



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



Popular Science Special Lecture Series:

# How Nobel Prizes Are Won

Lectures explaining Science behind 2021 Nobel Prizes  
 in Chemistry, Physiology or Medicine, and Physics

**3 Dec 2021 (Fri) · 4:30 – 6:50pm**  
 LT1A, Cheng Yu Tung Building, CUHK

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 Physical seats are limited and  
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## 分子感應器助你感知世界 Perceiving the World through Molecular Sensors

劉振宇 教授 Prof. LAU Chun Yu Wilson  
 生命科學學院 School of Life Sciences  
 廣東話主講 In Cantonese



## 不對稱有機催化的發展 Development of Asymmetric Organocatalysis

徐哲 教授 Prof. TSUI Chit Gavin  
 化學系 Department of Chemistry  
 英語主講 In English



## 從複雜系統到簡單物理： 四分之一個諾貝爾物理學獎的故事 From Complexity to Simplicity: The Story of a Quarter of a Nobel Prize in Physics

譚志勇 教授 Prof. TAM Chi Yung Francis  
 地球系統科學課程 Earth System Science Programme  
 廣東話主講 In Cantonese



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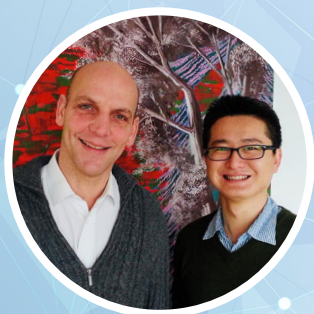
### Perceiving the World through Molecular Sensors

劉振宇 教授 Prof. LAU Chun Yu Wilson

生命科學學院 School of Life Sciences

今年諾貝爾生理學及醫學獎授予了兩位科學家，表揚他們發現感知溫度和觸覺基因的貢獻。他們的突破性研究為理解許多生理反應奠定基礎，並可能為長期性疼痛及心臟病等提供新的治療方法。

This year's Nobel Prize in Physiology or Medicine was awarded to two scientists who discovered the genes for sensing temperature and touch. Their groundbreaking discoveries have laid the foundation for understanding numerous physiological processes and could lead to new treatments for chronic pain and even heart disease.



徐哲教授 (右) 與 Benjamin List 教授 (左)  
Prof. Tsui Chit Gavin (right) & Prof. Benjamin List (left)

## 不對稱有機催化的發展

### Development of Asymmetric Organocatalysis

徐哲 教授 Prof. TSUI Chit Gavin

化學系 Department of Chemistry

在今次講座中，我將介紹不對稱有機催化發展的歷史背景，以及它如何改變化學家的思考方式和進行有機合成的方法。我還會分享自己在博士後期間，與今年諾貝爾化學獎得主之一 Benjamin List 教授一起工作的經歷。

In this lecture, I will give an overview and historical background of the development of asymmetric organocatalysis, and how it has changed the way chemists think about and carry out organic synthesis. I will also give a personal account on my experience working with one of the Nobel laureates Professor Benjamin List during my postdoctoral training.

## 從複雜系統到簡單物理：四分之一個諾貝爾物理學獎的故事

### From Complexity to Simplicity: The Story of a Quarter of a Nobel Prize in Physics

譚志勇 教授 Prof. TAM Chi Yung Francis

地球系統科學課程 Earth System Science Programme

2021 年諾貝爾物理學獎由三位科學家獲得，以表彰他們對複雜現象的研究。地球氣候是自然界中複雜系統的例子之一。本講座主要介紹獲頒四分之一個諾貝爾物理學獎的真鍋淑郎博士，在開發氣候模式方面的工作。他在 1967 年發表的論文首次考慮了輻射傳遞和大氣對流之間的相互作用。這也是第一篇計算關於二氧化碳濃度氣候敏感性的論文。真鍋博士的一系列研究奠定了地球系統模式的發展。今天我們得以利用氣候模式來預測厄爾尼諾，以至全球暖化，實有賴於真鍋的貢獻。

The 2021 Nobel Prize in Physics is shared by three scientists for their studies of complex phenomena. The Earth's climate is one example of complex systems found in nature. This lecture mainly introduces the pioneering work of Dr. Syukuro Manabe, one of the three Laureates, on the development of physical models of climate. His insightful paper in 1967 considered, for the first time, the interaction between radiative transfer and atmospheric convection. It was also the first paper to compute the sensitivity of the Earth's climate to increased CO<sub>2</sub> concentration. All these were achieved using a simplified climate model. The insights and experience gained from a series of his papers shaped the historical development of comprehensive Earth System Models- a powerful tool based on which we predict climate behaviors from El Niño-Southern Oscillation to global warming.

