



香港中文大學理學院

Faculty of Science, The Chinese University of Hong Kong

# SCIENCE FACULTY

## *Research Day 2014*

Date: 29 May 2014 (Thursday)

Time: 9:30a.m. - 12:30p.m.

Venue: L2, Science Centre, CUHK

*CUHK*

**Faculty of Science**

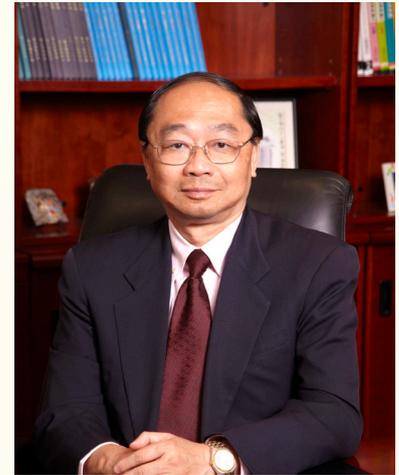


# EVENT PROGRAMME

- 09:30 - 09:45      Opening Ceremony
- 09:45 - 10:45      **The Science of Climate Change**  
*Professor Gabriel N.C. Lau*  
AXA Professor of Geography and Resource Management  
Director, Institute of Environment, Energy and Sustainability
- 10:45 - 11:05      Tea Break
- 11:05 - 11:25      **RGC-AoE “Centre for Organelle Biogenesis and Function”**  
*Professor Jiang Linen*  
Director, AoE Centre for Organelle Biogenesis and Function  
Professor, School of Life Sciences  
Outstanding Fellow of the Faculty of Science
- 11:25 - 11:45      **Searching for New Physics with the Large Hadron Collider**  
*Professor Chu Ming-chung*  
Professor, Department of Physics
- 11:45 - 12:05      **Daily Life of a Member of RGC Panel**  
*Professor Chan Ngai-hang*  
Choh-Ming Li Professor of Statistics
- 12:05 - 12:25      **Research Activities at Faculty of Science**  
*Professor Xie Zuowei*  
Choh-Ming Li Professor of Chemistry  
Associate Dean (Research)
- 12:25 - 12:30      Event Closing

# Message from the Dean of Science

**W**elcome to the Science Faculty Research Day 2014. This annual event has been an important annual platform bringing together the researchers behind some of the Faculty's finest endeavours in cutting-edge research, so that new ideas can be propagated and new sparks for collaboration may result. The focus of this year's event is two-fold, to highlight an emerging interdisciplinary field of science at our Faculty, and to share with our guests some insights and experiences on building grant-winning teams of collaboration.



In 2012, the Science Faculty established the Earth System Science Programme in response to the need to systematically study how our planet Earth works, and to probe and address many critical issues of public concern and are crucial to the future of society. With this in mind, the Faculty is pleased that our own Physics 1974 alumnus, Prof. Gabriel N.C. Lau, AXA Professor of Geography and Resource Management and Director of the Institute of Environment, Energy and Sustainability, will be our keynote speaker. With a wealth of experience researching global climate change, Professor Lau will provide an overview lecture on the key forces driving climate change and their trends over the past century.

Following Professor Lau's sharing on his work on climate change, we will feature several concise talks delivered by our faculty members, focusing on the path to obtaining major grants for research, as well as an overview of the current research activities at our Faculty. Our presenters for this section all have solid grant records, having received major grants such as Area of Excellence, Collaborative Research Fund, and multiple General Research Funds. One of the presenters is a recognized expert in his field, and will be sharing with you his observations as a member of a Research Grants Council Panel. Last but not least, our Associate Dean (Research) will also bring you an outline of our Faculty's recent research.

We at the Science Faculty take pride in nurturing innovative research, and we hope that Research Day will serve as a platform for all to exchange ideas and spark fruitful collaborations. Thank you for joining us in our celebration of excellence in research.

Yours sincerely,

A handwritten signature in blue ink, which appears to read 'Henry N.C. Wong'. The signature is stylized and fluid.

Henry N.C. Wong

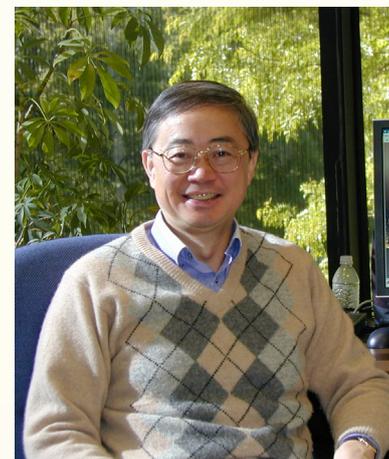
Presentation Abstracts

*and*

Speaker Introductions

# Professor Gabriel N.C. Lau

*Department of Geography and Resource Management*



**AXA Professor of Geography and Resource Management  
Director, Institute of Environment, Energy and Sustainability**

Gabriel Ngar-Cheung Lau (劉雅章) is the AXA Professor of Geography and Resource Management at The Chinese University of Hong Kong (CUHK). He previously served as the lead scientist of the Climate Diagnostics Project at the Geophysical Fluid Dynamics Laboratory (GFDL) of the U.S. National Oceanic and Atmospheric Administration (NOAA). He was concurrently a Lecturer with the rank of Professor at the Department of Geosciences and Program of Atmospheric and Oceanic Sciences at Princeton University.

Professor Lau was born in Hong Kong and spent his youth in this city. He majored in physics at United College, CUHK, and received the B.Sc. degree in 1974. He proceeded to pursue graduate studies at the University of Washington in Seattle, and received the Ph.D. degree in atmospheric sciences in 1978. He then went to Princeton and was associated with the research and teaching programs at GFDL throughout the 1978-2013 period.

He has authored or coauthored over 100 publications in various scientific journals, and has been designated as a Highly Cited Researcher by the ISI Web of Knowledge. He was a contributing author of the Fourth Assessment Report, and a lead author of the Fifth Assessment Report, of the Intergovernmental Panel on Climate Change (IPCC), which was recognized by the Nobel Peace Prize (2007).

## The Science of Climate Change

A brief review is given of the primary drivers of climate change and the salient climate trends in the past century. Emphasis is placed on the signals detected in Hong Kong. Projections of the future development of these trends in the 21<sup>st</sup> century are presented. A campus-wide survey is made of the teaching, research and outreach programmes at CUHK that are concerned with different facets of the earth's environment. A vision is articulated for the integration and coordination of these individual efforts to address broad climate change issues.



## Professor Jiang Liwen

*School of Life Sciences*

**Director, AoE Centre for Organelle Biogenesis and Function**  
**Outstanding Fellow of the Faculty of Science**  
**Professor, School of Life Sciences**

Dr. Jiang Liwen (姜里文) joined the Department of Biology of CUHK as an Assistant Professor in 2000 and was promoted as Professor in 2007. Dr. Jiang's research focuses on plant cell biology, organelle biogenesis and function. Dr. Jiang received awards for teaching and research achievements, including the CUHK Science Faculty Exemplary Teaching Award 2008, twice winning the CUHK Research Excellence Award (2006-07 & 2009-10), the Croucher Senior Research Fellow 2009-10, twice winning the Ministry of Education (MOE) Higher Education Outstanding Scientific Research Output Awards (2009 & 2013) and Outstanding Fellow of the Faculty of Science (2013). Postgraduate students of Dr. Jiang's laboratory have also received prestigious awards, including four times winning the Award for the Best Research Output by Research Postgraduate Students of CUHK (2004, 2006, 2009 & 2013) and twice winning the Human Frontier Science Program (HFSP) Long-Term Fellowship Awards (2009 & 2010) and the Keystone Symposium Scholarships (2007 & 2012).

## RGC-AoE “Centre for Organelle Biogenesis and Function”

With the strong support from the University, Faculty of Science and School of Life Science, our one-year team effort in the application of the Sixth Round of RGC AoE Scheme paid off: we were awarded a grant at HK\$47.25M to establish the “Centre for Organelle Biogenesis and Function”. Our AoE team consists of eleven PIs from CUHK of SLS, SBC, Mathematics, and Electronic Engineering, four PIs from sister Universities (HKU, HKBU and HKUST), and four international collaborators including the Nobel Laureate Prof. Randy Schekman. Here I will share my personal experience during the course of our AoE application and introduce our team-effort on studies of organelle biogenesis and function in eukaryotes. With continuous support from CUHK/FOS/SLS, we strive to develop our project into an internationally recognized Research Centre for collaborative research on Organelle Biogenesis and Function.



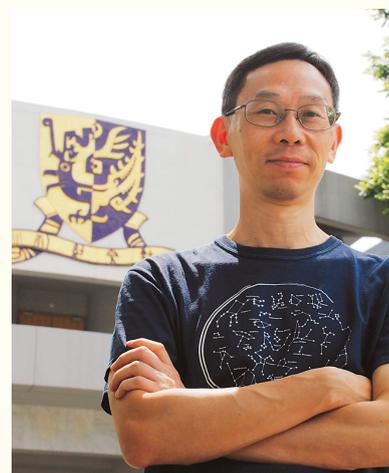
Professor Jiang (6<sup>th</sup> from left) and members of the AoE Centre for Organelle Biogenesis and Function.

# Professor Chu Ming-chung

*Department of Physics*

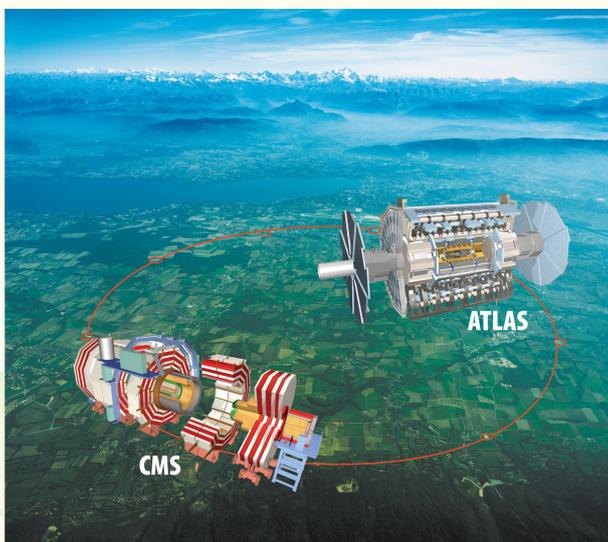
**Professor, Department of Physics**

Professor Ming-chung Chu (朱明中) obtained his B.Sc. and PhD degrees both at California Institute of Technology (Caltech). He held research positions at MIT and Caltech before joining The Chinese University of Hong Kong in 1995. His current research interest includes astrophysics, cosmology, and particle physics.



## Searching for New Physics with the Large Hadron Collider (LHC)

**B**uilt upon our successful experience in the Daya Bay Reactor Experiment and the supporting Aberdeen Tunnel Experiment, and the strong collaboration both between institutions in Hong Kong and between the Hong Kong team and leading institutes overseas and in China, a Hong Kong experimental particle physics group has been formed to join the ATLAS Collaboration, one of the two major Large Hadron Collider (LHC) experiments at CERN. Deploying the largest detectors and highest energy particle accelerator in the world, the LHC experiments are well positioned for making breakthrough discoveries in fundamental physics. The LHC runs in 2011-3, even though still at roughly half of the designed energy, already produced a huge volume of data. The discovery of the Higgs particle is indeed a result of these runs. We plan to search for new physics beyond the Standard Model of Particle Physics, utilizing data when the beam energy and luminosity both increase drastically with the new LHC run, in 2014. We will also work on the hardware development, reconstruction and simulation of the muon system, as our contribution to the upgrade of the ATLAS detector. This Hong Kong experimental particle physics group will also benefit from interacting with the particle theory and astrophysics groups under the Joint Center of Fundamental Physics. With the manpower and resources from CUHK, HKU and HKUST together, we believe we can make meaningful contributions to experimental particle physics, one of the most important endeavors in human being's quest to understanding Nature.



The ATLAS detector and Large Hadron Collider (LHC) at CERN.

*Illustration courtesy of CERN.*



## **Professor Chan Ngai-hang**

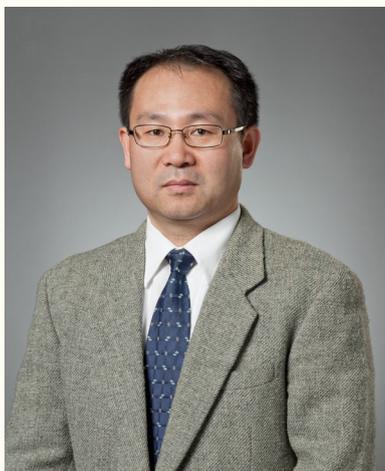
*Department of Statistics*

### **Choh-ming Li Professor of Statistics**

Professor Ngai Hang Chan (陳毅恒) is the Choh-Ming Li Professor of Statistics at CUHK. He has served as a panel member on various committees of the RGC, NSF and NSERC. He is currently also a Chang Jiang Scholar holding a Chair Professor of Statistics at the Renmin University of China, Ministry of Education, PRC.

## **Daily Life of a Member of RGC Panel**

**T**his talk will discuss some of the basic facts about RGC panel meetings. Information about programs and grants evaluation will be discussed. In particular, some of the dos and don'ts about grant applications will be shared.



## **Professor Xie Zuowei**

*Department of Chemistry*

**Choh-ming Li Professor of Chemistry  
Science Faculty Associate Dean (Research)**

Professor Xie Zuowei (謝作偉) is Choh-ming Li Professor of Chemistry and Science Faculty Associate Dean (Research) at The Chinese University of Hong Kong. He is an internationally well-known chemist with expertise in organometallic chemistry, and he is distinguished for his work in the areas of carboranes, supercarboranes and metallocarboranes. His work has been highlighted in *Chemical & Engineering News* several times. Professor Xie has received several prestigious awards including the State Natural Science Awards in 2008 and 1997, the Chinese Chemical Society Yao-Zeng Huang Award in Organometallic Chemistry in 2010, and the Croucher Award from the Croucher Foundation (Hong Kong) in 2003.

### **Research Activities at Faculty of Science**

**T**he Science Faculty of The Chinese University of Hong Kong is actively expanding the frontiers of a number of scientific disciplines. With the hard work and dedication of our investigators, we have been able to obtain generous support for our research, and are striving to publish more of our scientific breakthroughs to share our findings and exchange ideas with other scientists in a timely manner. In addition to building on our existing strengths, the Faculty also looks forward to breaking new grounds in emerging areas of science.

## 卓越研究



## Excellence in Research

The Faculty of Science is proud to be the home of more than a hundred dedicated scientists conducting cutting-edge research in various areas of science. Our staff and students remain committed to our Faculty's Mission in expanding the frontiers of human knowledge, aiming to build a better world for the future.

理學院擁有一支充滿熱誠的科研隊伍，逾百名科學家在多個領域進行尖端研究。我們的教職員與學生將秉承一貫的宗旨，擴展人類知識領域，為未來建立一個更美好的世界。

**SCIENCE FACULTY**  
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