

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

Chen Jia'er

Professor Chen Jia'er is the President of the National Natural Science Foundation of China, and was formerly the President of Peking University. An internationally famous scientist and educator, Chen Jia'er was born in 1934 in Shanghai, the only child in a family of intellectuals. His father Chen Bochui was a famous translator and author of children's literature; his mother Wu Hongzhi taught the piano. Brought up in a loving family, educated by precepts and by example, and surrounded by books and learning, Chen Jia'er grew in wisdom and character. The love of science and a respect for humane letters were implanted early in his young mind. From these seeds the distinguished career as a teacher and as a scientist was to blossom.

After the Second World War, Chen Jia'er entered Weiyu Secondary School in Shanghai. The school was blessed with excellent teachers, and boasted a very high standard of language education. At the age of only 13, Jia'er in his spare time translated from English the novel *The Red Man in the Forest*; the translation appeared in *Huamei Wan Bao*, showing already his extraordinary linguistic abilities. Thereafter, guided by his teachers of mathematics and science and encouraged by senior students in the school, Chen Jia'er's interest shifted from literature and translation to science, and from those days onwards his mind was set on a career in scientific research.

In 1950, Chen Jia'er entered Dalian University; in 1952, with the re-organization of universities in China, he was transferred to Jilin University, where he majored in physics. He was mentored by many distinguished professors. Among them Professor Wang Daheng was the most rigorous in his expectations of young Chen Jia'er, who therefore acquired a solid foundation in the knowledge and skills needed for experimental studies. Professor Zhu Guangya and Professor Wu Shishu respectively taught atomic physics and quantum mechanics, instilling in Jia'er a deep interest in modern physics. Upon graduation, Chen Jia'er stayed in Jilin University as a teaching assistant. In 1955, when Peking University established its physics teaching laboratory, Chen Jia'er was transferred there and given the responsibility of founding the first nuclear physics teaching laboratory in China. In 1959, Chen Jia'er led the laboratory in designing and constructing the first Betatron and sector focussed isochronous cyclotron, beginning a distinguished career in accelerator physics.

In 1963, Chen Jia'er was sent to Britain for further studies. There he worked under Professor Wilkinson of Oxford University and Professor Lawson of the Rutherford Laboratory, in particular studying the central region in isochronous cyclotrons. He analyzed, he calculated, he simulated, he pondered; in the end, he fully understood the mechanism leading to beam



attenuation, and was thus able to triple the beam transport efficiency. Moreover, he established experimentally the existence of the gap resonance, and developed an ingenious way to damp the resonance. This brilliant achievement was recognized internationally. He returned to China in 1966, but his research was interrupted by the Cultural Revolution.

In 1982, Professor Yang Chen Ning arranged for Chen Jia'er to go to the State University of New York at Stony Brook, to take up the task of designing and building the beam pulsing system in Stony Brook's superconducting linear accelerator. Chen Jia'er was able to use to advantage the expertise developed in his own accelerator research in the 1970s. His research results were developed into a specialized software for controlling the accelerator and its beam transport system. With this development, accelerator operation became accurate, practical and convenient. The mode of operation, now called the Chen mode, has been in use at Stony Brook since, essentially in the original form.

Chen Jia'er returned to Beijing in 1984, and was appointed Vice-President of Peking University, with responsibility for research and development. He emphasized basic research, applied research and technological innovations as a trinity in synergy. The policy paid off in rapid advancements for Peking University. Even with the heavy burden of university administration and community service, Chen Jia'er did not give up his research. He led the design and construction of the 4.5 MV electrostatic accelerator. Commissioned in 1990, this accelerator filled a major gap in mono-chromatic neutron facilities in China, especially in the energy ranges 3.5 – 7 MeV and 16-20 MeV. This accelerator also laid the foundation for the neutron and fission laboratory in Peking University. In recent years, Chen Jia'er led the design of accelerator mass spectrographs. As principal investigator for the national key "Xia-Shang-Zhou Project", he used physical techniques to date ancient artefacts, to accuracies of 30-40 years. No more than two or three laboratories worldwide can claim such precision. More recently he suggested and then demonstrated experimentally the feasibility of simultaneously accelerating positive and negative oxygen ions in one structure, and as a result was able to increase significantly the beam current and RF efficiency in the RFQ cavity; the result moreover opened the way to the implantation into experimental samples of two species of ions in any given ratio. This achievement was the first of its kind in the world. Other accomplishments include his work on microwave niobium superconducting accelerators.

In August 1996, Chen Jia'er was appointed by the State Council as President of Peking University. During his presidency, he made major contributions in leading the University's development, and raised its profile in research. With a venerable tradition of "Patriotism, Progress, Democracy and Science", Peking University takes up the mission of embracing the best of the past in order to build the best of the future. In 1998, under President Chen's leadership, Peking University celebrated its centenary. True to its motto of "Diligence, Rigour,



Honesty and Creativity", clear in its vision of "Carrying on Traditions, Strengthening Teaching and Researches, Meeting the Challenges of the Future and Making Progress", Peking University went from strength to strength. In his presidential address at the University's centenary, Chen Jia'er set out his vision for the University: that Peking University must educate students to the highest quality in both the humanities and the sciences; that Peking University must take advantage of its comprehensive offerings, rich infrastructure and synergy between teaching and research; that Peking University must aim to become a centre for innovation and knowledge-creation, a cultural temple consecrated to the preservation of the best of the past and the present, and a bridge fostering collaboration between the east and the west.

These views came from Professor Chen's heart, and struck chords of resonance in the hearts of many educators. Professor Chen deeply believes that innovation is the eternal theme of a university, which must at the same time strive to educate the young, to advance knowledge, to disseminate knowledge and to apply knowledge. The spirit of humanity is the soul of scientific creativity, and to allow scholars to pursue research in quiet and in concentration, a university must first provide a good environment. Genuine science does not mean indiscriminate quantification, but deep understanding of the regularities of nature, leading to lasting influences on human civilization, in theory and in practice. In the 21st century, the internet is spreading its tentacles into every corner, but is hardly the be-all and end-all of human civilization. Education is the uplifting of the human spirit in all its dimensions, and not the mere transmission of knowledge. These penetrating views from a true scientist contrast with the narrow prejudices of those who value only technology and fail to see the importance of human values.

Professor Chen is currently the President of the National Natural Science Foundation of China, and serves on the Executive Committee of the Presidium of the Chinese Academy of Sciences, being the Director of its Division of Mathematics and Physics. He is also a Specialist Consultant to the National High Technology Development Programme on High Power Lasers, the President of the Chinese Physical Society, the President of the Beijing Association of Science and Technology, and the President of the Association of Asia Pacific Physical Societies. He was honoured nationally in 1986 for his distinguished achievements, and in the same year was made an honorary citizen of Dallas, Texas, USA. He was elected an Academician of the Chinese Academy of Sciences in 1993, and a Fellow of the New York Academy of Science in 1998. He received an honorary Doctor of Science degree from Menlo College in California in 1999 and another honorary Doctor of Science degree from Waseda University in Japan in 2000.

Professor Chen's achievements in science are known to all. He has attended and spoken at numerous scientific meetings, and has published some 140 scientific papers; he is on the editorial board of many academic journals. Professor Chen has won many awards, including



the First Prize awarded by the State Education Commission for Progress in Science and Technology (twice), the First Prize for Achievements in Science and Technology bestowed by the Guang Hua Foundation of Science and Technology, the First Prize of China National Co-operation of Nuclear Energy for Outstanding Text Book, and the First Prize awarded by the State Commission of Science and Technology for Contribution on the State High-Tech Projects.

Over the years, Professor Chen has maintained close ties with The Chinese University of Hong Kong, and has helped to foster close links between Peking University and the Chinese University. In 1998, the Beijing Liaison Office of The Chinese University of Hong Kong was established on the campus of Peking University. In 1999, Peking University and the Chinese University established a Joint Centre for Intelligence Engineering and a Joint Laboratory for Plant Molecular Biology and Biotechnology. Peking University annually selects a number of first-year students to come to the Chinese University for their degree course, thus building closer ties and better understanding between the students in the two cities. Mr Vice-Chancellor, for his unique contributions to higher education and for his distinguished achievements in scientific research, I present Chen Jia'er for the award of the degree of Doctor of Science, *honoris causa*.