

Lectures on Modern Chemistry 2022 (Webinar)

Department of Chemistry
The Chinese University of Hong Kong

Programme

Talk 1: 30 June 2022, Thursday (Cantonese)

4:00 – 5:00 pm Prof. Hung Wing LI
Seeing You in the Darkness
漆黑中找理
Registration Before: 24 June

Talk 2: 22 July 2022, Friday (English)

4:00 – 5:00 pm Prof. Jiang XIA
Genetic Scissors: Nobel Prize in Chemistry 2020
2020 年諾貝爾化學獎 – 基因剪刀
Registration Before: 15 July

Talk 3: 12 August 2022, Friday (Cantonese)

4:00 – 5:00 pm Prof. Ying Lung Steve TSE
Exploring Chemistry on Computers
從電腦世界探索化學
Registration Before: 5 August

Live on **ZOOM Webinar**

Targets: Senior science secondary school students (S.4 – S.6)

Free Registration: <https://bit.ly/39DZYex>

Enquiry: Department of Chemistry,
The Chinese University of Hong Kong
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Tel: (852) 3943 6300
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QR Code for
Registration



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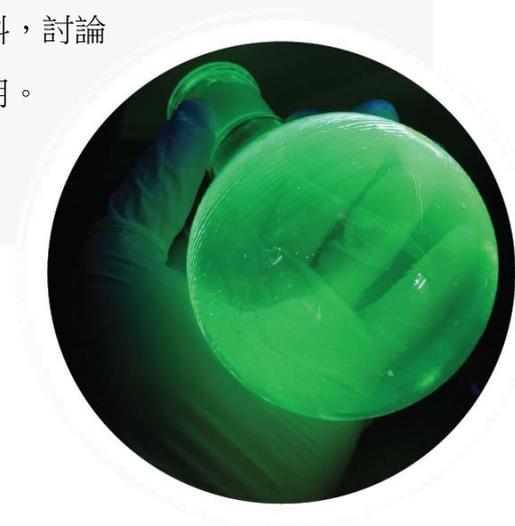
Talk 1: 30 June 2022 (Thursday)

Seeing You in the Darkness

Prof. Hung Wing LI

Matters interact with light. Some absorb light while some emit light. In science, fluorescence is the emission of light by a substance that absorbs light and be excited. In this talk, different classes of fluorescent materials will be introduced. Their important roles and applications in science, daily life, medical and forensic sciences will also be discussed.

物質與光相互作用，有些吸收光，而有些則發光。在科學上，熒光是吸收光並被激發的物質發出的光。在本次演講中，將介紹不同種類的熒光材料，討論它們在科學，日常生活，醫學和法醫學中的重要作用和應用。



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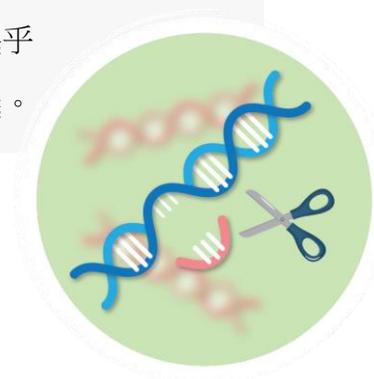
Talk 2: 22 July 2022 (Friday)

Genetic Scissors: Nobel Prize in Chemistry 2020

Prof. Jiang XIA

The Nobel Prize in Chemistry was awarded to two eminent woman scientists in 2020 to honour their work on the development of a method for genome editing. Since the discovery of DNA which revolutionized our understanding of life in 1950s, people have long been dreaming of doing chemical reactions on these genetic materials. A long list of tools to manipulate these molecules has been developed in the past 70 years. The most recent and outstanding one is the “genetic scissor” that can cut and paste DNA in a cell at almost any position. I will introduce this technology and its powerful applications and the controversy during the talk.

2020 年的諾貝爾化學獎由兩位傑出的女性科學家獲得。她們發現並發展一種修剪基因的工具。在 1950 年代，自人類發現基因後，通過化學反應來修改基因物料一直是人們長久以來的夢想。因而在過去的 70 年，大量的基因物料編輯器被研發。現時最新及最出色的基因編輯器便是「基因剪刀」。「基因剪刀」能修剪並貼上細胞內幾乎任何位置的基因。我將會介紹這項技術，它的應用，以及它背後的爭議。

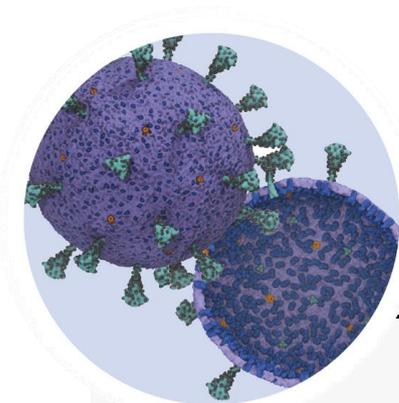


Lectures on Modern Chemistry 2022

Talk 3: 12 August 2022 (Friday)

Exploring Chemistry on Computers

Prof. Ying Lung Steve TSE



Right after World War II, computers first became available to scientists to study physical problems. Since then, computers have become an invaluable tool for understanding molecular processes.

Nowadays, thanks to the tremendous speed increase in computing power in the last few decades, we are able to simulate a variety of materials accurately. The advantages of carrying out these computer “experiments” are that we can easily and precisely control the experimental conditions and carefully study all the molecular details of the observed phenomena, whereas it may not be always possible to have such control and molecular resolutions in a real experiment. In this talk, I will discuss some examples for how experiment and simulation influenced and motivated the research directions of one another, and I will show how the joint efforts of experiment and simulation have advanced our understanding of the sciences. Finally, I will discuss the role of computer simulation in the fight of COVID-19.

科學家自第二次世界大戰後開始利用電腦研究自然科學問題。從那時起，電腦就成為研究分子過程不可或缺的工具。

過去幾十年來，電腦計算能力迅速提高，如今我們已能利用電腦準確地模擬各種材料。這些電腦“實驗”令我們能簡單而精準地控制實驗條件，並且能仔細研究其中的分子機制。這樣的精準度及分子解像度都是一般實驗難以實現的。在這次演講中，我將會以一些例子來說明實驗和電腦模擬如何互相影響及推動彼此的研究方向。我亦會展示實驗和電腦模擬如何合作提高我們對科學的認知。最後，我會討論電腦模擬在我們與 2019 年新型冠狀病毒肺炎的對抗中扮演著一個怎樣的角色。

