chancellor.

## Foreword

The Chinese University of Hong Kong was founded in 1963 with a charter 'to combine tradition with modernity and bring together China and the West'.

The University has always believed that the purpose of education is not only to acquire knowledge but also to build character. Our motto, a traditional precept attributed to the famous Chinese sage Confucius, is *bowen yueli* (博文約禮), literally 'to broaden learning while preserving propriety'.

The character *li* (禮), 'propriety', signifies the matrix of Confucian virtues that have been prized in China for several millennia. The character *wen* (文), 'learning', signifies the wealth of knowledge that the scholar must master.

When the University was founded, 'learning' was typically to be found in books or accessed through a microscope. Now, in twenty-first century China, it is increasingly to be found on the Internet or accessed through computer software. But although the mode of learning may have changed, scholarship, or 'the broadening of learning', demands the same qualities of intelligence, application and critical judgement that it always has.

The Chinese University of Hong Kong is one of Hong Kong's leading research universities. Since its earliest days, our researchers have striven to 'broaden learning'. In a number of important areas, our researchers have been at the forefront of international research and have helped to push back the frontiers of knowledge. They have lived up to the aspirations of our motto, and have truly 'broadened learning'.

At the same time, we have not forgotten our duty to 'preserve propriety'. We have always emphasized service to the local community, to the nation, and to the global family of which China is a part. Wherever possible, we seek to transform the fruits of our research into applications that have practical benefits to the community.

We are blessed at The Chinese University of Hong Kong with a veritable galaxy of research talent. We have produced this brochure to acquaint a wider audience with some of the brighter stars in this galaxy. In the following pages you will meet some of the remarkable individuals who have helped to craft the University's reputation. You will also, I hope, come to appreciate the impressive range of the University's research activities and the scope of the intellectual endeavour they represent.



Professor Henry N.C. Wong  
*Pro-Vice-Chancellor*

## Research at CUHK

The Chinese University of Hong Kong aspires to be acknowledged locally, nationally and internationally as a first-class comprehensive research university.

In support of this vision, the University has adopted a liberal policy on research activities that seeks to encompass both breadth and depth of research. The University fosters high-quality research over a broad front in its eight Faculties, but it also realizes the importance of focusing preferential resources in selected areas in order to achieve regional and global impact in selected academic areas.

Accordingly, while encouraging basic and applied research in all academic areas, the University has identified five existing areas of eminence for strategic research investment: Chinese studies, biomedical sciences, information sciences, economics and finance, and geo-information and earth sciences.

The University is also striving to establish at least ten areas of research excellence of national, regional and international significance, including infectious diseases, novel functional molecules, traditional Chinese medicine, and human and plant genomics. It is also determined to broaden its research capacity through investments in areas such as biomedical engineering, computer-assisted medicine and language development.

New resources, including endowment income and specific external donations, are channelled towards these strategic areas under the University's Focused Investments Scheme. Besides funding the five areas of eminence and other existing and potential areas of research strength, the scheme also supports high-flying groups and individuals with the potential for achieving even greater impact. It also exploits exceptional opportunities for building capacity in scholarship.

The University is strengthening its existing research capabilities by establishing new teaching programmes and research initiatives in fields such as logistics and supply chain studies, automobile parts, watch movements, biomedical engineering, law, public policy research, gender studies and cross-cultural studies. It is committed to publishing books, articles and other academic outputs of the highest quality, and to obtaining concrete results from applied research that translate into patents, technology transfer and licensing.

The University's research strategies and policies are formulated by the Research Committee, a committee chaired by Professor Henry N.C. Wong, the Pro-Vice-Chancellor with responsibility for research matters. The committee's members include the Associate Deans (Research) of each Faculty and several senior academic members appointed in a personal capacity by the Vice-Chancellor. The main duties of the Research Committee are to examine research policy issues and make appropriate recommendations, to foster the development of high-quality, multi-disciplinary research at the University, and to monitor and report on the progress of research projects.

## Recent Research Achievements

In accordance with its vision and mission, The Chinese University of Hong Kong undertakes a wide range of research programmes in many subject areas, and strives to provide scope for all academic staff to undertake consultancy and collaborative projects with industry. The University expects nearly all members of the academic staff to be research active, and benchmarks their research to international standards.

The University's insistence on the highest standards of research has won it an enviable research reputation. Some of the University's recent research achievements are highlighted in the following paragraphs.

### Areas of Excellence

Hong Kong's University Grants Committee (UGC) provides preferential grant funding to the local tertiary institutions to conduct research into fifteen selected Areas of Excellence (AoEs). Six of these AoEs are being led by researchers from The Chinese University of Hong Kong:

- Institute of Network Coding
- The Historical Anthropology of Chinese Society
- Centre for Research into Circulating Foetal Nucleic Acids
- Chinese Medicine Research and Further Development
- Centre for Plant and Agricultural Biotechnology
- Information Technology.

### State Key Laboratories

In 1984 China introduced a State Key Laboratory Scheme to establish state-funded laboratories in selected disciplines to conduct innovative basic and applied research to support the nation's technological and economic development. In view of their strategic significance, these laboratories are entrusted to institutions that can produce research of international quality and have the resources and skills to carry out important national research tasks. The Chinese University of Hong Kong presently has two state key laboratories. The State Key Laboratory in Oncology in South China, established in 2006, conducts research into the biology and early detection of cancers particularly prevalent in Asian populations, and seeks to develop novel therapeutics for their treatment. The State Key Laboratory of Agrobiotechnology, established in 2008, studies ways of improving rice yields in China by improving the species of rice grown by Chinese farmers.

### Published Research

The University's research outputs take the form of conference papers, books, monographs, reviews, and articles in leading local and international journals. During the academic year 2007–08, 6,331 research outputs were recorded, including 2,251 conference papers, 2,545 journal publications, 575 scholarly books, monographs and chapters, 116 creative and literary works, consulting reports and case studies, and 844 other outputs of various kinds.

The University has an excellent record of published research, both in discipline-specific journals and in more high-profile publications such as *Science*, *Nature*, and *The Lancet*. It has the second-highest number of refereed publications, both in absolute terms and expressed as a ratio of publications per staff member, of any of Hong Kong's UGC-funded institutions. According to the latest available statistics, for 2006–07, the University had 2,195 publications in journals tracked by Thomson Scientific (formerly the Institute for Scientific Information, ISI), again the second-highest number of citations of any UGC-funded institution.



## Researcher Profiles

The Chinese University of Hong Kong has a proud record of academic recognition. Its researchers include three Nobel Prize winners. One colleague is the holder of the Fields Medal, while another holds the Turing Award. Ten researchers are Academicians of the Chinese Academy of Sciences, and two others Academicians of the Chinese Academy of Engineering. Eleven researchers have received State Natural Science Awards of various classes. Fourteen Croucher Foundation Senior Research Fellowships and four Senior Medical Research Fellowships have been awarded to CUHK researchers since 1997.

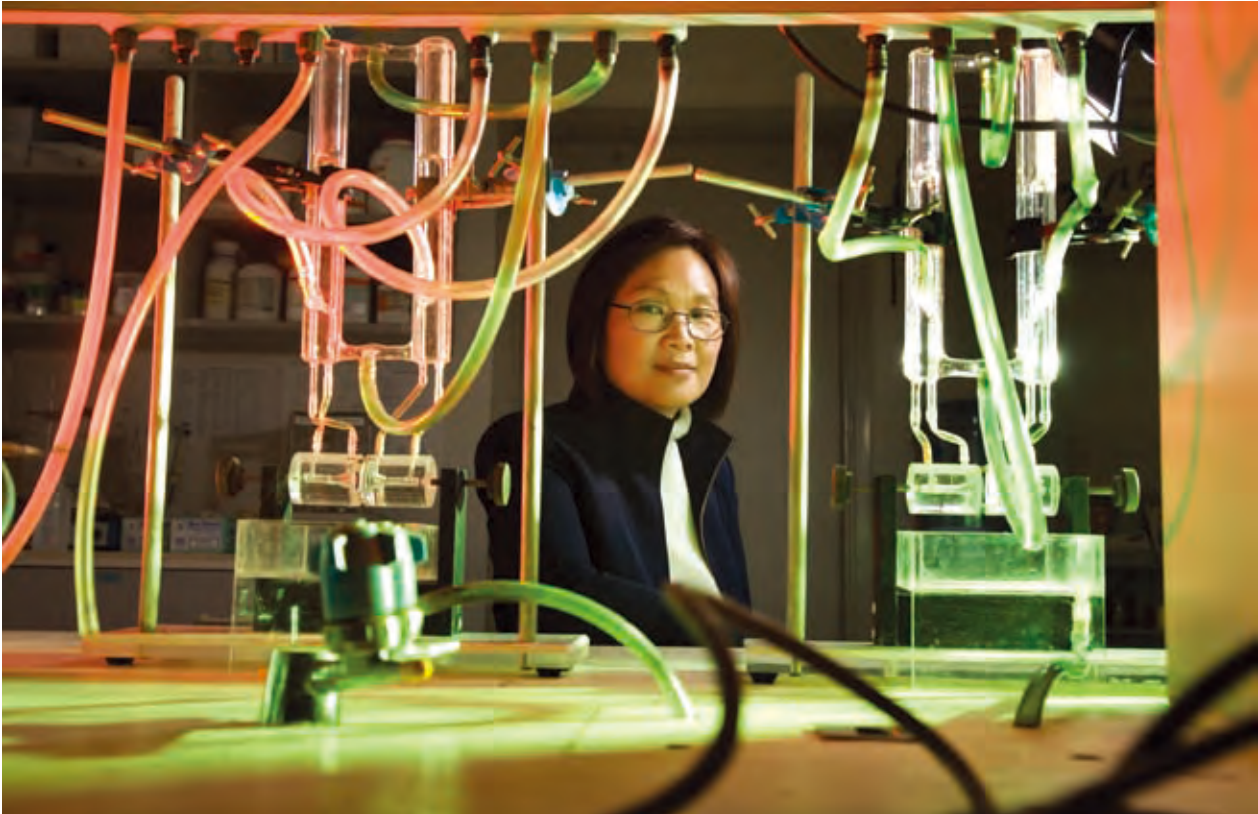
Several of the University's researchers have won important external academic honours during the past two years. In 2007 Professor Yangsheng Xu (Mechanical and Automation Engineering) was elected to membership of the Chinese Academy of Engineering, while Professor Yee Leung (Geography and Resource Management) received a State Natural Science Award (Class II). The Croucher Foundation awarded Senior Research Fellowships to Professors Emily S.C. Ching (Physics) and Hsiao-Chang Chan (Physiology) in 2007, Michael R.T. Lyu (Computer Science and Engineering) and Tony K.M. Shing (Chemistry) in 2008, and Liwen Jiang (Biology) in 2009; and a Senior Medical Research Fellowship to Professor Francis K.L. Chan (Medicine and Therapeutics) in 2007.

These remarkable men and women, and many others of comparable stature, are celebrated in the following pages. They can be justly proud of their achievements, which have brought honour not only to them but also to The Chinese University of Hong Kong.



## Hsiao-Chang CHAN

Department of Physiology



When receiving her Cheung Kong Scholar Achievement Award from China's Ministry of Education in 2008, Professor Hsiao-Chang Chan remarked that the honour belonged as much to the staff and students of the Epithelial Cell Biology Research Centre and to their many research collaborators as to herself. Professor Chan may well be a leading authority in epithelial biology research, with a glowing entry in *Who's Who in the World*, but she never forgets that the unaided efforts of a single person cannot build knowledge. With 18 visiting professorships in mainland universities and directorships of both the Research Centre and the CUHK-Jinan University Joint Laboratory for Regenerative Medicine, she has extensive experience in leading and working with teams at the forefront of her field.

Professor Chan is interested in how disturbances in the way epithelial cells operate can affect a broad range of physiological functions. She has played a significant

role in a number of important discoveries in the field of reproductive health, including a cell shrinkage-activated cation channel, the  $\beta$ -defensin molecule in the epididymis that is involved in initiating sperm maturation, and the role of the cystic fibrosis transmembrane conductance regulator in female fertility and infertility. Her team has also found that a defect in an epithelial ion channel previously shown to result in female infertility is also present in sperm and can affect male fertility also.

In combination, these discoveries have provided the basis for the development of new strategies in the treatment of infertility and advances in contraception. In 2007 Professor Chan was awarded a Croucher Senior Research Fellowship in recognition of her excellence in scientific research, and in 2008 a State Natural Science Award (Class II). No doubt she thought about her team when she received the news.

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## Francis K.L. CHAN

Department of Medicine and Therapeutics



Success so very often begins at home, in the way young people are nurtured and encouraged and in the opportunities their education offers them. Francis Chan has never forgotten this, and a string of teaching awards from CUHK—where he graduated with honours in 1988 and received his medical doctorate in 1998—attests to his determination to temper his research with a focus on developing the next generation of doctors. Even so, he leads the world in his chosen field.

Now Professor of Medicine and Therapeutics at CUHK and an honorary consultant physician at the Prince of Wales Hospital, Professor Chan is an internationally renowned expert in the management of aspirin use and peptic ulcer bleeding. He was the first doctor outside the United States to be awarded the David Y. Graham Lectureship by the American College of Gastroenterology, which invited him to join the College's Task Force on

Understanding Ulcers, NSAIDs and Ulcer Bleeding in 2005. In Hong Kong he was awarded a Croucher Foundation Fellowship in 1993 and a Croucher Senior Medical Research Fellowship in 2007.

Professor Chan has also made outstanding contributions to public health in Hong Kong, launching the first bowel cancer screening programme in the eastern New Territories during 1999 and organizing a large-scale SARS screening test for over 12,000 people during 2003. He is a prolific author, having published more than 200 research papers in leading international journals. Fittingly for someone with such outstanding achievements, Professor Chan was the first academic to publish six first-authored research papers in both the *New England Journal of Medicine* and *The Lancet*.

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## Christopher H.K. Cheng

School of Biomedical Sciences



A local boy from Hong Kong, Christopher H.K. Cheng recently shot to fame as a nationally recognized expert in Chinese medicinal plants. A biochemistry graduate of CUHK in 1976, Cheng pursued graduate studies at the University of London as a Shell Scholar, obtaining his PhD in 1980. After working as a postdoctoral researcher at the University of California at San Francisco, he returned to CUHK as a lecturer, his major research interests molecular endocrinology and the development of therapeutic agents from natural and synthetic compounds. A few years later, Professor Cheng embarked on an ambitious project—a 20-year research on the ‘Composition analysis of certain medicinally important plants’, specifically plants found in northwestern China, that culminated in his being conferred a highly prestigious national award.

The project studies the chemistry and biology of the phytochemicals in the plants grown in northwestern China, such as Ningxia, Xinjiang, Qinghai, Shannxi and Gansu, which are believed to be particularly acclimatized to drought and intense UV irradiation conditions.

Over the years, adopting modern scientific methods such as fractionation and isolation of chemical components, spectroscopic characterization, chemical structure elucidation, biochemistry and pharmacology, the project examined the components of important plant taxa, such as *Asteraceae*, *Euphorbiaceae*, *Scrophulariaceae* and *Lamiaceae*, and found that extreme weather conditions produce

special compounds useful for the identification of new medicines.

Together with his co-researchers, Professor Cheng, now Professor in the School of Biomedical Sciences and chief of its Reproduction, Development and Endocrinology Programme, discovered that plants such as *Sinofranchetia chinensis* that are resistant to extreme weather conditions are a rich source of flavonoids, with some possessing very potent antioxidative and/or free radical scavenging activities. These compounds can be used to prevent oxidant-related illnesses such as gout. These findings rationalize the traditional use of the plants and help explain their adaptability to abiotic stress from the environment. They also found that plants like *Artemisia annua*, *Ajuga lupulina* and *Artemisia capillaries* contain antimicrobials and antifeedants that can defend them against attacks from insects and pathogenic microorganisms. Such compounds are also proven to be effective in preventing certain cancers, including liver cancer. This indicates that bionics is a useful strategy in the search for new drugs.

The project was conferred the second-class award of the 2009 State Natural Science Award for its contribution to the elucidation of the components of some 200 plants, to the development of new medicines from natural products, and to the enhancement of international recognition for traditional Chinese medicine.

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## H. Samuel CHEUNG

Department of Chinese Language and Literature

After a long voyage of discovery, H. Samuel Cheung returned to his starting point. Some academics are reluctant to look backwards, but Professor Cheung returned to his roots in Hong Kong because of his deep commitment to his research on the Cantonese language. A graduate of CUHK's BA and MA programmes in the late 1960s, he gained his PhD from the University of California at Berkeley before embarking on a distinguished academic career in the US. But, as he wrote in his introduction to his *Cantonese as Spoken in Hong Kong*, he had such a passion for language, and for Cantonese in particular, that he finally decided 'to return to Hong Kong, where it all began'.

Professor Cheung joined CUHK as Professor of Chinese Language and Literature in 2004. His research interests encompass a broad sweep of language and culture, taking in historical phonology, historical grammar, dialectology, language pedagogy and vernacular Chinese literature. In recent years, he has made use of a wide variety of language manuals published in the 19th and 20th centuries as data for reconstructing the history of the Cantonese language.

Of less recent vintage, but still very influential in the West, is Professor Cheung's *A Practical Chinese Grammar*. Described as a 'comprehensive' treatment of the subject, the volume has long been a welcome addition to the language teaching profession. Retained as a Professor Emeritus by the University of California at Berkeley, Professor Cheung has left his legacy at every point of his long journey.

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## Fanny M.C. CHEUNG

Department of Psychology

Only the most influential scholars are remembered as much for their ‘sidelines’ as for the focus of their research. When Fanny Cheung returned to Hong Kong after gaining her PhD in Psychology from the University of Minnesota in the 1970s, she began a distinguished career as a psychologist, first in clinical practice and then as an academic. Yet her experience in those early years led to concerns that women’s issues were not being addressed, and she is now widely recognized as the ‘mother of gender studies in Hong Kong’.

Currently Chairperson of the Department of Psychology at CUHK, Professor Cheung was founding Director of the Gender Research Centre and founding Chairperson of Hong Kong’s Equal Opportunities Commission. She has also served as a member of the Women’s Commission. She is still concerned that ‘there is a large gap between the advocates and the policy makers’ on gender questions, a point she makes in her recently edited volume, *Mainstreaming Gender in Hong Kong*. A co-authored volume published in 2008, *Women at the Top* traces how women leaders have integrated work and family life, contradicting the so-called ‘mommy-track’ versus career-track dichotomy.

Professor Cheung’s major research focus is personality assessment, and her work has raised awareness of the need for cultural sensitivity in this field. She adapted the widely used Minnesota Multiphasic Personality Inventory to suit local cultural norms and interpretations in the 1970s, and published a Chinese translation in the 1990s. Collaboration with researchers in mainland China led to the development of the Chinese Personality Assessment Inventory by 1996. More recently, that inventory has been modified to hone the interpersonal relatedness dimension and is attracting

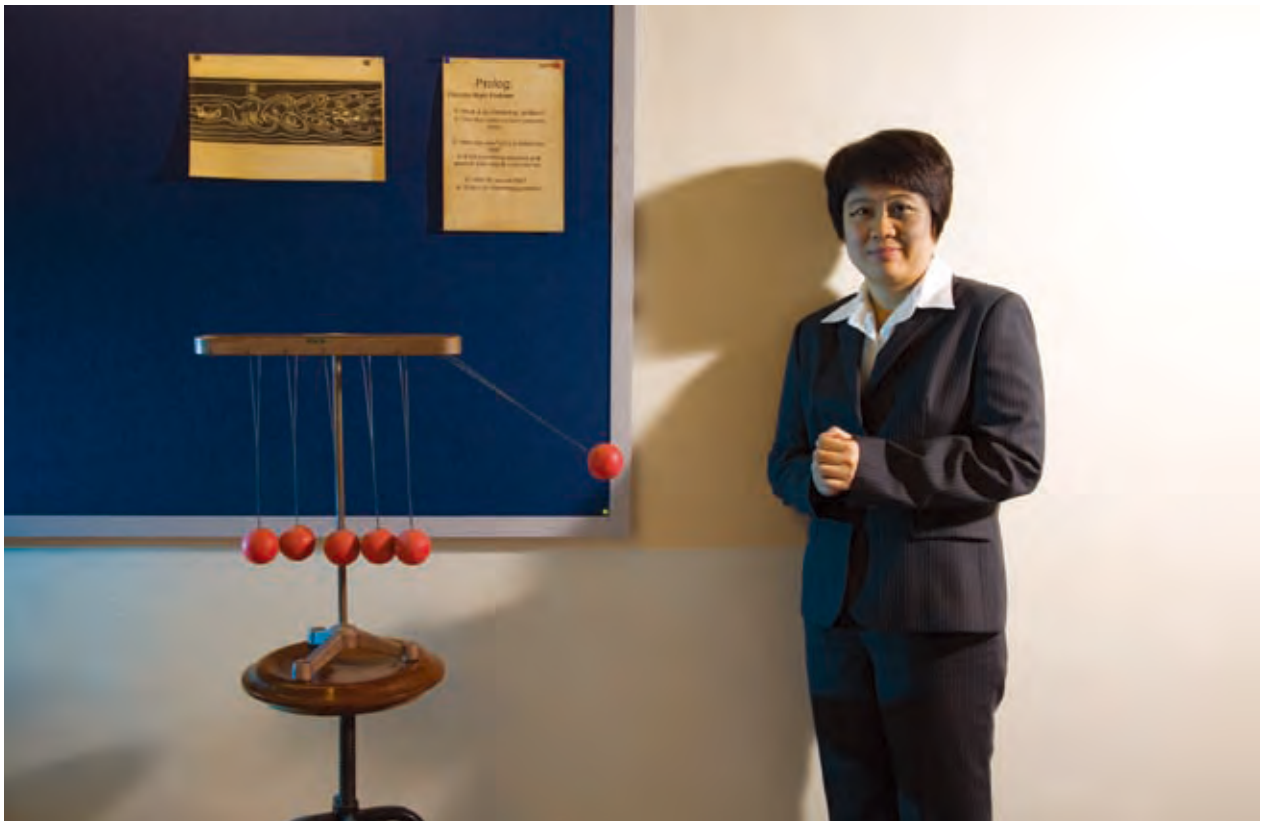


attention in both Asia and Europe as the Cross-Cultural Personality Assessment Inventory. At home and abroad, Professor Cheung has had a significant influence on two major fields.

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## Emily S.C. CHING

Department of Physics



Few researchers achieve renown through their graduate studies, but Emily Ching's study of light refraction in fluids for her MPhil thesis has since become a standard work of reference. Professor Ching is a theoretical physicist at CUHK's Department of Physics, which she joined in 1995 after having turned her attention to problems of fluid turbulence. Her first project for the university produced a framework for studying turbulence using conditional statistics.

More recently Professor Ching has turned her attention to understanding how polymer additives can reduce drag in turbulent flows, which could lead to a reduction of the energy needed to transport fluids such as oil in pipelines or move aircraft through the air. She and her collaborators have already shown that polymers can dissipate energy, thus reducing turbulent fluctuations, streamlining flows and reducing drag.

Professor Ching's research achievements have been recognized internationally. In 1999 she received an Achievement in Asia Award from the Overseas Chinese Physics Association 'for contributions to the understanding of the complex fluctuations in fluid turbulence'. She became a Fellow of the UK Institute of Physics in 2004, and in 2005 the American Physical Society elected her a Fellow 'for leadership in the analysis of turbulent and chaotic dynamics, and particularly for elucidating the structure of turbulent correlations in turbulent systems'. More recently Professor Ching has received a Croucher Senior Research Fellowship, the award for which was presented by Professor Chen-Ning Yang, Nobel Laureate in Physics. It would be difficult to think of a more fitting person to congratulate this outstanding scholar.

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## Hak-Fun CHOW

Department of Chemistry

The Department of Chemistry at CUHK has long been familiar territory to Hak-Fun Chow. He first entered its halls in 1975 as a fresh undergraduate, receiving Bachelor of Science and Master of Philosophy degrees by 1981. After doctoral studies at Cambridge University and postdoctoral positions in England and Switzerland, he returned to CUHK in 1992 as an accomplished researcher, receiving his professorship in 1998. He is now also Director of the Centre of Novel Functional Molecules, a multidisciplinary group investigating the biological and catalytic applications of newly identified functional molecules.

Professor Chow is a leading scientist in the fields of organic and synthetic chemistry. He has won an international reputation for his contribution to the field of dendrimer chemistry, an area of the sciences which studies repeatedly branched molecules featuring structural perfection. He has made important contributions to understanding the chemical properties of these macromolecular systems, and was one of the first scientists to work on the synthesis and self-assembly of dendronized polymers.

With over 70 papers published in leading international journals, Professor Chow has been invited to deliver more than 15 talks and plenary lectures at international conferences. He was awarded a Croucher Foundation Scholarship as a PhD candidate in 1981 and a Croucher Senior Research Fellowship as a professor in 2006, underscoring his commitment to excellence since entering academia. Professor Chow's achievements have been recognized in both the United States and the United



Kingdom. He is a Member of the American Chemical Society, a Fellow of the Royal Society of Chemistry, and a Chartered Scientist of the UK's Science Council.

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## David FAURE

Department of History

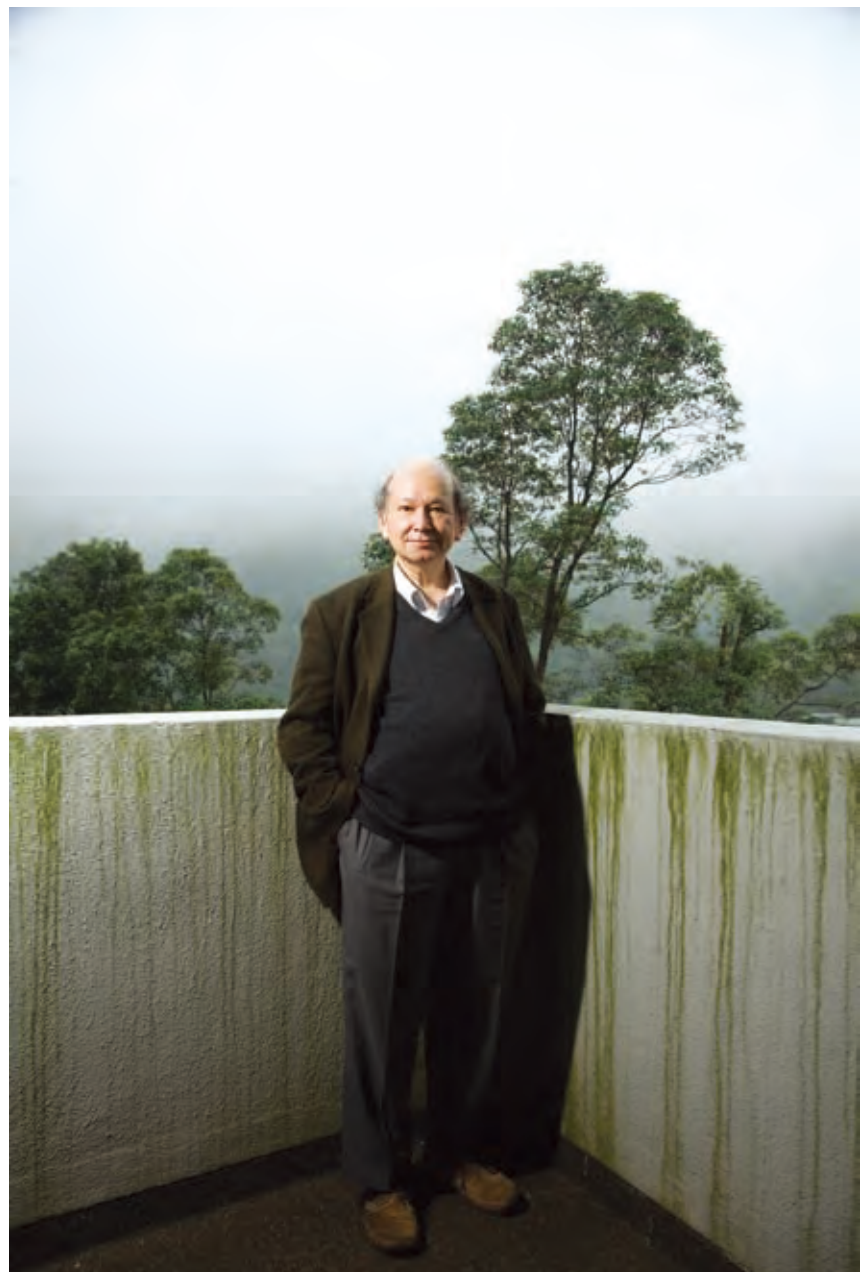
Central to Professor David Faure's interest in history is an understanding of how people deal with the social structures in which they live, as identified in their own terms. He believes that history plays a role in helping people to understand and surpass the restraints they accept, and that 'we read history to contribute to a better life'. An internationally renowned expert on China's economic and business history, Professor Faure has also published widely on Chinese social history and the history of Hong Kong at the local level.

As Director of CUHK's multidisciplinary Centre for Comparative and Public History Professor Faure is an example of his own philosophy, having been born, raised and largely educated in Hong Kong before completing his studies in the US and commencing his research career in the UK. Since publishing his first book on the eastern New Territories in 1986, he has written numerous social histories of southern China and edited several important historical document collections.

Described by the *China Review* as 'one of the premier authorities on the history of Chinese lineage and society', Professor Faure recently published *Emperor and Ancestor*, an acclaimed study of county government and ritual reforms in the Pearl River Delta during the Ming and Qing dynasties. His history of business in modern China, published in 2006 under the title *China and Capitalism*, has been described as offering an historical perspective on the development of Chinese business groups that is often ignored by scholars too impressed by the rapid changes taking place

in the country today. With Professor Faure's research, perceptions of a historically 'changeless' China are themselves history.

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## Kit-Tai HAU

Department of Educational Psychology

Kit-Tai Hau's distinguished career in education research is a standing reproach to the popular prejudice that those who can, do, and those who can't, teach. Having received bachelor and master degrees from CUHK, Professor Hau gained his PhD from the University of Hong Kong before beginning his career as a school teacher. Chairman of CUHK's Department of Educational Psychology since 1995, he received a chair professorship in 2007. During his many years of service to the university, he has investigated educational psychology, motivation, moral development, research methodology, psychometrics, adolescent suicide and media of instruction.

Professor Hau is an acknowledged expert in structural equation modelling for education research, and has conducted many advanced educational statistics workshops in mainland Chinese universities. He also holds a number of honorary professorships from these universities. In Hong Kong he has served on numerous policy-making education committees and boards, and is well known for his participation in debates on student segregation by ability, computerized assessment, media of instruction, public examination systems, and gender discrimination in the allocation of school places.

Professor Hau recently submitted an extensive study on the adaptation and development of non-Chinese speaking children in mainstream Hong Kong schools to the Legislative Council. He has also published articles in the *Journal of Educational Measurement*, the *Journal of Educational Psychology*

and *American Psychologist*, and several other leading international publications. In all of his endeavours, he shows that we still have much to learn.

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## Jie HUANG

Department of Mechanical and Automation Engineering

When Professor Jie Huang received his Fellowship from the Institute of Electrical and Electronics Engineers (IEEE) in 2005 he certainly matched the required profile of 'a person with an extraordinary record of accomplishment'. Acknowledged as a primary developer of nonlinear output regulation, he has developed a firm mathematical foundation for the field. Modestly, he downplays this achievement. 'I always feel that I know too little and I need to work harder to catch up.'

Since joining CUHK in 1995 after completing his studies and beginning his career in mainland China and the United States, Professor Huang has pursued research into nonlinear control theory and its applications, industrial control and automation, scientific computing, Internet-based control, neural networks and the guidance and control of flight vehicles. He has served as science advisor to the Leisure and Cultural Services Department of the HKSAR government and honorary advisor to the Hong Kong Science Museum.

With over 100 publications in leading academic journals, Professor Huang received recognition for his contributions to science through a Cheung Kong Scholarship in 2002 and a Croucher Senior Research Fellowship in 2006. As Director of CUHK's Applied Control and Computer Laboratory, he is currently inspiring a new generation of student researchers to devise practical solutions to problems in power supply, the control of high-performance vehicles and high-precision machinery, satellite systems and robotics. 'In some sense', he says, 'I am also learning from my students'. A distinguished lecturer and member



of the board of governors of the IEEE Control Systems Society, Professor Huang has chaired numerous important international conferences in his field. His is indeed an extraordinary record of accomplishment.

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## Liwen JIANG

Department of Biology



Teamwork is crucial to the advancement of science, whether in large leaps or the smallest of steps. Liwen Jiang, Professor of CUHK's Department of Biology and Director of the Centre for Cell and Development Biology, is well aware of that, even when receiving individual awards. When awarded a Croucher Senior Research Fellowship (2009–2010), he spoke little about his own efforts, for which he was being honoured by the international research community, and emphasized instead the help he had received from his collaborators. 'I am very proud of the students and researchers from my laboratory. They have made great contributions towards our research over the past years', he said.

Professor Jiang joined CUHK in 2000, after receiving his PhD from Canada's Simon Fraser University and working as a Research Associate at Washington State University for four years. He has since received numerous awards for outstanding teaching and research, the most recent being CUHK's Research Excellence Award (2006–07). During

the past eight years he has received competitive research grants worth over HK\$20 million from the Hong Kong Research Grants Council, the National Natural Science Foundation of China, the National High-Technology Research and Development Programme, and other important funding bodies.

Joint holder of a US patent on a plant gene expression system for transgenic seeds, Professor Jiang has spent most of his career researching plant biotechnology. He is particularly concerned about the molecular mechanism of protein degradation in germinating seeds, the characterization of plant prevacuolar compartments at the molecular level, protein targeting and organelle biogenesis. A member of the American Society for Plant Biologists, the American Association for the Advancement of Science and the International Society for Seed Science, Professor Jiang has a truly international research outlook.

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## Yee LEUNG

Department of Geography and Resource Management



What is the rationale for research? Professor Yee Leung avoids complexity when describing his own efforts, simply noting that ‘the purpose of my research is to solve problems and discover the truth’. Yet his drive to know covers the varied and difficult domain of geography, encompassing many of the things related to space and time in our daily lives. Since joining CUHK in 1977, Professor Leung has exploited his background in operations research and systems engineering to solve many problems of geographical methodology, quantitative analysis, and urban and regional planning.

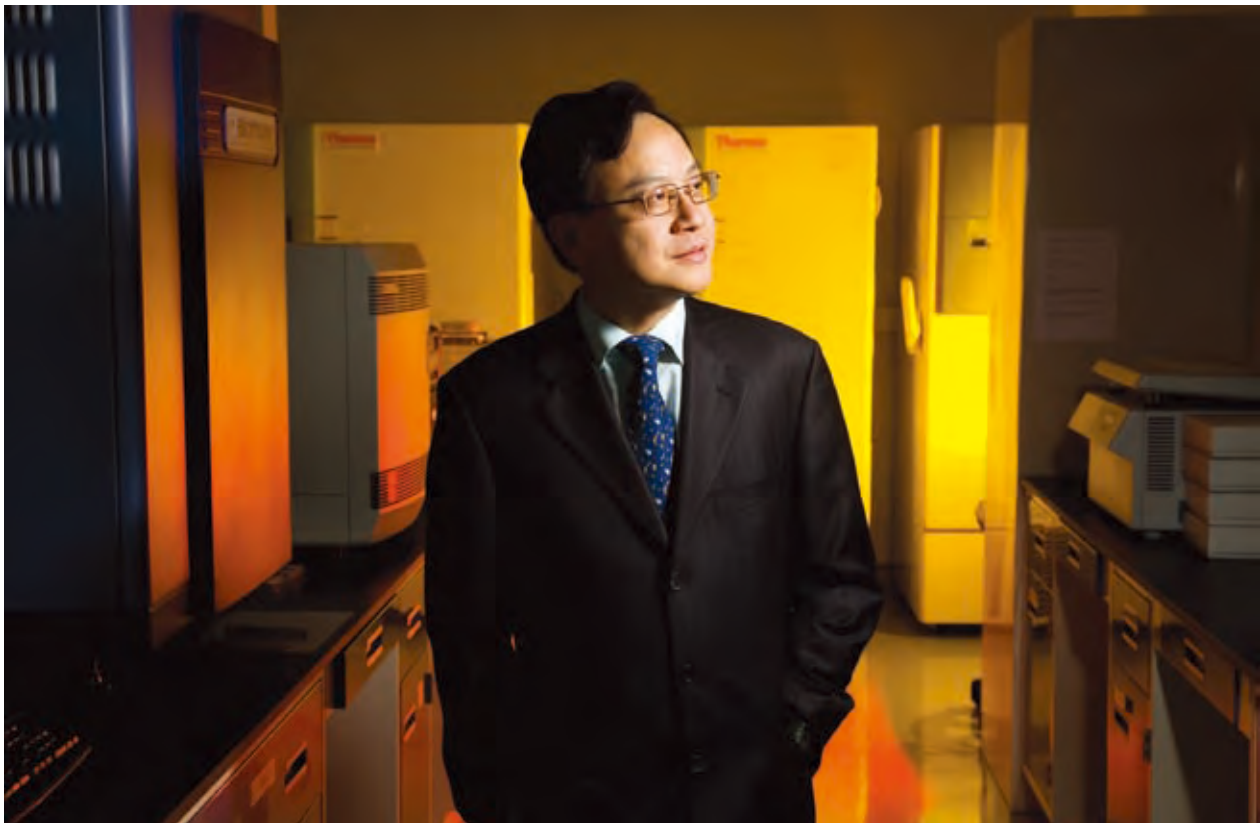
Now a Professor of Geography, he is an international authority on uncertainty analysis and fuzzy sets in geographical research. Professor Leung’s accomplishments also cover geocomputation, intelligent spatial decision support systems, spatial data mining and knowledge discovery. He has received 30 competitive research grants in these areas, produced six books, and published over 140 papers in leading international journals.

In 2007 Professor Leung received a prestigious State Natural Science Award (Class II) for his research into the modelling of geographical data that, in his own words, ‘capitalizes on the power of human intelligence and machine efficiency’. Among the important results of this research are the ability to discover seismic belts from earthquake data, and the capacity to identify land cover, physical features and concealed natural resources in remote sensing and radar data. Professor Leung also contributes to the advancement of geographical knowledge through visiting professorships at four mainland universities and his position as a council member of the Chinese Geographical Association, academic council member of the National Laboratory of Environmental Resources and Information Systems under the Chinese Academy of Sciences, and editorial board member of several international and Chinese journals.

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## Dennis Y.M. LO

Department of Chemical Pathology



Good photographers are characterized by an intense focus on the moment and an innate curiosity about the unknown—qualities also found in certain researchers. Little wonder that Professor Dennis Y.M. Lo, Li Ka Shing Professor of Medicine and Professor of Chemical Pathology, is seriously shutter-happy. Professor Lo's interest in photography was sparked by his father's gift of an old Canon bought in the 1950s. A few more cameras later, he was president of the Emmanuel Photographic Society at Cambridge. Last year, zebras and lions at a wilderness reserve in South Africa might have spotted our star researcher snapping away from his jeep with one of his seven cameras.

Professor Lo's trail-blazing career owes as much to his academic credentials—he was educated at both Cambridge and Oxford—as to his groundbreaking research findings since returning to Hong Kong in 1997. His research team was the first in Asia to publicly announce the complete sequence of the SARS-coronavirus. But perhaps Professor

Lo is best known for his discovery that an unborn foetus releases its DNA into the blood plasma of the pregnant mother. Until then, definitive prenatal tests to determine an unborn child's genetic characteristics had required the invasive extraction and analysis of foetal materials such as amniotic fluid, an approach which might increase the risk of miscarriage. Professor Lo went on to develop a method for the prenatal diagnosis of Down Syndrome derived from the plasma of pregnant women. His endeavours won him a State Natural Science Award (Class II) in 2005 and a Cheung Kong Achievement Award in 2006. He has also been awarded a Croucher Senior Medical Research Fellowship (2006–2007).

Professor Lo's discovery has made possible a new generation of non-invasive tests. At the decisive moment, perhaps he felt a little like that adolescent had felt in the dark room his parents let him set up at home, when his first photograph shimmered into view.

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## Leslie N.K. LO

Department of Educational Administration and Policy

Change is very much a constant in Professor Leslie Lo's research career. He has had a profound influence on the transformation of education in the Greater China region as a result of his research into preschooling — an area of education often overlooked but of crucial importance — and his role in the reform of secondary schooling in Hong Kong and pre-service teacher training in mainland China. Since joining CUHK in 1982, Professor Lo has firmly established the university as a leader in school improvement. Founding Dean of the Faculty of Education and now Director of the Hong Kong Institute of Educational Research, he has also served for the last six years as a member of the Hong Kong's Education Commission, the senior government advisory body on educational affairs.

Professor Lo argues that change in education very much depends upon how teachers 'confront the requirements of reform' as part of their own development. His former doctoral students have certainly met that challenge, working in key universities in mainland China as well as in local institutions and schools. Professor Lo has also been active in research-led development projects, ranging from a World Bank loan project for three medium-sized cities in mainland China during 1991 to an ongoing government-sponsored improvement project for hundreds of local schools.

In recent years, Professor Lo has advised on and participated in such noteworthy endeavours as the Hong Kong-PISA Project, which monitored the quality of education reform from an international perspective. With his

scholarship and contributions recognized by honorary and adjunct appointments at almost 40 Chinese academic and research institutions, he has ample opportunity to offer his wide-ranging expertise where it is most needed.

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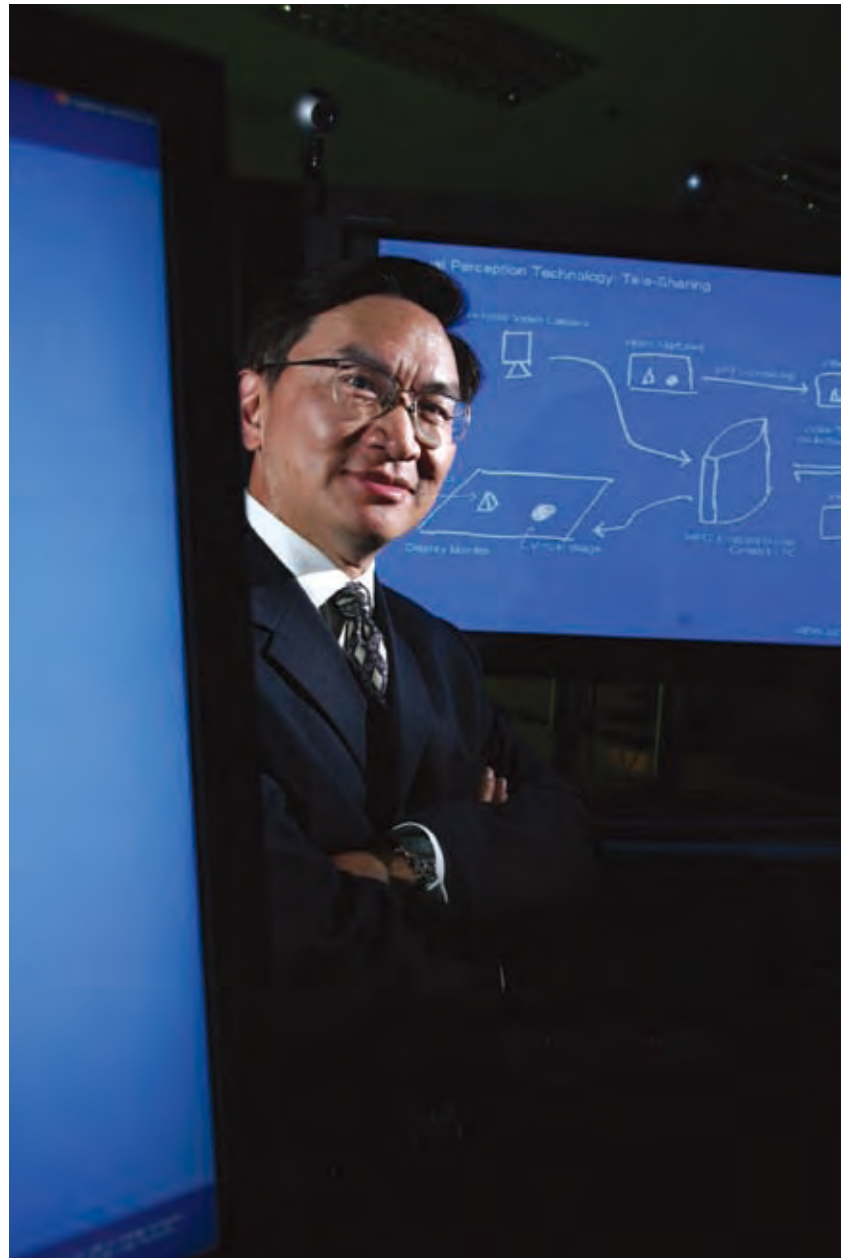
## Michael R.T. LYU

Department of Computer Science and Engineering

In an age dependent on information technology, CUHK's Michael R.T. Lyu is at the forefront of software reliability research. Professor Lyu's considerable expertise covers software reliability engineering, distributed systems, fault-tolerant computing, web services, mobile and sensor networks, machine learning techniques, multimedia technologies, and video searching, retrieval and delivery.

Besides publishing over 300 journal articles and conference papers, Professor Lyu has also co-edited two books on software reliability that have received enthusiastic responses from both academia and industry. His participation in more than 30 research projects for industry, and his role as founder and Director of the Video over InternEt and Wireless (VIEW) Technologies Laboratory at CUHK, have led to the development of many commercial systems and software tools.

Professor Lyu's pioneering work on software reliability modelling and measurement has been adopted worldwide by practitioners and other researchers. In 2004 he became a Fellow of the Institute of Electrical and Electronics Engineers (IEEE). In 2006 he was elected a Fellow of the American Association for the Advancement of Science, the world's largest general scientific society, for his 'distinguished contributions to the fields of software engineering and dependable computing, particularly for the advancement of software reliability engineering and software fault tolerance'. In 2008 he was awarded a Croucher Senior Research Fellowship for a research project aimed at developing advanced software reliability techniques for next-generation large-scale distributed



systems. In the years ahead Professor Lyu's research will continue to ensure that the many automatic systems we use daily are both dependable and safe.

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## Mike MCCONVILLE

Faculty of Law

For Professor Mike McConville, Dean of CUHK's Faculty of Law, a legal system itself cannot remove inequalities, but it can provide a mechanism for helping people to improve their circumstances. Born into an impoverished Irish family in Wales, he discovered the limits of social reciprocity as a youth and set about gaining a legal education in England.

The only member of his family to have received higher education, Professor McConville is now a leading socio-legal scholar, having researched legal aid and assistance, plea bargaining, trial by jury and legal history. He is also internationally recognized for his contributions to the rights of individuals, which he has promoted through pioneering empirical research. For his 1977 co-authored book *Negotiated Justice*, which focused on the shortcomings of the criminal justice system in England and Wales, he received the Cobden Trust Human Rights Award.

Professor McConville believes that the fundamental principles embodied in law, such as equality, respect for individuals and dignity for all, are expected everywhere. Indeed, his research has led to advisory positions in numerous countries undergoing social change. In Malawi he and his colleagues oversaw the reconstruction of an entire legal system, a process he has described as 'uplifting and inspiring'. Over the last 10 years, Professor McConville has turned his attention to China, 'an exciting and challenging environment to live in'. Since 2001 he has been working with a large group of collaborators on an empirical study of Chinese criminal

justice, with the aim of improving the mainland criminal justice system. As always, he is intent on ensuring that 'people have a square deal in life'.

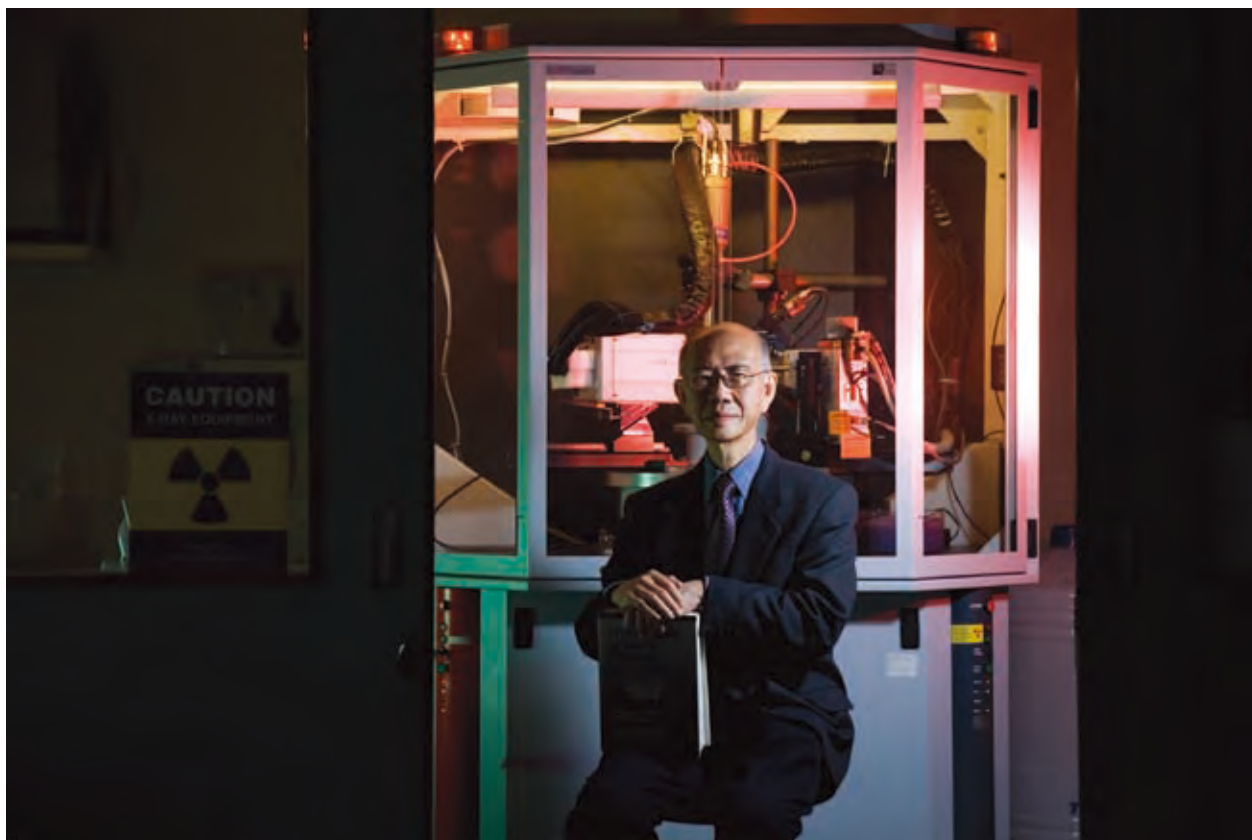
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## Thomas C.W. MAK

Department of Chemistry



When Professor Thomas Mak visited mainland China in 1973 as a member of the first scholarly delegation from Hong Kong, he observed a research environment in need of significant improvement. Since then he has done whatever he can to help mainland researchers develop their capabilities. A renowned research chemist himself, and now Emeritus Professor of Chemistry, Professor Mak has been instrumental in attracting young mainland scholars to study and conduct research at CUHK, and their more seasoned counterparts to present scientific reports on campus.

In 2001 Professor Mak was elected a member of the prestigious Chinese Academy of Sciences for his substantial contribution to the development of chemistry in mainland China, and is one of only 121 members in the Chemistry Division. His own research focuses on crystal engineering, or the design and synthesis of structures at

the molecular level, structural inorganic chemistry and coordination network assembly. He is a prolific author, with over 900 papers published in international journals.

Professor Mak's co-authored volume *Crystallography in Modern Chemistry* is a very important reference work for scholars interested in crystal structures. It was described by *Acta Crystallographica* as 'a gem of a reference book on structural chemistry' and a must for 'every chemical and biochemical laboratory'. Another co-authored volume, *Advanced Structural Inorganic Chemistry*, has been praised as going a 'long way in improving the understanding of modern chemical crystallography among the general chemistry community'. Professor Mak's collaborators on both books were researchers either from CUHK or from mainland China. Thirty-six years on, his commitment to fostering research in China has never wavered.

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## Shige MAKINO

Department of Management

An interest in finance might send some people to Wall Street, but Shige Makino chose a more fulfilling direction when he left the financial sector in Japan during the 1980s. After completing an MBA, he left the country 'to gain international experience and exposure', eventually completing doctoral studies at the University of Western Ontario and joining CUHK in 1995.

Now Chairman of the Department of Management, Professor Makino has long recognized the international nature of business. He is interested in studying foreign firms and their subsidiaries in overseas markets, particularly their performance, mode of market entry, entry timing and the structure of their joint ventures. He focuses on long-term factors such as the history of a firm's previous choices and other companies' choices, the legal, economic, social and cultural conditions in the host country, and also the historical relations between the home country and the host country, all of which influence firm strategy.

Ranked by the *International Journal of Business* as one of the 20 most prolific academics in international strategic management research, Professor Makino is currently researching the performance of foreign subsidiaries in China—especially those of Japanese *keiritsu*. He is, he says, surrounded by 'a really good research team'. His modesty masks an impressive array of research awards, including the Haynes Prize for the Most Promising Scholar from the Academy of International Business in 2002, the Japan Academy of International Business Studies Award of the Year in 2003, and CUHK's Young Researcher Award in 2007 and Research Excellence Award in 2008.

Chairman of the Japanese Business Studies Association since 2007 and elected a Fellow of the Academy of International Business in 2009, Professor Makino is a leading light in his field.

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## James A. MIRRLEES

Department of Economics



An early aptitude for mathematics transformed into an abiding interest in economics for James Mirrlees when he began to appreciate the significance of poverty and the distribution of wealth as a graduate student. Now Distinguished Professor-at-Large at CUHK and Master of Morningside College, Professor Mirrlees' career has encompassed lengthy appointments at both Oxford and Cambridge universities, a Nobel Prize in 1996 and a knighthood in 1997.

Professor Mirrlees' engagement with the ideas of the late William Vickrey in considering incentives under asymmetrical information led to groundbreaking research on optimal income taxation. The task, he notes, was to choose an income tax system that would 'maximize the total utility of people, when people independently choose how much to work'. As with all of his work, the problem involved the development of what Professor Mirrlees calls 'a moral calculus'. The results have had a profound

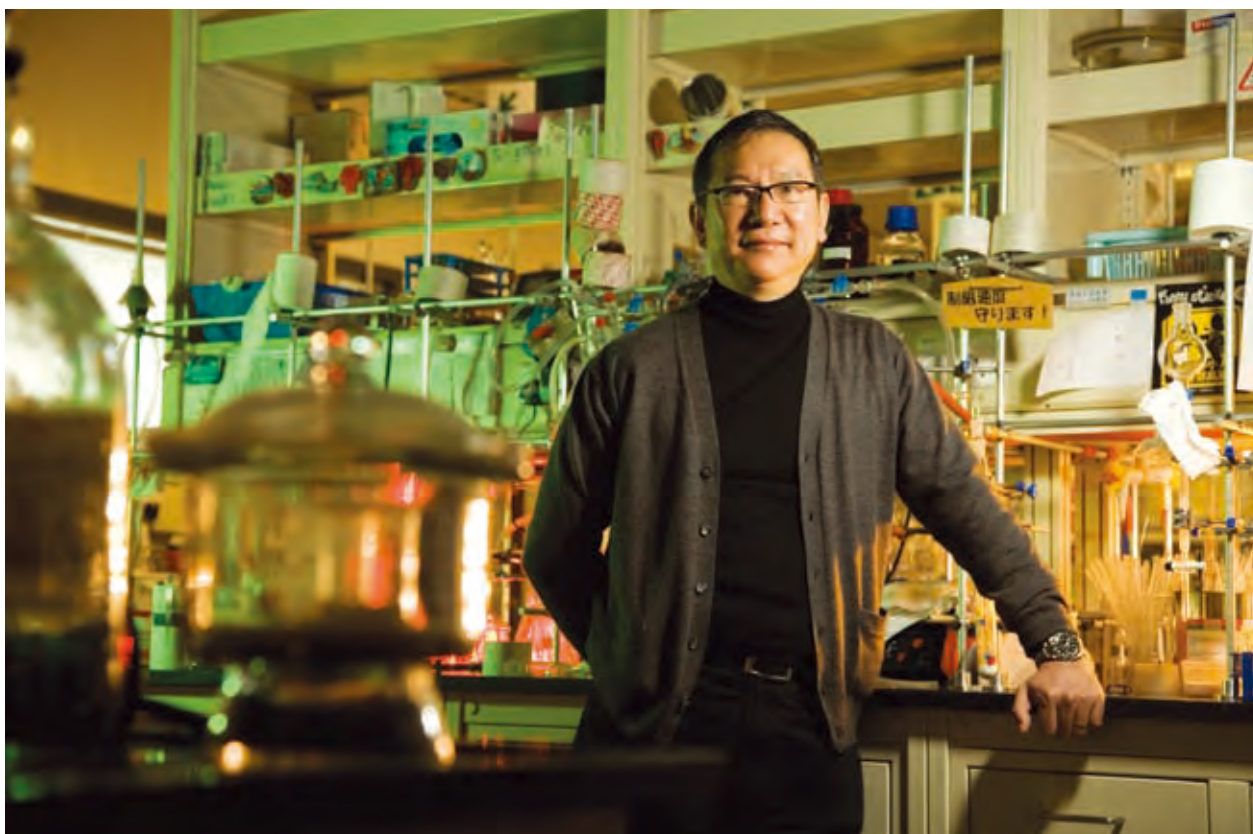
effect on taxation policy around the world, which was recognized when Professors Mirrlees and Vickrey received the Nobel Prize in Economics.

More recently Professor Mirrlees has investigated the tax treatment of charitable contributions, developing a new model with colleagues, and has completed theoretical work on partially irrational economic behaviour. He has also conducted research into incentives for lenders and the impact they have had on the current financial crisis. For around three years Professor Mirrlees has been chairing a team that is writing a report on tax systems under the auspices of the Institute of Fiscal Studies in the UK. Even with such an outstanding career in behavioural economics, he still sets out 'to ask questions about what ought to be done'.

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## Tony K.M. SHING

Department of Chemistry



Helping people to heal might seem like an unusual goal for a research chemist, but it has driven Tony Shing since he was a child. Realizing early that doctors dealt too often in less than pleasant bodily fluids, he turned his ambitions and considerable intellect to synthetic organic chemistry. Now a professor of organic chemistry with CUHK and Chairman of the Royal Society of Chemistry, Hong Kong Section, Professor Shing is doing exactly what he dreamed of long ago.

Since returning from studies and early research work in the UK during 1990, Professor Shing has, as he puts it, ‘built molecules’ for use in cancer and diabetes treatment. Ongoing efforts in creating molecules that will attack cancer cells alone have been difficult, he admits, but he and his research group intend to continue their search for the first step in a cure for the debilitating disease.

Diabetes research is another important area of interest for Professor Shing. He has recently built a molecule that could be used to halt the absorption of glucose by Type II diabetics, who cannot be treated with insulin. His aim is to have this research furthered by the pharmaceutical industry, with the ultimate goal of creating new forms of medicine. This and other substantial research achievements have won him numerous honours, including the designation of Chartered Scientist in 2004 by the Royal Society of Chemistry and the Science Council of the UK, and a Croucher Senior Research Fellowship (2008–2009) in Hong Kong. Often recognized for advancing the science of synthetic organic chemistry, he is less well known for a more remarkable feat—the compassion that drives his research.

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## Kwong-loi SHUN

Department of Philosophy

Not many scholars would plan a research project lasting three decades, but Prof. Shun Kwong-loi is such a forward-looking person. In 1988, as an assistant professor at UC Berkeley, two years after obtaining his PhD from Stanford University, he made the decision to conduct thorough research on Confucius thought and write three books within 30 years. Nine years on, his first book *Mencius and Early Chinese Thought* was published. The basic research for his second book, which will focus on Zhu Xi, an important Confucian philosopher in the Song dynasty, and the third book, which will turn from classical studies to an examination of philosophical themes in Confucian thought, has also been completed. It will not be long for their drafts to be finished. In addition to these three books, he is the author of a number of papers and editor of *Confucian Ethics: A Comparative Study of Self, Autonomy, and Community*.

Professor Shun studied both mathematics and western philosophy in university, and made up his mind to pursue an academic career in Chinese philosophy with an emphasis on Confucianism. While western philosophy researchers are characterized by their analytical capability, Chinese scholars see the development of Chinese philosophy from a broader perspective because of their equal mastery of Chinese literature, history and philosophy. By combining the strengths of these two approaches, Professor Shun has blazed a trail in his research on Chinese philosophy.

Now Professor of Philosophy at CUHK, Professor Shun also has rich experience in academic administration. He taught at UC Berkeley for 17 years and was appointed



Dean of the Undergraduate Division, College of Letters and Science in 2000. Prior to joining CUHK in 2007, he was the Vice-President of the University of Toronto and Principal of the University of Toronto at Scarborough.

Professor Shun became an administrator due to his passion for undergraduate education and he wanted to make fundamental changes that would benefit students. An enthusiastic researcher and teacher, he wants to inspire and motivate undergraduates—young men and women in their formative years.

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## Samuel S.M. SUN

Department of Biology



A single achievement was never going to be enough for Professor Samuel Sun, who cloned the first plant gene in 1980. Driven by his conviction that biotechnology has a crucial role to play in providing the world with an adequate food supply, he went on to raise the level of amino acid in seed protein using genetic transfer and led his team to clone the pest-resistant gene *Arcelin*. In more recent years, he has sought to combine traditional farming wisdom with modern biotechnology techniques to develop new varieties of rice with improved yield and nutritional value. This visionary researcher, who started his career as a high school teacher, now heads CUHK's prestigious State Key Laboratory of Agrobiotechnology. In 2003 he became an Academician of the Chinese Academy of Engineering.

One of Professor Sun's most important goals has been to improve the quality of food and health products to meet demand both in Hong Kong, mainland China and elsewhere in the world. He is aware of the resistance,

particularly in Europe, to bioengineered foods, and is a proponent of enhanced labelling and public education about biotechnology. Closer to home, he is collaborating with Professor Yuan Longping, the 'father of hybrid rice', to develop a high yield rice to feed tens of millions more Chinese. He is also working on an international collaborative project supported by the Bill and Melinda Gates Foundation to develop a nutrient-rich 'Golden Rice' for use during famines.

Although he always has humanity's vital concerns at heart, Professor Sun never loses sight of his local commitments. As Master of S. H. Ho College, currently under development, he foresees the creation of 'a homely learning environment where students can integrate knowledge into their everyday lives'. With Professor Sun leading by example, that vision is certain to become a reality.

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## Joseph J.Y. SUNG

Department of Medicine and Therapeutics



Although best known for his selfless devotion to duty during the 2003 SARS epidemic, Professor Joseph Sung prefers to think of himself as an educator learning from the past and passing his knowledge on to the next generation. He manages a busy schedule, combining his role as a leading researcher of gastroenterology and infectious diseases with his duties as Chairman of the Department of Medicine and Therapeutics, Associate Dean of the Faculty of Medicine, advisor to the Stanley Ho Centre for Emerging Infectious Diseases and Head of Shaw College. This last role, in particular, allows him to refocus his thoughts on students, for whom he seeks to be a role model. ‘Classrooms’, he says, ‘aren’t the only places where I can teach’.

Professor Sung also leads by example in his research, having published results in over 350 articles. He recently led a study that established the possibility of using traditional Chinese medicine to relieve irritable bowel syndrome. In 2007 his team received a State Scientific and Technological Progress Award from the Chinese

government for innovation in the treatment of peptic ulcer bleeding. In 2005 Professor Sung was the first Hong Kong researcher to receive the prestigious Cheung Kong Achievement Award. He is also the recipient of a Croucher Senior Medical Research Fellowship (2004–2005).

A crisis often brings out the best in human beings, and it certainly did in Professor Sung’s case. The courage and determination he showed during the global SARS epidemic in 2003 won him international admiration. Honoured by *Time* magazine in 2003 as one of its ‘Asian Heroes’, Professor Sung was also awarded a Silver Bauhinia Star by the HKSAR government for ‘demonstrating exceptional courage and professionalism in treating SARS patients’, and for his involvement ‘in international collaborative efforts on the study, prevention and treatment of the disease’. The physician’s role is not only to heal, but also to learn and to pass on knowledge. Professor Sung may be cast in a heroic mould, but he still has both feet firmly on the ground.

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## Juncheng WEI

Department of Mathematics

In a world of abstract ideas and indecipherable data, Professor Juncheng Wei is a mathematician rooted firmly in the important things in life. Clearly a devoted father, he describes his two children as ‘angels’, and his work on nonlinear partial differential equations focuses on applications in the physical and biological sciences. In essence, he devises mathematical understandings of the changing patterns produced in nature.

Educated in mainland China and the US, Professor Wei excelled early, gaining three outstanding student awards at Wuhan University and an Outstanding Thesis Award for his doctoral dissertation at the University of Minnesota. Since joining the Department of Mathematics at CUHK in 1995, he has conducted internationally recognized work on a systematic approach to understanding nonlinear patterns in one or two spatial dimensions. He is the recipient of a Young Research Award (2004–2005) and a Croucher Senior Research Fellowship (2005–2006).

Professor Wei and his team are considered the world’s leading group in their field, and their studies have explored new dimensions of both pure and applied mathematics. Having led research projects funded by Hong Kong, Germany and France, Professor Wei has been invited to share his expertise through short-term visiting positions at universities on four continents. He has also organized a number of prestigious international conferences in conjunction with such distinguished organizations as the Banff International Research Station for Mathematical Innovation and Discovery in Canada and Mathematisches Forschungsinstitut Oberwolfach in Germany. With more than 120 papers published in leading



mathematical journals, Professor Wei is amongst the 20 most-cited authors in his field—clear recognition of his ground-breaking efforts.

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## Henry N.C. WONG

Department of Chemistry

He might be CUHK's Pro-Vice Chancellor overseeing research, but Henry Wong understands his role in universal terms. Commenting on his appointment in early 2009, Professor Wong looked to a future in which he would help to 'enhance our research efforts based on our solid foundation, and to transfer research output into initiatives benefiting mankind'.

Professor Wong graduated with a bachelor degree from CUHK in the mid-1970s, gained his doctoral degrees in the UK and worked as a Research Associate on three continents, before returning to the university in 1983. Currently a Professor of Chemistry and Head of New Asia College, he has a refined sense of the benefits that research can offer, having devoted a good deal of his career to enhancing the development of science in mainland China. In 1999 he was elected an Academician of the Chinese Academy of Sciences, and is currently honorary professor and guest professor at a number of mainland tertiary institutions.

With research interests in the syntheses of natural and non-natural molecules, Professor Wong is active in the use of furan, a compound obtained from the decomposition of cellulosic solids such as pine wood. His research has featured in leading chemistry journals and earned him both a State Natural Science Award (Class II) from the Chinese government and a Croucher Senior Research Fellowship in Hong Kong. Underscoring the

truly international outlook of his research undertakings, Professor Wong is both a Chartered Chemist and a Fellow of the Royal Society of Chemistry in the UK.

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## Tak-Jun WONG

School of Accountancy

Professor Tak-Jun Wong has accomplished what few researchers ever achieve—advocacy of his findings in the mainstream media. His work on earnings management, political connections, IPOs and auditor choice has been featured in *The Economist*, *The Globe and Mail*, the *Wall Street Journal*, the *Hong Kong Economic Journal* and the *South China Morning Post*. He has also published widely in several leading accounting and finance journals. These publications have firmly established his credentials, particularly in terms of corporate governance in China.

Appropriately for a scholar with such a broad reach into the media, Professor Wong received his higher education in the fields of economics, accounting, finance and management. After gaining his bachelor, master and doctoral degrees in the US during the late 1980s and early 1990s, he held academic positions both in the US and in Hong Kong, before joining the School of Accountancy at CUHK in 2004. Currently both Dean of the Faculty of Business Administration and Director of the Centre for Institutions and Governance at CUHK, Professor Wong is also a senior research fellow in the Global Corporate Governance Academic Network at Yale University.

Since embarking on research in Hong Kong, Professor Wong has received funding for 14 projects from a range of organizations, including the Hong Kong Research Grants Council, Hong Kong Exchanges and Clearing Limited and the State Natural Science Foundation of China. He has also

delivered invited presentations at major conferences and institutions on four continents, spreading the reach of his research findings ever further.

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## Laurence K.P. WONG

Department of Translation



Despite his renown as a translator and familiarity with eight languages, Professor Laurence Wong claims that even his Chinese and English have ‘much room for improvement’. For Professor Wong, the study of literature is a process that parallels life. The more someone learns, the more aware they become of their presence in a complex but intriguing world. He tells his students that the study of literature will not make them rich, but it will fundamentally alter their spiritual life, helping them to ‘appreciate much better the glorious beauty created by God’.

Professor Wong is best known for his translation from Italian into Chinese of Dante Alighieri’s *Divine Comedy*, an epic allegory of the Christian afterlife written in the fourteenth century. Not only did this involve a deep knowledge of classical Italian, but it also drew on his acknowledged skill as a poet. Rather than translate the more than 14,000 lines of the epic in simpler rhyme, Professor Wong preserved its *terza rima* scheme, using

an a-b-a, b-c-b, c-d-c, d-e-d pattern. The rhyme in each new stanza reaches back to the last, pulling the Chinese reader along with Dante as he journeys through hell and purgatory to reach paradise. Fresh from his success with Dante, Professor Wong has recently been considering whether Johann Wolfgang von Goethe’s German epic *Prometheus* can be effectively translated into Chinese.

Professor Wong’s attention to detail is evident in every writing task he undertakes. His role as Chairman of the Department of Translation at CUHK involves writing citations for honorary graduates and fellows. Professor Wong regards the composition of these citations as an interesting and exciting challenge, and prides himself on finding something fresh and original to say in every case. As in his most intricate research projects, Professor Wong is simply finding room for improvement.

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## Jean W. WOO

Department of Medicine and Therapeutics

Few researchers could claim to have pioneered an important service in a major world metropolis, but Professor Jean Woo did exactly that. She was responsible for the development of geriatric services in the New Territories East hospital cluster, working to establish the Geriatric Day Hospital in 1985 and a non-acute in-patient service at Shatin Hospital in 1991, where she is still Chief of Service for Medicine and Geriatrics.

Professor Woo joined CUHK's Faculty of Medicine in 1985, and is now Head of Medicine at its Division of Geriatrics, Director of the S.H. Ho Centre for Gerontology and Geriatrics, and Director of the Centre for Nutritional Studies. For over 30 years Professor Woo has been leading the development of teaching and research in geriatric medicine, with particular emphasis on ageing and common diseases, public health and ageing, health service delivery to the elderly and the nutritional status and requirements of an ageing population. She has published over 400 articles in peer-reviewed journals, plus a number of other articles and book chapters.

In 1999 Professor Woo received a Senior Medical Research Fellowship from the Croucher Foundation for her contributions to medical science. She has also been the recipient of many research grants, including the worldwide Unrestricted Nutrition Grant from BristolMyersSquibb and its parent company Mead Johnson in the United States. Professor Woo is undaunted by goals that might intimidate the less determined. She is currently Director of the Hong Kong Jockey Club's Cadenza project, which

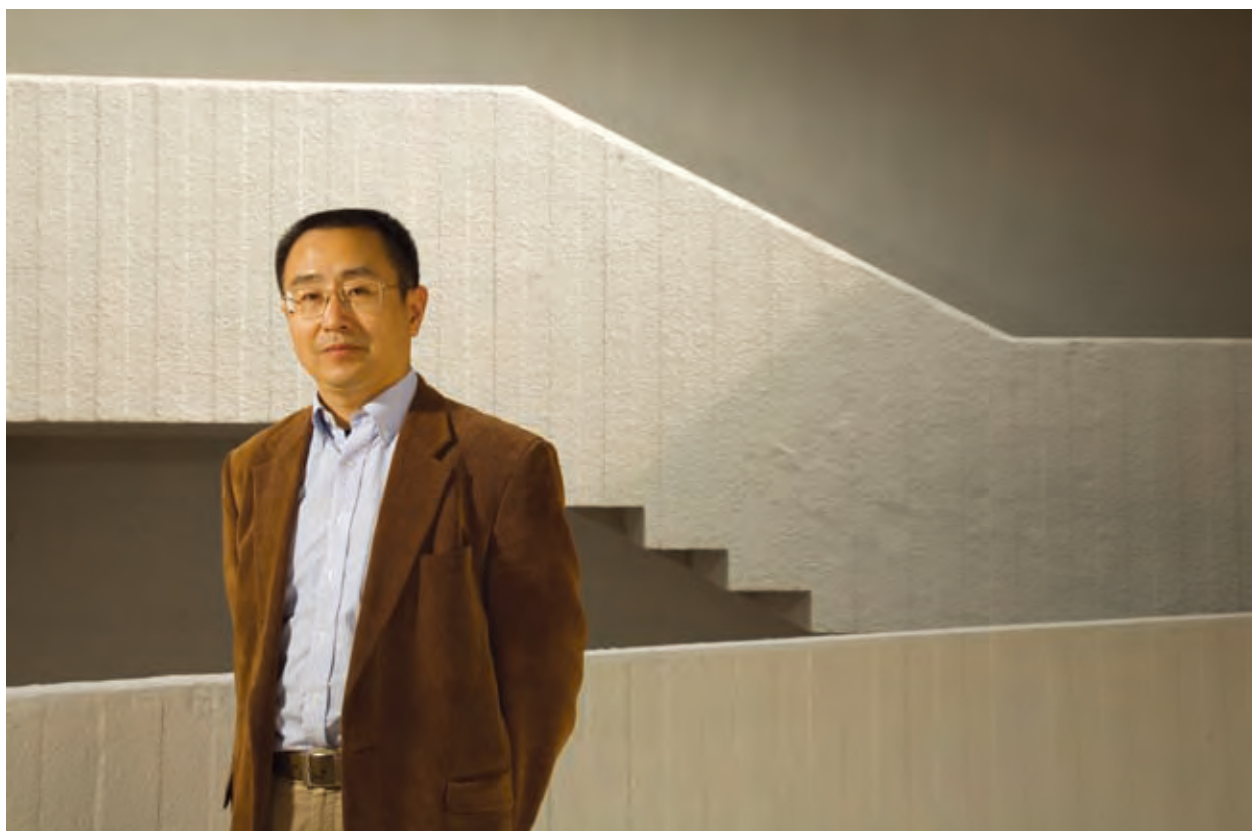


aims to revolutionize the way society views and treats the elderly. In all of her activities, Professor Woo is a true pioneer.

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## Chi WU

Department of Chemistry



Chi Wu has been at the cutting edge of science research since his undergraduate studies. After receiving his bachelor degree in the early 1980s from the China University of Science and Technology, a key research institution renowned for its advanced programmes, he gained a PhD from the State University of New York at Stony Brook. He joined CUHK in 1992 after working for six years as a Research Associate at Stony Brook and a laboratory supervisor at BASF in Germany. A Professor in the Department of Chemistry since 1999 and now also Supervisor of the Polymer and Colloid Laboratory, Professor Wu has set out to 'design and execute decisive experiments to answer important physical chemistry questions of macromolecules and colloids'.

Professor Wu's research interests focus on the design, synthesis and assembly of functional macromolecules, the dynamics and interaction of macromolecules in solution, the development of non-viral vectors for

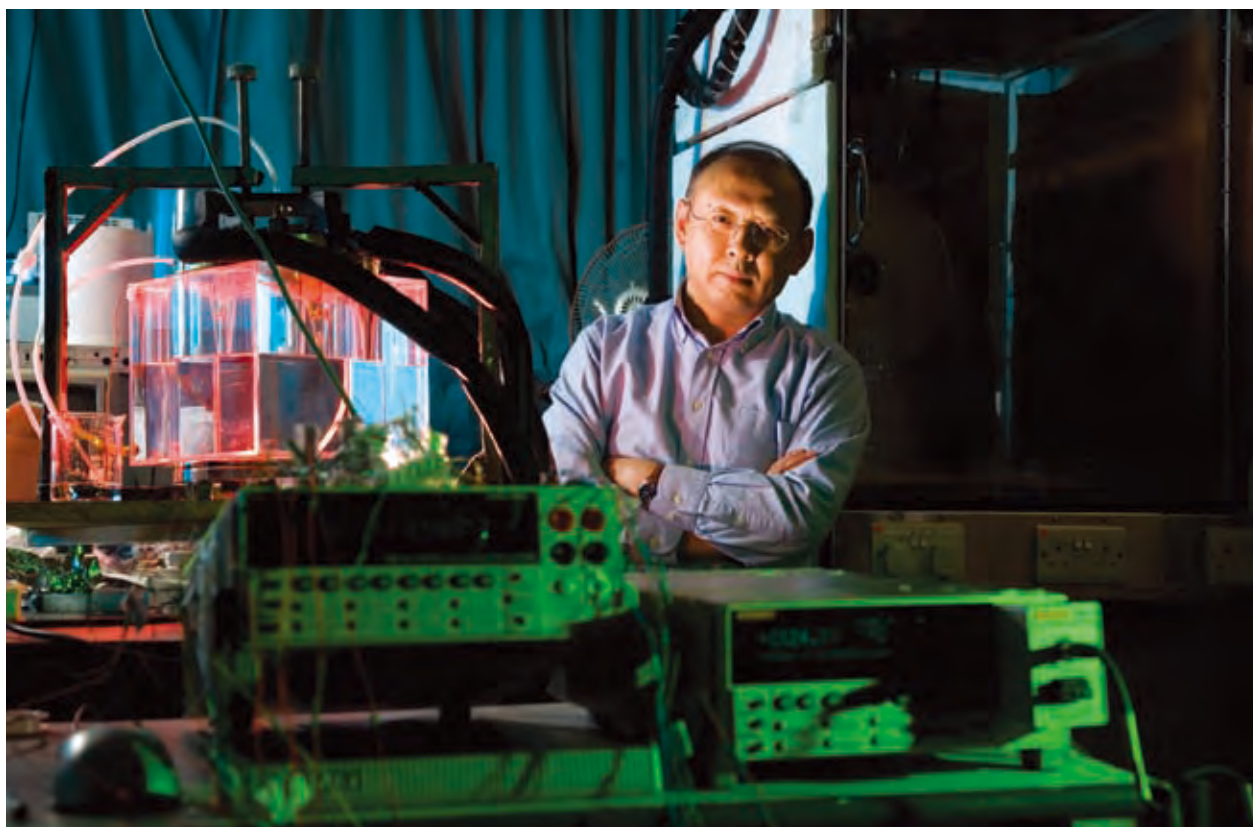
molecular medicines, the structures and dynamics of polymer gel networks, and the characteristics of special intractable polymers.

Professor Wu has been awarded 16 major and 12 minor research grants for projects on topics ranging from laser light refraction to the folding of individual copolymer chains. He is also the joint holder of patents granted in Hong Kong, mainland China and the United States for a novel gel composition and its uses. In 1999 Professor Wu was elected a Fellow of the American Physical Society, an honour usually reserved for physicists but fitting recognition of his contributions to physical chemistry. In 2003 he was elected an Academician of the Chinese Academy of Sciences. He is also the recipient of a State Natural Science Award (Class II) and a Croucher Senior Research Fellowship (2001–2002).

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## Keqing XIA

Department of Physics



Turbulence is an almost hidden feature of our lives, but it determines how objects move through fluids and air and influences the way heat is transferred. Professor Keqing Xia, Supervisor of the Turbulence Group at CUHK's Department of Physics, is at the forefront of efforts to understand how turbulence affects the world around us, particularly in terms of thermal convection and polymer solutions to turbulence problems. He has published more than 80 papers in leading international journals and, as a pioneer in his field, has been invited to deliver over 30 lectures and talks at international conferences

Professor Xia's work on high Prandtl number heat flux measurement played a pivotal role in resolving a long-standing problem in the field, and his research into the statistical behaviour of thermal plumes shed new light on the Rayleigh-Bénard convection problem. The empirical

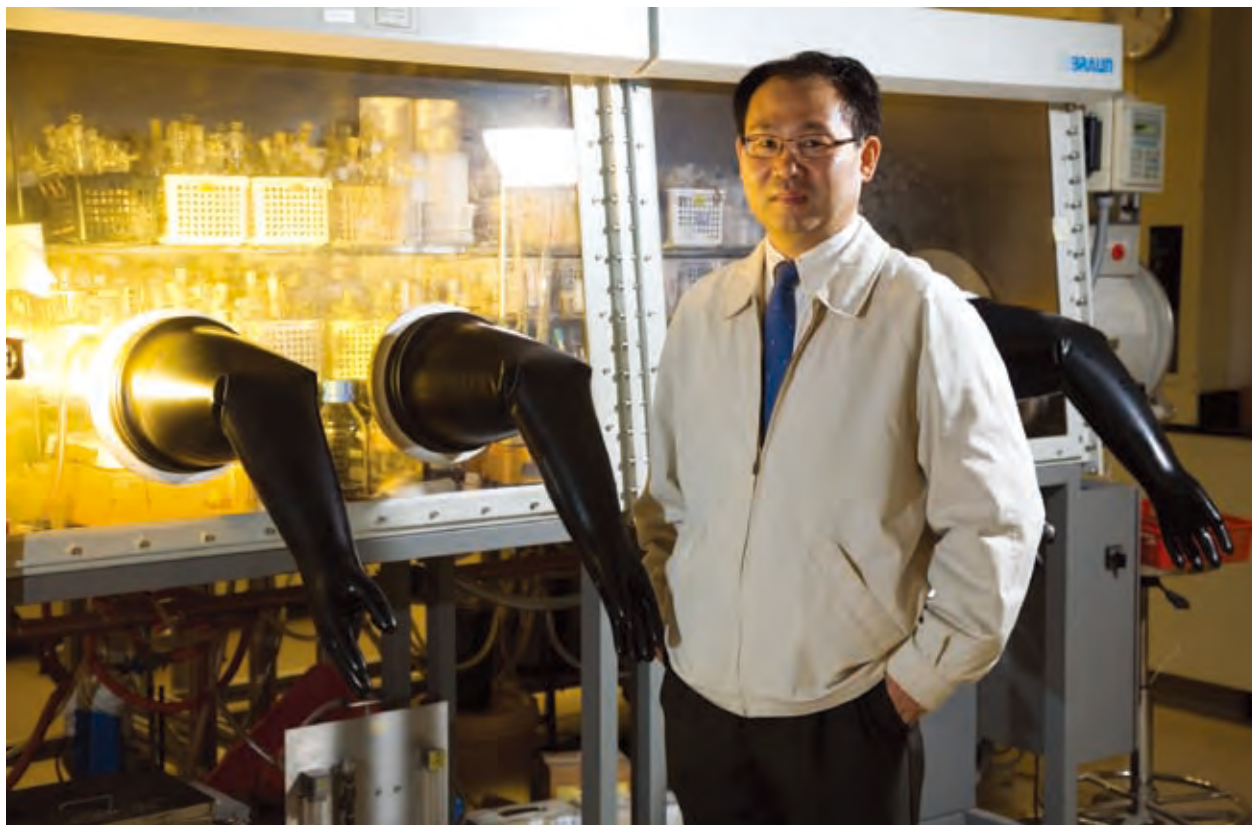
results of his group's research into polymer solutions have become benchmarks against which various theoretical models have been tested, and have resolved several disputes in this area.

Professor Xia is a member of the Hong Kong Physical Society and a life member of the American Physical Society. He received an undergraduate education at Lanzhou University in China and graduate degrees from the University of Pittsburgh, and joined CUHK in 1992, after pursuing postdoctoral research in the US for six years. Since then he has secured more than 20 research grants. In recognition of his outstanding contributions to the science of turbulence, he received the prestigious China Higher Education Science and Technology Award (Class II) in 2001, a Croucher Senior Research Fellowship in 2005, and a State Natural Science Award (Class II) in 2009.

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## Zuowei XIE

Department of Chemistry



Excellence has been a hallmark of Zuowei Xie's career since he completed his doctoral research at both the Shanghai Institute of Organic Chemistry and the Technische Universität Berlin in 1990. Now a Professor in CUHK's Department of Chemistry and Supervisor of the Organometallic and Inorganic Chemistry Laboratory, he received early recognition of his efforts while still in Shanghai in the form of a young chemist award from the Chinese Chemical Society. Since joining CUHK he has received State Natural Science Awards from the State Commission on Science and Technology in 1997 and 2008, an Outstanding Young Investigator Award in 2002, and a Young Researcher Award in 2004.

Professor Xie was also awarded a Croucher Senior Research Fellowship in 2003 for his contributions to organometallic and inorganic chemistry, especially in the areas of carboranes, metallocarboranes and organolanthanides. His findings include the discovery of the highest hapticity of carboranes and the development

of a novel class of organic-inorganic hybrid compounds. He has also investigated the activation of small molecules and polymer synthesis. With a tally of 26 publications in leading international journals, Professor Xie is widely considered an expert in his field.

The joint holder of a US patent on a process for the preparation and use of bridged metallocene complexes, Professor Xie received funding from the Chinese Academy of Sciences and the Croucher Foundation in 2008 for a project on molecular catalysts for bond-forming reactions involving carbon. A member of both the International Scientific Committee of the International Conference on Boron Chemistry and the International Advisory Board of the International Conference on Organometallic Chemistry, Professor Xie continues to push back the frontiers of chemistry research.

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## Yangsheng XU

Department of Mechanical and Automation Engineering

Committed throughout his career to research with immediate practical applications, Professor Yangsheng Xu shifts readily between advanced projects on space hardware and solutions to everyday concerns. An internationally-respected expert in robotics and intelligent control systems, he enjoys transforming his ideas 'into real systems that are useful and make life convenient'. Professor Xu has developed over 30 robotic systems and has helped to improve the quality of the intelligent control systems needed for China's space programme. While leading satellite research projects in mainland China, he has also found time to work with his Hong Kong team on the development of 'intelligent glasses'—spectacles for overseas tourists that will provide instant translations of signs and notices in a foreign language.

This sort of practicality extends to many of Professor Xu's research achievements, including the development of a smart wheelchair to improve the quality of life of the physically challenged. Unsurprisingly in view of his broad focus, Professor Xu is a Council Member of both the Chinese Society of Automation and the Hong Kong Productivity Council. He became a Fellow of the Institute of Electrical and Electronics Engineers in 2003, and has also been elected a Fellow of the Chinese Academy of Engineering in recognition of his work in engineering science and technology.

This range of overlapping interests, combined with extensive research experience in the US, is serving Professor Xu well in his new role as Associate Pro-Vice-Chancellor. Focusing on CUHK's development in the Pearl River Delta, he sees himself as 'a bridge that connects CUHK with China and the wider world'. One way in which he is doing that is as Director of the Shenzhen Institute of

Advanced Integration Technology, a joint venture between CUHK and the Chinese Academy of Sciences, where he is promoting the development of technology to benefit the local mechanical and electronic industries. From a global reach to a local focus, Professor Xu is making life easier every step of the way.

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## Raymond W.H. YEUNG

Department of Information Engineering



Several years ago Professor Raymond Yeung pioneered the technique of network coding, an important new field of information theory. His discoveries in this area have revolutionized the study of the flow of data through networks. Professor Yeung joined CUHK in 1991, and over the next ten years worked with colleagues to develop a method of achieving maximum information flow in a network. Rejecting the notion that data need only be stored and forwarded, he devised a system of coding that allowed information to reach specific receivers more efficiently.

An early application of this theoretical perspective was found in satellite communications, and it has since been applied to computer networks such as the Internet, network security and distributed information storage. In 2005, a paper on network coding that Professor Yeung co-authored with CUHK colleagues received the IEEE Information Theory Society Paper Award, a first for Hong Kong researchers.

Now Chair Professor of Information Engineering, Professor Yeung received a Croucher Senior Research Fellowship in 2000 and is an elected Fellow of the Institute of Electrical and Electronics Engineers (IEEE). In 2007 he received the Friedrich Wilhelm Bessel Research Award from the Alexander von Humboldt Foundation in Germany in recognition of his outstanding research achievements. His reputation has also been enhanced by the publication of *A First Course in Information Theory*, which has been described as providing new slants on staples in the field and is now being used as a key text by leading American universities such as Cornell, MIT and Stanford. In recent years Professor Yeung has turned his attention to the mathematical structure of information measures, again making breakthrough contributions to the field.

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## Leslie YOUNG

Department of Finance



Born in China, educated in New Zealand and the UK, and having taught in both the UK and the US, Professor Leslie Young adds a worldly perspective to his international finance research. Completing his doctorate at the young age of 20, Professor Young has had ample time to develop a far-reaching research reputation. He has published more than 40 articles in leading academic journals, and his book *Black Hole Tariffs and Endogenous Redistribution Theory* was commended by two Nobel Laureates and the Chairman of the Nobel Committee.

Currently Professor of Finance, Chairman of CUHK's Department of Finance, and Executive Director of the Asia-Pacific Institute of Business, Professor Young is focusing his research on the international foundations of law, international corporate governance and international financial economics. Not that he has in any way neglected his roots. Rather, he sees the Chinese contribution to

economics from a truly international perspective. In a 1996 paper on Sima Qian, he showed how the Han dynasty historian anticipated Adam Smith's doctrine of the invisible hand in writings influenced by Daoism. Indeed, Professor Young's influential argument was that Chinese ideas played an important role in stimulating European thought on economics in particular and political philosophy in general during the Enlightenment.

Today Professor Young is concerned that 'the US sub-prime crisis is shaking the architecture of global finance, redistributing power and wealth, and challenging the credibility of institutions and ideologies'. There will be, he notes, 'new developments in theory and practice'. His own studies will undoubtedly influence these developments.

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## Jimmy C.M. YU

Department of Chemistry



For someone concerned about the natural environment, the imagination is a crucial tool. When Professor Jimmy Yu, Director of CUHK's Environmental Science Programme, recently spoke about pollution treatment with oxidation techniques, he asked, 'Could you imagine how much faster these chemical processes would be if a more powerful oxidant was used?' This kind of inquisitiveness, the ability to imagine a better biosphere, is a hallmark of Professor Yu's research.

With interests in analytical methods for environmental and biological samples, the use of nanotechnology in environmental protection, and environmental applications for photocatalysis, Professor Yu is the holder of six patents. One invention he is particularly proud of is a nanoscale titanium dioxide that reacts with ultraviolet light and oxidizes most organic and inorganic pollutants. This is especially beneficial in water treatment.

Professor Yu has also published over 140 papers in international journals and his work has been cited more than 1400 times. Since joining CUHK's Department of Chemistry in 1995, he has secured numerous research grants. In 2005 his work on the photocatalytic degradation of persistent organic pollutants received a State Natural Science Award (Class II). He also holds a visiting professorship at the Fujian Institute of Research on the Structure of Matter, a division of the Chinese Academy of Sciences, and a research position at the Academy's Research Centre for Eco-Environmental Sciences. In Hong Kong he is a member of the Executive Committee of the Air and Waste Management Association and a member of the Board of Governors of the Friends of the Earth (HK). It would be hard to imagine a more committed environmentalist.

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## Junsen ZHANG

Department of Economics



Families are Professor Junsen Zhang's major concern, and not only because he is married with two children. Although his undergraduate studies were in engineering at Zhejiang University in mainland China, further study at Nankai University and postgraduate degrees from McMaster University in Canada turned him towards the economics of family behaviour. Since joining CUHK in 1993, Professor Zhang has researched the economics of crime, fertility, marriage, education, intergenerational transfers, marital transfers, gender bias and old-age support. The recipient of numerous research grants, he has also studied family-related macro-economic issues such as ageing, social security and economic growth.

Currently Chair Professor in the Department of Economics at CUHK and President of the Hong Kong Economic Association, Professor Zhang has used quantitative

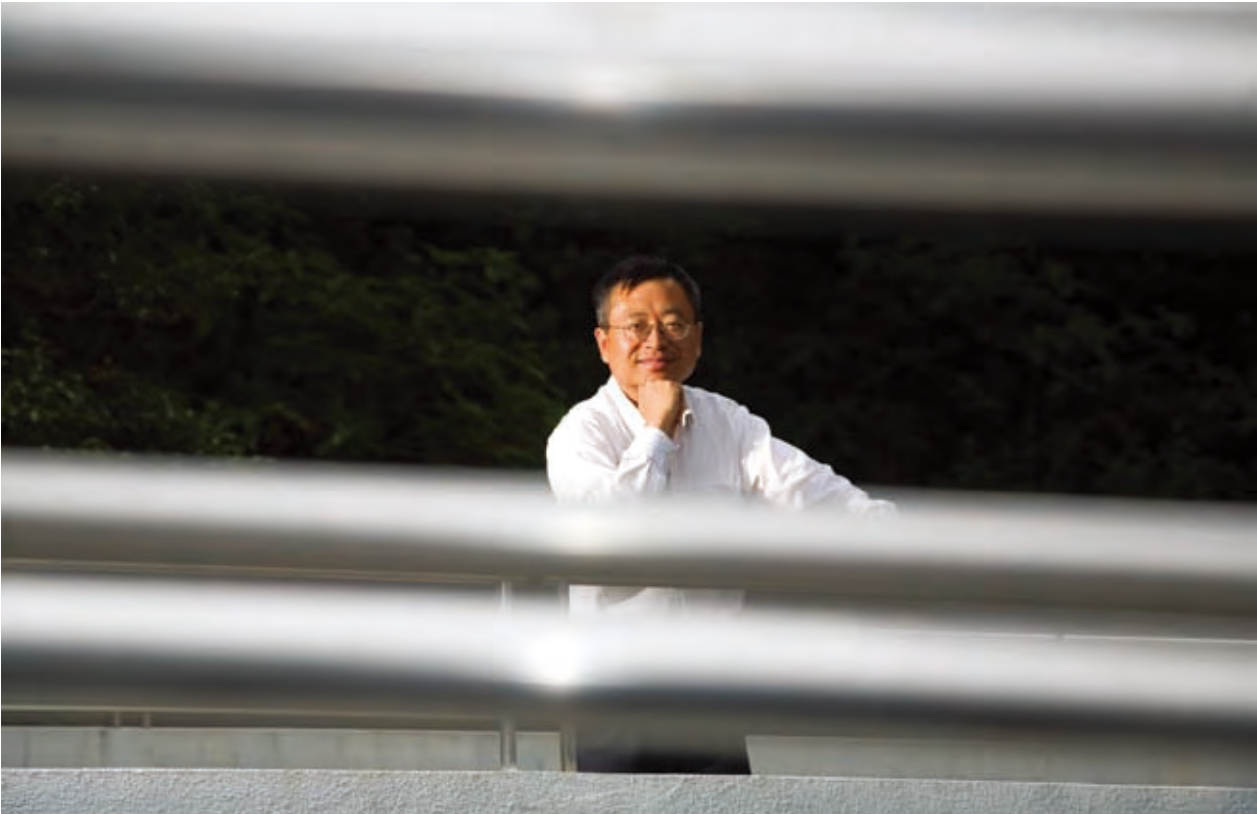
methods to study datasets from a range of countries and regions, including Canada, China, Hong Kong, the Philippines, Taiwan and the US. His findings have been published in leading international journals, and he was ranked in the world's top 1000 economists based on publications from 1990–2000, the most recent decade-long survey period.

Editor of the *Journal of Population Economics*, Professor Zhang has also been the Associate Dean (Research) of CUHK's Faculty of Social Science since 2004. In a broader context he has been a part-time member of the HKSAR government's Central Policy Unit since 2001. From individual families to society as a whole, Professor Zhang's scholarship is leaving its mark.

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## Xunyu ZHOU

Department of Systems Engineering and Engineering Management



It takes a researcher of extraordinary calibre to have one of his publications described as ‘an excellent and superb book’ and ‘a major reference’. Yet that is just what Xunyu Zhou achieved in 1999 with his co-authored *Stochastic Controls*, an authoritative text that unified two distinct approaches to problems in dynamic control systems. With the addition of two co-edited books and over 70 papers published in major international journals, Professor Zhou’s output has placed him at the forefront of research into the reduction of uncertainty in dynamic systems, covering areas ranging from engineering physics to finance. A major breakthrough was his introduction and development of the indefinite stochastic LQ control theory, which has since been widely used in applied mathematics.

Presently Chair Professor of Systems Engineering and Engineering Management at CUHK, Professor Zhou’s research since arriving at the university in 1993 has

extended across 14 major projects funded by the Research Grants Council and industry. In 2003 he was co-winner of the 2003 SIAM Outstanding Paper Prize from the Society for Industrial and Applied Mathematics. The holder of a prestigious Alexander von Humboldt Research Fellowship, in 2005 he was elected a Fellow of the Institute of Electrical and Electronic Engineers, and was also awarded a Croucher Senior Research Fellowship.

Professor Zhou’s recent research, which has extended Harry Markowitz’s Nobel Prize winning mean-variance portfolio selection model, has established his reputation in the fields of finance and insurance, and won commendations from both Dr Markowitz and his fellow Nobel Laureate Dr Kenneth Arrow. Professor Zhou holds a professorship in mathematical finance at Oxford University.

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It has not been possible, for reasons of space, to range across the entire spectrum of research at CUHK in this brochure. The researchers profiled in the previous pages represent only a small sample of the many talented men and women pursuing research at The Chinese University of Hong Kong. To redress this imbalance a little, and to provide some idea of the breadth and depth of research conducted at CUHK, the following pages contain shorter profiles of several more of the University's leading researchers. Like their thirty-five colleagues who have already been introduced to the reader, they are also distinguished researchers in their own right and the recipients of coveted external academic honours.

### **Hsiang-Fu KUNG**

Stanley Ho Centre for Emerging Infectious Diseases

Professor Kung joined the University in 2004. His areas of research interest include molecular genetics, molecular oncology and virology. His studies have elucidated the regulation of  $\beta$ -galactosidase synthesis and the roles of Met-tRNA transformylase and ribosome release factor in protein synthesis, and he was also crucially involved in the development of interferon into a commercial therapeutic drug. Professor Kung is a member of the Chinese Academy of Sciences.



### **Lawrence J. LAU**

Department of Economics

Professor Lau was appointed Vice-Chancellor of The Chinese University of Hong Kong in 2004. He specializes in economic development, economic growth and the economies of East Asia, including that of China. In 1966 he developed one of the first econometric models of China, which he has continued to revise and update ever since. He has authored, co-authored, or edited five books and published more than 160 articles and notes in professional journals. Professor Lau is a member of Academia Sinica.



### **Joseph W.Y LAU**

Department of Surgery

Professor Lau joined the University in 1989. He is an international expert on surgery of the liver, the pancreas and the bile duct. He has helped to perfect the art of radical excision for cancers of the liver and the hilar bile duct, and has pioneered the development of liver transplantation both in Hong Kong and elsewhere in Asia. Professor Lau is an academician of the Chinese Academy of Sciences.





## ■ Charles K. KAO

Faculty of Engineering



Professor Kao first joined CUHK in 1970. He is a pioneer of the use of fibre optics in telecommunications. Shortly after completing his PhD in 1965, he demonstrated that the high loss of existing fibre optics arose from impurities in the glass rather than from an underlying problem with the technology itself. Professor Kao is a foreign member of the Chinese Academy of Sciences and a member of Academia Sinica. He was awarded the Nobel Prize in Physics in 2009.

## ■ Ambrose Y.C. KING

Department of Sociology



Professor King joined the University in 1970, and during the past four decades has published widely on change and development in China during the nineteenth and twentieth centuries, and on political and social transformation in Hong Kong before and after 1997. He has also written on the function of universities in modern society, arguing that their educational role should also encompass moral education. Professor King is a member of Academia Sinica.

## ■ Leo O. LEE

Centre for East Asian Studies



Professor Lee first joined CUHK in 1994, and has been here permanently since 2004. His research interests include modern Chinese literature and culture, particularly contemporary Chinese fiction and cinema. He has published several well-regarded works on these themes in both Chinese and English, including books on the early twentieth-century author Lu Xun and on modern urban culture in Shanghai. Professor Lee is a member of Academia Sinica.

## ■ William S.Y. WANG

Department of Electronic Engineering, Centre for East Asian Studies, and  
Department of Linguistics and Modern Languages



Professor Wang joined the University in 2004. His main field of research is the emergence and evolution of human speech, an area of study where he has brought to bear insights gained from linguistics, engineering and the biological sciences. He founded the *Journal of Chinese Linguistics* in 1973 in Berkeley and helped to bring it to its present home at CUHK in 2007. He has worked closely with computer scientists and biologists throughout his career in a common search for the origin of language and patterns in language differentiation. Professor Wang is a member of Academia Sinica.



## ■ Chen-Ning YANG

Department of Physics

Professor Yang joined CUHK in 1986. His main research interests are particle physics, statistical mechanics and the conceptual history of theoretical physics. He was awarded a Nobel Prize in 1957 for his work on parity laws, which led to important discoveries regarding the elementary particles. Professor Yang is a member of Academia Sinica and a foreign member of the Chinese Academy of Sciences. He has donated his manuscripts, papers and medals, including the Nobel medal, to CUHK.



## ■ Andrew C.C. YAO

Department of Computer Science and Engineering

Professor Yao joined the University in 2005. His research interests include the design of efficient computer algorithms and complexity theories in emerging new areas of theoretical computer science, such as quantum communication and computing. He is investigating new paradigms for designing fast quantum algorithms, and mathematical tools for the security analysis of quantum cryptographic protocols. Professor Yao is a member of Academia Sinica and a foreign member of the Chinese Academy of Sciences, and has also won the Turing Award.



## ■ Shing-Tung YAU

Department of Mathematics

Professor Yau joined CUHK in 1991. His research in the field of differential geometry has led to some important pioneering discoveries. In 1976 he proved Calabi's conjecture on a class of manifolds now named Calabi-Yau manifolds, which has now become the geometric ground where physicists build their string theory. Professor Yau is a member of Academia Sinica and a foreign member of the Chinese Academy of Sciences, and also a holder of the Fields Medal.



## ■ Guoping ZHAO

Department of Microbiology

Professor Zhao joined the University in 2008. He is a distinguished molecular biologist, and his research interests include the structure-function relationship and reaction mechanisms of microbial enzymes and the development of microbial and protein engineering technology for the industrial application of these enzymes. Professor Zhao is a member of the Chinese Academy of Sciences.





**'Scholarship ripens like a growing tree,  
flowering in the spring and fruiting in the autumn.'**

—Yan Zhitui, *Yanshi jiaxun*

(Yan Zhitui, a scholar and official of the Northern Wei dynasty, was born in AD 531. His best-known work, *Yanshi jiaxun*, 'The Family Instructions of Master Yan', was influenced by the Confucian classic *The Great Learning*. The *Yanshi jiaxun*, a compilation of traditional Confucian precepts, encourages its readers to cultivate virtue and self-discipline.)

