香港中文大學理學院
FACULTY OF SCIENCE
THE CHINESE UNIVERSITY OF HONG KONG

第十五屆柳愛華紀念科學講座

The 15th Lau Oi Wah Memorial Science Lecture Series

香港中文大學理學院與柳愛華紀念基金主辦
Organized by The CUHK Faculty of Science and The Lau Oi Wah Memorial Fund

12 April 2019
4:30 pm - 6:30 pm

香港中文大學康本國際學術園2號演講廳
LT2, Yasumoto International Academic Park (YIA), CUHK

理學院院長的話

Message from the Dean of Science

Welcome to the 15th Lau Oi-Wah Memorial Science Lecture Series at The Chinese University of Hong Kong (CUHK). Commencing in 2005, this annual lecture series is organised in recognition of Professor Lau Oi-Wah's contribution to promoting science education.

Having obtained a BSc degree from The University of Hong Kong, Professor Lau joined Chung Chi College of CUHK as an Assistant Lecturer in 1968, whilst still working on her PhD thesis. She became a Lecturer at CUHK upon the completion of her doctoral degree in inorganic chemistry in 1970. After having been awarded the Leverhulme Foundation Fellowship in 1971 by Imperial College, London and the Honorary Research Fellowship in 1978 by the University of Birmingham, Professor Lau became a Chartered Chemist and an elected Fellow of the Royal Society of Chemistry, U.K., in 1981. Following her success in the academic career in research, Professor Lau was promoted to Senior Lecturer in 1982; Reader in 1993; and was elected to the Deanship of the Faculty of Science for three successive terms, from 1994 until her retirement in 2003.

Professor Lau was a dedicated teacher and a caring research advisor, who always put her students' learning and benefits first. During her academic career, she supervised 7 PhD students and about 30 M.Phil. students. To those who knew her well, she was undoubtedly a passionate educator with a warm personality. During her Deanship, she had successfully pushed for the establishment of many interdisciplinary teaching and research programmes, a philosophy of which continues to be a direction for curricula developments of the Faculty of Science. In addition to university teaching, Professor Lau had also initiated efforts to promote science education in local secondary schools.

After the passing of Professor Lau, her friends and students established the Lau Oi-Wah Memorial Fund in order to commemorate her commitment to education. Supported by the fund, the Lau OiWah Memorial Science Lecture Series runs annually to promote public engagement in science. The Lecture Series continues to inspire young people to pursue further studies and careers in scientific fields. Professor Lau's legacy has indeed lived on through the gift of learning as we all wish.

Through the Lau Oi Wah Memorial Science Lecture Series, members of the public will have the opportunity to learn about some of the recent advances and latest innovations in science, and I am certain that you will be inspired.

Zuowei XIE
Dean of Science

柳愛華教授生平

Biography of Professor Lau Oi Wah

柳愛華教授一生致力在大學及高中推廣科學教育，於中大春風化雨三十五載。柳教授一九六八年加入崇基學院化學系任教。二零零三年自中大榮休。在職期間，積極參與大學教務以及書院服務，柳教授於一九九四至二零零三年期間擔任中大理學院院長達九年，八三至八六年以及九四至零三年出任香港中文大學校董，於一九八零年至二零零三年參與崇基學院院務委員會工作，八六至九五年代表院務委員會出任崇基學院校董。一九七七年至一九八五年出任崇基學院獎學金委員會主席，又於一九八七年至二零零三年出任崇基學院體育委員會主席。柳教授於零三年榮休後，仍繼續匡助崇基學院的發展，出任學院資深導師，輔助推廣校園健康教育。

出任大學理學院院長九年期間，在柳教授的領導下，理學院擔任前線科學家及普羅市民的橋樑，與大眾一同分享科研成果。柳教授亦明白到，必須培養年輕一輩學子對科學的熱情，以及將科學知識傳遞至各階層人士，拉近科學與香港市民的距離。

理學院仝人非常認同柳教授在香港年輕人間推動科普教育的理念，所以當柳教授在二零零四年辭世後，理學院也肩負起延續這份跟社會大眾傳達科學知識的重任。自二零零五年起，每年香港中文大學理學院與柳愛華紀念基金都會舉行「柳愛華紀念科學講座」，以延續柳教授獻身於推廣高中科普教育的無私精神。

The late Professor Lau Oi Wah devoted herself to promoting science education in both university and high school, and left a legacy of 35 years of service to The Chinese University of Hong Kong. As a Professor in the Department of Chemistry who also served as Dean of the Science Faculty from 1994 to 2003, Professor Lau Oi Wah recognized the importance of nurturing young minds of next generation and the necessity to bringing scientific knowledge and advancement to the public.

Professor Lau joined the Department of Chemistry of Chung Chi College in 1968, and retired from the Faculty of Science of The Chinese University of Hong Kong in 2003. Active in affairs at both the college and university levels, Professor Lau served as Member of the University Council (1983 – 1986, 1994 – 2003), Member of College Assembly of Fellows (1980 – 2003), Member of College Board of Trustees (1986 – 1995), Chairperson of College Scholarships, Awards and Financial-Aid Committee (1977 – 1985), and Chairperson of College Physical Education Committee (1987 – 2003). During the nine years as the Dean of Science, Professor Lau led the Faculty of Science in building bridges between scientific frontiers and the masses, showing how science is an inherent as well as an integral part of everyday life. Even after her retirement, Professor Lau continued to assist Chung Chi College in promoting campus health education.

After the passing of Professor Lau in 2004 at the age of 63, her former colleagues at the Faculty of Science wished to continue Professor Lau's legacy in promoting science education to the young people of Hong Kong. First held in 2005, the annual Lau Oi Wah Memorial Science Lecture Series – jointly sponsored by the Faculty of Science and the Lau Oi Wah Memorial Fund – has been one of the ways the members of the Faculty of Science at The Chinese University of Hong Kong carry on Professor Lau's dedication to igniting a passion for science among high school students.

程序表
Programme Rundown

16:30

開幕禮
Opening Ceremony

16:45

STEAM@大豆研究
STEAM @ Soybean Research

生命科學學院 林漢明 教授
by Professor LAM Hon Ming
School of Life Sciences

小休
Break

17:40

尋找最佳投資組合
Optimal Investment Portfolio

統計學系 邱俊業 教授
by Professor YAU Chun Yip
Department of Statistics

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STEAM@大豆研究

STEAM @ Soybean Research

生命科學學院 林漢明 教授
Professor LAM Hon Ming
School of Life Sciences

摘要 Abstract

大豆是影響人類健康和可持續環境的重要作物。香港中文大學林漢明教授從事大豆研究超過二十年，他的科研之旅亦由大學實驗室的基礎研究，延伸至農田上的實際應用。林教授應用嶄新基因測序技術研究大豆基因組，證明野生大豆蘊藏豐富的生物多樣性，成功獲得野生大豆耐鹽基因，並建成了野生大豆參考基因組。利用基礎科學的資訊，林教授與甘肅農科院張國宏教授合作，成功育成三個新的耐逆大豆品種，可以在受鹽漬和乾旱影響的邊緣土地上種植。基因組、遺傳、生理、生化和分子生物學研究是說明 STEM 元素的好例子。同時，將科學知識應用於中國西北乾旱地區，可以彰顯 STEAM 中的 “A” ，指的是人文元素。林教授的研究，給香港中學生 STEAM 教育帶來了一個活的例子。

Soybean is an important crop affecting human health and environmental sustainability. Professor Lam Hon Ming of CUHK has decades of experience in conducting soybean research. His research journey has extended from basic science in the university laboratory to applications on agricultural fields. He has used state-of-the-art DNA sequencing approach to investigate soybean genomes, to show the genomic diversity in wild soybeans, to identify a salt tolerance gene, and to complete a reference genome for wild soybean. Through collaboration with Professor Zhang Guohong of the Gansu Academy of Agricultural Sciences, Professor Lam used his scientific findings from basic research to generate three new stress tolerant soybean cultivars, that are suitable for cultivation on marginal lands suffering from high salinity and drought. While the genomic, genetic, physiological, biochemical, and molecular researchers are good examples of STEM elements, the applications of his scientific findings in arid regions of North-West China is a solid real-life example of “A” – the humanity part of STEAM, providing an inspiring model for STEAM education to local high school students.

講者簡介 Speaker Biography

香港中文大學生命科學學院林漢明教授是土生土長的香港科學家，他同時亦擔任國家科技部批准成立的農業生物技術國家重點實驗室主任。在過去二十多年關注世界糧食安全問題。林教授尤其致力大豆研究，更將學術成果轉移至農業應用。近年亦積極透過大豆研究推動香港的 STEM 教育。

Professor Lam Hon Ming of School of Life Sciences, CUHK is a native Hong Kong scientist. He is the Director of the State Key Laboratory of Agrobiotechnology, a national level laboratory approved by the Ministry of Science and Technology, PRC. For over 20 years, his research has been focusing on global food security issues, especially on soybean research. He has also translated some of his scientific findings into agricultural applications. Professor Lam also actively promotes STEM education using his own soybean research.

尋找最佳投資組合
Optimal Investment Portfolio

統計學系 邱俊業 教授
Professor YAU Chun Yip
Department of Statistics

摘要 Abstract

本講座，我們將探討如何建立一個最佳資產組合，能在給定的風險水平下，得到最大的預期收益 ； 或在給定的預期回報水平下，使得風險最小。我們會介紹如何利用矩陣、微積分和概率來將上述問題轉化為一個數學的問題。這個問題是由美國學者 Harry Markowitz 提出亦由於這項工作，他於1990年獲得諾貝爾經濟學獎。但是，在大數據時代，這種方法面臨著一些新的挑戰。我們將探索該研究領域的最新進展及其如何應對這些挑戰。

In this lecture, we consider the problem of constructing an optimal portfolio of assets such that the expected return is maximized for a given level of risk, or equivalently, the risk is minimized for a given level of expected return. Brief introduction to matrix, calculus, and probability will be discussed in order to set up a mathematical optimaization framework to this problem. This problem is introduced by American Economist Harry Markowitz, who was awarded a Nobel Prize in Economics in 1990 due to this work. In the big data era, this approach faces several challenges. We will explore recent advances in this research area in attempt to tackle these challenges.

講者簡介 Speaker Biography

邱俊業教授在2006年碩士畢業於香港中文大學，2010年獲得美國哥倫比亞大學統計學博士學位，隨即加入香港中文大學統計學系。邱教授現時為風險管理課程主任，主要研究項目包括時間序列分析，變點分析和統計金融。

Professor Yau Chun Yip obtained his M.Phil from the Chinese University of Hong Kong in 2006 and Ph.D. in Statistics from Columbia University in 2010. He then joined the Department of Statistics of CUHK, and is currently the Programme Director of the Risk Management Science Programme. His research interests include time series analysis, change-point analysis and statistical finance.