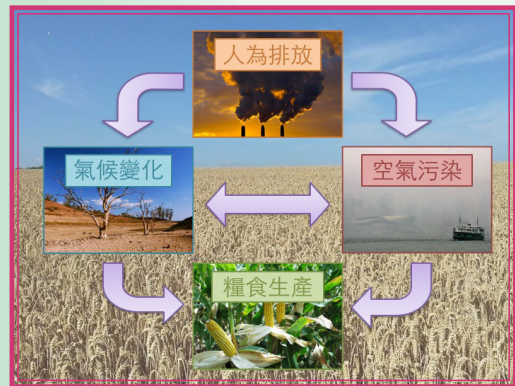


# 氣候變化下的全球糧食危機

## Global Food Crisis under Climate Change



主講 Speaker:

戴沛權 教授  
Prof. TAI Pui Kuen Amos

地球系統科學課程  
Earth System Science Programme

### 摘要 Abstract

專家預測在21世紀中葉，由於人口上升和越趨普遍的多肉型西方飲食習慣，全球對糧食的需求將增多達兩倍，但糧食生產卻嚴重地受到各項環境問題所限制，氣候變化更是最影響農作物的威脅之一。同時，農業亦是溫室氣體的一個主要來源。當地球持續變暖，我們必須問，我們能否滿足全球日益增長的糧食需求以避免更多人挨餓，而同時減少對環境的破壞？講座中，我們將討論農業與環境的關係，以及氣候變化下糧食危機的科學根據，並探討農民、科學家、政府和個人可以甚麼方法來確保可持續的糧食供應。

Experts predict that the global demand for food will roughly double by the mid-21st century due to a rising population and a widespread shift toward a more westernized, meat-intensive diet. However, global food production is severely constrained by environmental threats. Global climate change, in particular, has been observed to substantially impact crop production worldwide. Meanwhile, agriculture is one of the biggest sources of greenhouse gases contributing to global warming. As our planet continues to warm, it is necessary to ask whether we are able to satisfy the growing global “appetite” for food without seeing more people go hungry, while minimizing environmental degradation. In this talk, we will discuss the scientific basis for agriculture-environment interactions and global food crisis under climate change, and explore different ways farmers, scientists, governments, and we as individuals may help environmentally and sustainably feed an increasingly hungry world.

### 講者簡介 Speaker's Biography

戴沛權教授現任中文大學理學院地球系統科學課程助理教授，主要研究氣候、大氣化學與生態系統之間的關係，當中以空氣污染、氣候變化、農業及公眾健康等與社會相關的課題為重點。戴博士畢業於美國麻省理工學院，其後在哈佛大學取得環境科學及工程哲學博士學位。他熱愛昆蟲，亦樂於向大眾推廣科普知識。

Professor Amos P.K. Tai is an Assistant Professor of the Earth System Science Programme of the Faculty of Science at CUHK. His research examines the interactions between climate, atmospheric chemistry and ecosystems, focusing on aspects with direct societal relevance such as air pollution, climate change, agriculture, and public health. Professor Tai obtained his B.Sc. degree from MIT, and Ph.D. in Environmental Sciences and Engineering from Harvard. He is an insect enthusiast, and delights in communicating science to a general audience.



## 柳愛華教授生平

### Biography of Prof. Lau Oi-wah

柳愛華教授一生致力在大學及高中推廣科學教育，於中文大學春風化雨三十五載。柳教授1968年加入崇基學院化學系任教。2003年自中文大學榮休。在職期間，積極參與大學教務以及書院服務，柳教授於1994至2003年期間擔任中文大學理學院院長達九年，83至86年以及94至03年出任香港中文大學校董，於1980年至2003年參與崇基學院院務委員會工作，86至95年代表院務委員會出任崇基學校校董。1977年至1985年出任崇基學院獎學金委員會主席，又於1987年至2003年出任崇基學院體育委員會主席。柳教授於03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。

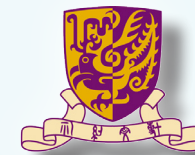
出任大學理學院院長九年期間，在柳教授的領導下，理學院擔任前線科學家及普羅市民的橋樑，與大眾一同分享科研成果。柳教授亦明白到，必須培養年輕一輩學子對科學的熱情，以及將科學知識傳遞至各階層人士，拉近科學與香港市民的距離。

理學院全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2004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2005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 Prof. 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, Prof. 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, 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.



香港中文大學理學院  
Faculty of Science, The Chinese University of Hong Kong

## 第十一屆

# 柳愛華紀念科學講座

The 11<sup>th</sup> Lau Oi Wah  
Memorial Science Lecture Series

日期：2015年3月7日 (星期六) Date: 7 March 2015 (Saturday)

時間：上午九時三十分至下午十二時三十分 Time: 9:30a.m. - 12:30p.m.

地點：香港中文大學康本國際學術園1號演講廳

Venue: LT1, Yasumoto International Academic Park, CUHK

| 時間 Time       | 程序表 Programme  | 講者 Speaker  |
|---------------|--|---|
| 09:30 – 09:45 | 登記 Registration  |   |
| 09:45 – 10:00 | 開幕禮 Opening Ceremony                                       |   |
| 10:00 – 10:45 | 微型殺手伊波拉<br>Ebola: The Micro-Killer                         | 彭珏琰博士<br>Dr. PANG Kok Shuen<br>School of Life Sciences<br>生命科學學院          |
| 10:50 – 11:35 | 弦理論中的幾何與物理<br>Geometry & Physics<br>in String Theory       | 梁迺聰教授<br>Prof. LEUNG Nai Chung<br>Department of Mathematics<br>數學系        |
| 11:35 – 11:45 | 小休 Break   |   |
| 11:45 – 12:30 | 氣候變化下的全球糧食危機<br>Global Food Crisis<br>under Climate Change | 戴沛權教授<br>Prof. TAI Pui Kuen<br>Earth System Science Programme<br>地球系統科學課程 |



理學院及柳愛華紀念基金主辦  
Organized by The CUHK Faculty of Science & The Lau Oi Wah Memorial Fund

[www.cuhk.edu.hk/sci/memorialtalk](http://www.cuhk.edu.hk/sci/memorialtalk)  
Email: [sfo@cuhk.edu.hk](mailto:sfo@cuhk.edu.hk) Facebook: CUHKScience





## 理學院院長的話 Message from the Dean of Science

The Lau Oi-Wah Memorial Science Lecture Series was established in 2005, in recognition of Prof. Lau Oi-Wah's contribution to Science Education at The Chinese University of Hong Kong (CUHK) and to Hong Kong in general.

Professor Lau obtained her B.Sc. degree in 1965 from The University of Hong Kong (HKU). She joined Chung Chi College of CUHK as an Assistant Lecturer in 1968, during which she was still working on her Ph.D. thesis. After the completion of her doctoral degree in inorganic chemistry in 1970 at HKU, she became a

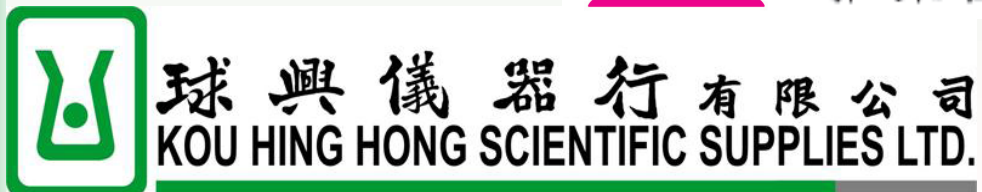
Lecturer at CUHK. She was promoted to Senior Lecturer in 1982 and Reader in 1993. She was awarded a Leverhulme Foundation Fellowship in 1971 by Imperial College, London and an Honorary Research Fellowship in 1978 by the University of Birmingham. Professor Lau became a Chartered Chemist and an elected Fellow of the Royal Society of Chemistry, U.K., in 1981. She was elected to the Deanship of the Science Faculty for three successive terms, from 1994 to her retirement in 2003.

Professor Lau was a dedicated teacher and a caring research advisor who always put her students' learning and benefit first. During her academic career, she supervised seven Ph.D. students and about 30 M.Phil. students. To many of us who knew her well, she was a passionate educator with a warm personality. During her Deanship, she had successfully pushed for the establishment of many interdisciplinary teaching and research programmes, which remains a direction for curricula developments of the Faculty of Science for the years to come. In addition to university teaching, Professor Lau had also initiated an effort to promote science education in local secondary schools.

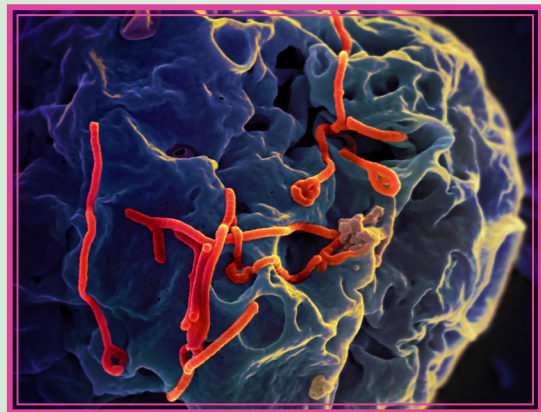
After the passing of Professor Lau, her friends and students have established a memorial fund to support the Lau Oi-Wah Memorial Science Lecture Series in order to recognize Professor Lau's contribution to science education in Hong Kong and to commemorate her commitment to education. The Lecture Series continues to inspire young people to pursue further studies and careers in Science. Professor Lau's legacy has indeed lived on through the gift of learning as we all wish.

Henry N.C. Wong, Dean of Science

## 鳴謝 Acknowledgements



## 微型殺手伊波拉 Ebola: The Micro-Killer



主講 Speaker:

彭珏琬 博士  
Dr. PANG Kok Shuen Iris

生命科學學院  
School of Life Sciences

### 摘要 Abstract

由二零一四年三月爆發至今的伊波拉疫症，是從一九七六年首次發現伊波拉病毒後最大的疫情。伊波拉病毒的基因組非常簡單，由單鏈核糖核酸組成，當中只有七組基因（對比之下，人類的基因組有大概二萬組基因）。儘管如此，伊波拉卻是已知病毒中最致命的其中一種，讓差不多一半患者死亡。為什麼這種微少的病毒能帶來如此嚴重的傷害？講座中，我們將會討論伊波拉病毒的特性及人類免疫系統在感染後的反應。我們亦會簡介防預和治療伊波拉病症的研究。

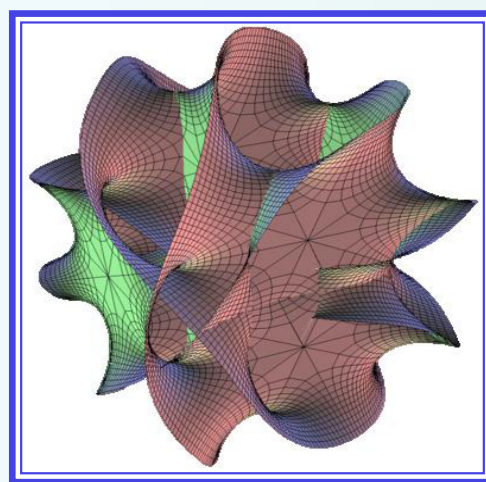
The current Ebola outbreak that started in West Africa in March 2014 is the largest in history since the virus was first discovered in 1976. Ebola virus has a simple genome, consisting of a single strand of RNA that codes for seven genes (compared to about 20,000 genes in the human genome). However, Ebola virus is one of the deadliest viruses known to mankind, killing on average 50% of those infected with the virus. How can these tiny viruses cause so much damage to the host? In this talk, we will explore the biology of Ebola virus and learn how the immune system responds to Ebola virus infection. We will also discuss some potential emerging options for the treatment and prevention of Ebola virus disease.

### 講者簡介 Speaker's Biography

彭珏琬博士現為中文大學生命科學學院講師。她從西雅圖華盛頓大學完成細胞、分子及發育生物學理學士課程，並於耶魯大學獲得免疫學博士資格。她的博士論文題目是研究免疫系統如何對抗感冒病毒的感染。她曾於香港大學進行博士後研究，直至2013年入職中文大學。

Dr. Iris K.S. Pang is currently a lecturer in the School of Life Sciences at The Chinese University of Hong Kong (CUHK). She received her B.Sc. degree in Cell, Molecular and Developmental Biology from the University of Washington, Seattle. Dr. Pang went on to obtain her PhD in Immunobiology at Yale University, where she studied how the immune system defends against influenza virus infection. She was previously a post-doctoral researcher at the University of Hong Kong before joining CUHK in 2013.

## 弦理論中的幾何與物理 Geometry & Physics in String Theory



主講 Speaker:

梁迺聰 教授  
Prof. LEUNG Nai Chung Conan

數學系  
Department of Mathematics

### 摘要 Abstract

物理中的弦理論是一個全面性的理論。它的時空有一個六維的隱藏空間，稱之為「卡拉比-丘」空間。大部份的物理現象都取決於這個空間的幾何結構。反過來說，物理中的對稱理論也導致對這種幾何的革命性的新理解。在這個演講中，我會介紹這個近年來非常活躍的研究發展。

String theory in Physics is "a theory of everything". The Spacetime has a six dimensional hidden space, called "Calabi-Yau" space. Much of the physics is controlled by the geometry of this Calabi-Yau Space. Conversely, symmetry in physics also revolutionizes our understanding of this geometry. In this talk, I will describe this recent exciting development.

### 講者簡介 Speaker's Biography

梁迺聰教授1993年於美國麻省理工學院取得博士學位，並曾得到丘成桐教授及辛格教授指導。他於1994年在紐約大學完成博士後研究，隨後加入美國明尼蘇達大學擔任助理教授，及後升任為教授。至2004年，他加入香港中文大學數學系及數學科學研究所。梁迺聰教授曾榮獲2010年陳省身獎，以表彰他在鏡像對稱和量子上同調研究中的重要貢獻。

Professor Conan N.C. Leung received his PhD degree from the Massachusetts Institute of Technology (MIT), USA in 1993 under the advisory of Professor Yau Shing Tung and Professor Isadore M. Singer. He completed his postdoctoral research in the New York University in 1994. Then, he joined the University of Minnesota in USA as Assistant Professor and later promoted to Professor. In 2004, he joined the Mathematics Department and the Institute of Mathematical Sciences of the CUHK. Professor Leung was awarded the 2010 Chern Prize for his significant research contributions in the study of mirror symmetry and quantum cohomology.