The University's 10th Congregation was a celebration of achievement and potential. More graduates were honored this year than ever before. Together, they represent a dynamic force for change that will shape the future of Hong Kong and the world beyond.

More on pages 2 to 4
Dear graduates:

The past three years have seen Hong Kong, together with the region, struggling hard against a sluggish economy. The gloom remains as deflation persists. I fully understand the stress and difficulties that many Hong Kong people are now experiencing. I was in a very similar situation during my youth in Taiwan, but the experience was worse. However, I always tried to remember that "When the going gets tough, the tough get going", as Joseph P Kennedy, the father of President John F Kennedy, once said.

Therefore, let's not be so disheartened by the present as to lose faith in the future—the faith in knowledge and in one's influence on society. There is no room for pessimism; opportunities are only available to those who are well prepared for the changes ahead, and success belongs to the optimist.

Dear graduates, you will always find in your alma mater a faithful partner on the road of progress. To substantiate my claim, I shall recount some of our accomplishments since the University's establishment.

11 years ago, HKUST was a name known only to some Hong Kong people. Today, the University has attained international acclaim in the areas to which we are devoted, and has drawn the world's attention to Hong Kong. The success rate of HKUST faculty in securing both basic and applied research grants from the Research Grants Council (RGC) and the Innovation and Technology Commission (ITC) has ensured our position as a leader among our local sister institutions. Our scientists have synthesized the world's smallest single-walled carbon nanotubes. We have also fabricated a genechip that can authenticate Chinese herbal medicines efficiently. HKUST won the prestigious 2001 LEAD award presented by the Computer and Automated Systems Association of the Society of Manufacturing Engineers (CASASME). The University's accounting research was ranked No. 1 internationally in terms of research articles published in the top five academic journals in 2001, and our MBA program was ranked 47th in the world and 1st in Asia by the Financial Times. HKUST's China Studies program is among the world's five best, based on faculty's research published in the top three academic journals from 1997 to 2001.

So much can be achieved within the short span of 11 years, and the key is faith. Our faith in HKUST has transformed plans into actions, words into deeds. Our history is short, but we are vigorous and our profile has been raised internationally. I am sure your faith in yourself and in Hong Kong will help you achieve more than you can imagine today. Don't forget that you are one of those lucky ones who enjoyed the privilege of a sound education, a lifeboat that will help you ride out and overcome whatever challenges may lie ahead.

You may ask, "Can I survive?" My answer is a resounding "Yes" to all HKUST graduates who possess the following four qualities:

First, creativity, which will help you break new ground when a solution is called for;
Second, steadfastness in the search for a solution;
Third, optimism when the solution is still out of sight; and

Fourth, compassion, which means readiness to share when the solution is found.

Perhaps they can be summed up in one phrase: "Be engaged." To be engaged means to participate fully, to put a little extra effort into whatever we do to bring about changes that will benefit all. Albert Einstein once said, "The whole of science is nothing more than a refinement of everyday thinking." It is the willingness to do a little more—some call it passion, others perfectionism—that turns a job into a profession. Nothing inspires us more than a determination to excel. Don't settle for a job; strive for self-fulfilment.
Prof Chen-Ning Yang's Address (Extract)

Dear fellow graduating students,

160 years ago there was the signing of the Treaty of Nanking at the end of the infamous Opium War, which ceded Hong Kong to the British Empire. The year of my birth, 1922, happens to be the exact middle point of those 160 years.

The first half of the 160 years witnessed the sad sinking of a once confident people with a glorious culture, to the status of a despised semi-colony mired in poverty. At the time when I was born, Shanghai was the paradise of buccaneers. The sign at the gate of the Bund Park saying “Chinamen and Dogs Not Admitted” was not a fabrication, but a fact. Hundreds of thousands of Cantonese from the Pearl River Delta were sold as “piglets” to America, a history well known to people in Hong Kong today.

The second half of the 160 years is the period during which the Chinese people, the most numerous among all peoples in the world, finally “stood up”, after countless disasters and wars, correct and incorrect political lines, and millions of meaningful and meaningless sacrifices. The difficult and rapid rise was an unprecedented miracle in the history of mankind. It was a miracle of rebirth, bathed in blood. I am a beneficiary of this miracle.

Fellow graduating students! You are more fortunate again than I. You did not have to experience the Civil Wars and the Japanese invasion. And what lies in front of you is a series of challenges and opportunities for you to fully develop your talents. You will recognize extremely serious issues for the 21st century: resource depletion, worsening pollution, problems brought about by accelerating scientific and technological advances. And also the role that a powerful China plays in the world. These are all important problems. They are also great opportunities. I hope each of you will recognize clearly the main trend of development of human history, and create for yourself a truly meaningful life.

University Honors Distinguished Persons at 10th Congregation

The University held its 10th Congregation from 6 to 8 November 2002. More degrees were conferred at this ceremony than any previous Congregation, highlighting the progress made by the University in its short existence.

Over the three days, 1,817 bachelor’s and 615 master’s degrees were awarded, as well as 75 PhDs. Dr Robert Ferguson, Assistant Professor of Social Science, received the Michael G Gale Medal for Distinguished Teaching, and the Stephen Cheong Kam-chuen Medal for Distinguished Service to the Student Body was presented to Mr Yu-Kwan Siu, President of the Ninth Session of the HKUST Students’ Union.

Proceedings were lent further distinction by the presence of this year’s honorary graduates and fellow, each of them internationally acclaimed and respected, not just in their field, but the wider community too.

Dr Laura May Lung Cha, Doctor of Laws honoris causa

Born in Shanghai and educated in Hong Kong and the US, Dr Cha obtained her law degree from the University of Santa Clara. She worked for two leading US law firms, both in the US and Hong Kong, before joining the Hong Kong Securities and Futures Commission as an Assistant Director in 1991, rising to Deputy Chairman in 1998. During her tenure, she helped reform Hong Kong’s securities markets and establish the regulatory framework for the Hong Kong listing of Chinese state-owned enterprises. In 2001, the State Council appointed Dr Cha Vice-Chairman of the China Securities Regulatory Commission, making her the first overseas appointee to join the Chinese government at vice-ministerial level. Her reputation for being both a woman of principle and a consummate regulator ensures that Dr Cha is considered one of the most influential people in China.
Prof Anne O Krueger, Doctor of Social Sciences honoris causa

Prof Krueger is a celebrated economist and scholar who received her PhD from the University of Wisconsin at the age of 24. In 1982 she was appointed Vice President and Chief Economist of the World Bank, before moving to Duke University and then Stanford, where she became the Herald L and Caroline L Ritch Professor of Humanities and Social Sciences, Director of the Center for Research on Economic Development and Policy Reform, and a Senior Fellow of the Hoover Institute. In 2001 she was appointed First Deputy Managing Director of the International Monetary Fund. Her groundbreaking paper on what are now referred to as "rent-seeking activities" was hailed for demonstrating that social losses created by protectionist trade policies are larger than earlier estimates indicated. Her analytics of rent-seeking have become a standard tool for economists. A long-standing friend of HKUST, Prof Krueger is also an advisor to the University's Center for Economic Development.

Prof Chen-Ning Yang, Doctor of Science honoris causa

Prof Yang has been called one of the greatest physicists of the 20th century. In 1954, he and R. Mills invented the non-Abelian gauge field theory, a precursor to the development of modern particle physics, and in 1957 Prof Yang and his colleague Prof T. D. Lee astounded the world with their proposal of non-conservation parity, for which they became the first Chinese ever to win a Nobel Prize. Prof Yang obtained his PhD from the University of Chicago and worked at the Institute for Advanced Study as a Research Professor until 1966. He then accepted the Albert Einstein Professorship at the State University of New York at Stony Brook, a post that he held until his retirement in 1999. Prof Yang's influence on Chinese communities inside and outside China is immense, and he says of himself: "The most important contribution in my life is to have helped the Chinese people overcome our inferiority complex." He remains a dedicated educationalist, lecturing and training young scientists throughout the Chinese Mainland, Hong Kong and Taiwan.

Dr C K Lau, Honorary Fellow

Dr Lau is a practicing civil engineer who specializes in geotechnics. He took his PhD at Cambridge in 1988 and has worked on over 120 projects in Hong Kong and Europe. After a period of private practice in the UK, he was appointed a director of Fong On Construction and Engineering Co Ltd in Hong Kong. He co-founded the Association of Geotechnical Specialists (Hong Kong), becoming its first Chairman. He is also a past Chairman of the Hong Kong Institution of Engineers (HKIE), Geotechnical Division, and contributes his expertise to a variety of other industry and government bodies. Dr Lau's desire to give to the Hong Kong community is also expressed through his teaching activity. He lectures and researches at several Hong Kong universities, and is an HKIE Scheme A training-supervising engineer.

The presence of each of these honorable awardees made a significant contribution to the success of this year's Congregation.

Prof Henry T Y Yang, Doctor of Engineering honoris causa

Prof Yang is the fifth Chancellor of the University of California at Santa Barbara (UCSB) and is one of the few Chinese American academicians to have risen to the highest level in US tertiary education. He has also served as Head of the School of Aeronautics and Astronautics, and Dean of Engineering at Purdue. Prof Yang has brought national acclaim to the academic programs at both Purdue and UCSB by recruiting distinguished faculty and students, creating interdisciplinary national research centers and establishing innovative teaching and learning programs. He has made lasting contributions to a range of engineering fields, and his pioneering development of the finite element method in plates and shells is considered classic. An exemplary educator, Prof Yang has received 12 teaching awards from Purdue. He is a founding member of the Steering Committee of the Association of the Pacific Rim Universities, and has served on the HKUST School of Engineering's Advisory Board.
Integrated Microdevice to Detect Biohazards

Biohazards are a constant concern for many governments around the world. Take, for example, the increasing risk of bioterrorism, or the rising incidence of food contamination and water pollution.

A device capable of screening the environment for biohazards 24 hours a day, seven days a week, and immediately reporting their presence and type to the relevant authorities as soon as detected, would clearly be a highly useful tool.

HKUST's Dr I-Ming Hsing, Assistant Professor of Chemical Engineering and Associate Director of the University's new Bioengineering Graduate Program, is already developing what he calls a microfabricated bioanalytical system, an offshoot of the Biotechnology Research Institute (BRI)'s pioneering genechip project. His device would upload samples like body fluids, foodstuffs or air, then apply silicon-based genechip technology developed at HKUST to amplify the sample's DNA and search for harmful bacteria, spores or viruses.

The researcher sees a wide range of benevolent applications for the device. These include: point of care diagnosis in the doctor's clinic, quick and easy water quality inspection and the detection of bacteria in food production and distribution processes.

Dr Hsing hopes his research, which is being funded by the Government's Innovation and Technology Commission, the Research Grants Council and HKUST's Institute of Integrated Microsystems, will produce a full working prototype by 2005.

Two factors make Dr Hsing's device stand out—its portability and its integration of the latest wireless communication technology.

Tiny dimensions and a capacity to transfer data anywhere at anytime make the system perfect for use in the field. For instance, imagine that at the Lo Wu checkpoint customs officials are concerned a batch of imported chickens is carrying the deadly H5N1 bird flu virus. Samples could be taken from the chickens at the checkpoint, and the relevant DNA analysis undertaken in situ using the microfabricated bioanalytical system. The device would swiftly provide results that it would immediately send to the relevant authority by wireless communication, in order that an appropriate course of action can quickly be decided upon to contain the threat.

In this way the system circumvents the time intensive requirement of sending specimens back to a central laboratory for analysis, saving not only time and money, but possibly lives too.

According to Dr Hsing, the greatest challenge lies in the engineering of a device capable of performing analysis on the micro-scale. He is currently assessing the merits of two methods, one involving silver and gold-based electrochemical detection, the other involving a process called intercalation, both of which he is in the process of refining.

"What we are proposing is something like a pregnancy test. Is there a biohazard in the environment? With this device we will quickly be able to say 'yes' or 'no', removing extraneous time requirements and the need for huge laboratory resources," he said.

Dr Hsing's research typifies the way in which engineers and scientists are increasingly working together at HKUST, at the cutting edge of "bioinnovation". "Development of the microfabricated bioanalytical system is in many ways a collective effort," Dr Hsing said. "I really must give credit to the School of Science and BRI, whose latest lab-on-a-chip technology I am integrating into the device."

HKUST's multidisciplinary commitment to bioinnovation is further demonstrated by the recent launch of the Bioengineering Graduate Program, details of which can be found on page 8.
Anna Ng
Giving it her best shot

The Asian Games were held in the Korean city of Busan during October, and our very own alumna, Anna Nga-Sze Ng, was there to compete on behalf of Hong Kong.

Anna holds the Hong Kong women’s outdoor recurve 70m archery record. But before her second year at HKUST she had never picked up a bow and arrow, let alone dreamt of representing Hong Kong in a world-class archery competition.

An accountancy major, Anna graduated in 2000. She speaks fondly of her days at HKUST, where she still regularly comes to practice. One memory stands out in particular, of the day she walked by the Archery Club’s booth during orientation week to be persuaded by a friend that, just maybe, it would be worth giving the sport a try!

“It took me two and a half years to realize I was any good,” she laughs, “and I really think that it was only by luck that I eventually won my first competition.”

Clearly modest, Anna also has a great sense of humor. Discussing last year’s World Target Archery Championships in Beijing, where she again represented Hong Kong, Anna describes how life at HKUST prepared her for competitions away from home: “Living in the athletes’ village is just like living in the student halls at UST: it’s great, but you’re never there that much because you’re always working so hard elsewhere!”

Talk of Beijing leads the archer to reflect on the 2008 Olympics. Qualification, she believes, will be extremely difficult. Unlike competitors from other countries, Anna is not a professional and receives only limited support for her endeavors at national level. Instead, she prefers to hold down her full-time accounting position with Ernst and Young, and constantly balance the responsibilities of a challenging job with those of being an international athlete.

She vows that she will keep practicing, and when asked what message she would give to students at her alma mater, she replies: “Give everything your best shot and don’t give up. Like me in archery, even if your results aren’t that good at first, you never know your full ability and potential unless you keep trying.”

Whether Anna makes it to the Beijing Olympics or not, it is clear that she has the spirit of a consummate champion. She also has the good wishes of the entire HKUST family!
Institutions Hail Achievements

Profs Khaled Ben Letaief and Hoi-Sing Kwok, of the Department of Electrical and Electronic Engineering, have been appointed fellows of the Institute of Electrical and Electronics Engineers (IEEE). In electing Prof Letaief, the IEEE cited his "contributions to the analysis, design and performance evaluation of high-speed wireless communication systems", while Prof Kwok was elected for his "pioneering research in liquid crystal display technology". Fellowship is one of the IEEE's most prestigious honors and follows a rigorous evaluation procedure. It is conferred by the IEEE Board of Directors upon a person with an extraordinary record of accomplishments in any of the IEEE fields of interest.

Dr Yufei Tao, a 2000 PhD graduate in Computer Science, has won the Hong Kong Institution of Science's inaugural Young Scientist Award in Physical/Mathematical Science. The award recognizes "Dr Tao's excellent potential", and the significance of his research into the indexing and query processing of spatio-temporal data.
Graduate Program Promotes Bioinnovation

HKUST is boosting Hong Kong's ability to fuel the "bio-based" technology boom with the launch of an innovative Bioengineering Graduate Program this fall.

In the past 10 years, research has progressed rapidly in areas such as the human genome, cell function and nanotechnology. Discoveries at the molecular level have provided an exciting new way to apply principles and discoveries from the biological sciences to engineering design.

Bioengineering is expected to be one of the main drivers of technological change in the 21st century, contributing solutions to health concerns, spurring development of bio-related industries and improving quality of life. In line with this, HKUST's multidisciplinary program, led by the School of Engineering with the active participation of the School of Science, is designed to highlight bioinnovation through engineering. The Program is the first of its kind in Hong Kong.

"Encompassing the basic sciences of biology, chemistry and physics, we aim to bring engineering skills and approaches to research, thereby producing innovative products and services," said Program Director and Associate Professor of Chemical Engineering, Dr John Barford.

HKUST's expertise in neurobiology, "lab on a chip" with electrochemical detection, bioprocessing and bioproduct design, biomaterials and biosensors, among other areas, enables bioengineering students to work with members of the University's world-class faculty on research at the forefront of the rapidly developing field. Degrees at the master's and doctoral levels are available.

The program provides core courses in biochemistry, molecular biology and cell biology together with several different areas of concentrations. The three major themes initially offered are biological information engineering; bioprocessing and bioproduct design; and BioMEMS and biomaterials. Neuroengineering is due to be made available in phase two, scheduled for 2003-04.

"We are a focused and energetic program. We seek to challenge our students to achieve research excellence and to develop our program into one of international stature," Dr Barford said.

For program details, please visit http://www.ab.ust.hk/arr/pghom.htm

HKUST Students on a Par with Global Best

Negative sentiment sometimes seems to pervade any discussion concerning the academic ability of undergraduates in Hong Kong, while overseas universities often appear to receive overwhelming acclaim for the graduates they produce and the academic standards to which they adhere.

It would therefore be a useful exercise for HKUST to be able to benchmark the ability and academic attainment of its student body in comparison to overseas students. In this way the University can confirm that it is fulfilling its teaching responsibilities to the highest international standards, and ensure that HKUST graduates are able to compete equally with their international peers once they have graduated and entered the global marketplace.

A recent study conducted by the Office of the Vice-President for Academic Affairs offers the University significant encouragement on these issues, indicating that our students perform at least as well as their overseas counterparts.

The study analyzed the performance of all 65 HKUST undergraduates who spent a semester on US university exchange programs during 2001.

Prior to their departure, our students had a cumulative grade point average (CGA) of 8.7 on HKUST's 12-point scale, comparable to a strong B+. During their period of overseas study, the students achieved a CGA of 3.4 on the commonly used 4-point US scale, which also equates to a strong B+. More encouraging still, the percentage of those HKUST students deemed worthy of an A grade average in the US increased from 23% to 34%, with four of our students achieving a straight A record on exchange.

Such figures clearly indicate that HKUST is grooming its undergraduates to a standard comparable to some of the US's best universities, including the Ivy League schools and University of California. They also demonstrate that an HKUST education is a global passport for success.
Logistics and IT Expertise Benefit Community Transport

In a knowledge-based society, achievements in scientific research can serve as a catalyst for wealth creation, but just as significantly, they can also help the disadvantaged and contribute to society’s development. A case in point is the new “Rehabus” information management system developed by the University for the non-profit organization, the Hong Kong Society for Rehabilitation (HKSR).

The HKSR runs a fleet of 84 specially equipped minibuses that provide various transportation services for the disabled, including scheduled route collections, Dial-A-Ride and feeder services. Previously, Rehabus booking and scheduling were done manually, but the system was proving inflexible and hindering the HKSR’s ability to improve and expand its services, a problem that was exacerbated by a prevailing shortage of resources.

An HKUST research team, comprising IT engineers from the Applied Technology Center (ATC), the Department of Industrial Engineering and Engineering Management, and the software engineering team of the Nansha IT Park, offered to help the HKSR by pooling its strengths in transportation logistics and software engineering to create a new, computerized, booking and scheduling system.

Web-based system enhances efficiency and service

Project manager and ATC Information Engineer Jason Ho explained that the team completed the first phase of the project within 13 months, with sponsorship being provided by the Hong Kong Jockey Club Charities Trust. “The information management system we have developed enables the HKSR operators to access their database via the Web and keep a firm hold on the location and status of their 84 minibuses, as well as customer requests. We have also put in place the information infrastructure for the second phase of the project,” Mr Ho said.

The team was faced with many challenges during the project. Dr Chung-Lun Li, Associate Professor of Industrial Engineering and Engineering Management, remarked: “We sent our colleagues to work at the HKSR for three weeks, to learn its mode of operation and working processes. Based on the data collected, the software engineers carefully wrote the database management programming and ensured that no data were omitted or mixed up by mistake.” The research team’s instructions for system testing ran to over 500 pages alone, demonstrating the meticulous accuracy required to develop the management system.

For the HKSR, the transition from manual recording to computerized information management system is a significant advance. Once funding can be secured, the organization is keen to continue the progress made alongside HKUST and commence phase two of the project.

Future development will contribute to passenger transport research

The second phase will apply the data generated by the new management system to develop a decision support structure, providing the operators with a state-of-the-art vehicle scheduling and routing tool. This should further lighten the operators’ workload, and also provide a valuable academic exercise for the researchers: Dr Raymond Cheung, Associate Professor of Industrial Engineering and Engineering Management, noted that existing literature on transportation logistics mainly concerns freight transport and rarely involves passenger traffic research. He commented: “Passenger transport is more complicated than freight transport. For instance, in designing the optimum route for freight transport, part of the goods may be made to go a longer way round. But the cargo will not feel displeased and complain. Passengers, however, can’t tolerate having to make a longer journey than is necessary. So the policy support system we develop will also take into consideration the extent of customer satisfaction.”

Jason Ho concluded: “The HKSR is a farsighted partner that attaches great importance to service quality.” The fact that the HKUST team shared the same standards was a key component of phase one’s success.
Nansha IT Park, Phase 1 Completed

The first phase of construction work at the Nansha IT Park, a joint development between the Fok Ying Tung Foundation and HKUST, has been completed. On 29 December, the Honorable Mr Henry Fok Ying Tung, Vice-Chairman of the Chinese People’s Political Consultative Conference, Mr Liu Yanhua, China’s Vice Minister of Science and Technology, Mr Lin Shushen, Mayor of Guangzhou, and Prof Otto Lin, HKUST’s Vice-President for Research and Development, officiated at the site’s inauguration ceremony. Around 400 other guests from Hong Kong and the mainland also attended. The IT Park will cover a total area of 250 hectares. Phase One occupies 15 hectares and houses facilities for professional training, research, development and entrepreneurship incubation.

Nobel Laureate Gives First Chern Lecture

On 9 November, the University’s inaugural SS Chern Lecture was delivered by 1957 Nobel Laureate in Physics, Prof Chen-Ning Yang, on the evolution of the concept of vector potential. The annual lecture is supported by the S S Chern Foundation for Mathematical Research, US, to bring renowned scientists from around the world to give lectures at HKUST on the latest developments at the frontiers of research. Prof Shing-Shen Chern is considered one of the greatest geometers of the 20th century. He developed the Chern characteristic classes in 1944, which opened a new era in differential geometry.

CL3 Signs eUniversities Agreement

The College of Lifelong Learning (CL3) signed an agreement on 21 November to offer degree programs through UK eUniversities (UKeU). UKeU was established by the British government for selected UK universities to deliver quality academic programs online. From Spring 2003, CL3 will offer two programs: the first, York University’s MA in Public Policy and Management, and the second, a Postgraduate Certificate in Learning in the Connected Economy, offered by the British Open University in conjunction with Cambridge University. Prior to the agreement, Sir Anthony Cleaver, Chairman of UKeU, visited HKUST and said how impressed he was by the University’s achievements. CL3 will provide further programs from other UKeU affiliates later in 2003.

New Mentorship Program Launched

The Student Affairs Office (SAO) launched its new Confluence Mentorship program for undergraduates at a ceremony on 26 October. The program builds on SAO’s weekly Confluence dinners, which have provided an informal setting for approximately 17,000 students to interact with 2,600 guests from commerce, industry and the professions since 1988. 50 mentors have joined the program, and will provide personal guidance to their mentees for a one-year period. The relationships will strengthen the professional and social development of students and provide opportunities for experienced professionals and community leaders to contribute to the education of HKUST students. The mentorship program has received strong support from the Rotary Club of Hong Kong, World Vision Hong Kong, and the HKUST Alumni Association.

Chinese Medicinal Chemists Hold Symposium

The Third International Symposium for Chinese Medicinal Chemists was hosted by HKUST from 28 to 31 December. The symposium offered a wealth of outstanding science in all aspects of medicinal chemistry, with special focus on the studies of novel approaches to drug discovery and development, including bioinformatics, virtual screening, combinatorial chemistry, chirotechnology and traditional Chinese medicine related research. Over 200 delegates attended, including representatives from China’s National Natural Science Foundation. The three renowned plenary speakers were: Prof Hung-wen Liu of the University of Texas at Austin, Prof Tsann-Long Su of the Academia Sinica and Prof Li-He Zhang of Peking University.