



香港中文大學
院士講座系列

The 13th Lecture Series by Academicians from the Chinese Academy of Sciences (CAS)

Jointly Organized by
Department of Biomedical Engineering
China Engagement Office

Speaker: Prof. Zhao Yuliang
Division of Chemistry
Chinese Academy of Sciences
中國科學院化學部趙宇亮院士



Title: 納米生物效應機制及其醫學應用
**The Bio-chemical Mechanism of
Nanomaterial Interacting with Living
System**

Date: Wednesday, 19 April 2023

Time: 14:45-16:00

Venue: 蒙民偉工程學大樓九樓演講廳
Lecture Theatre, 9/F,
William M W Mong Engineering Building

Registration: http://www.cuhk.edu.hk/cneo/cas_2023/



Biography

Prof. Yuliang Zhao, the Director-General, National Center for Nanosciences and Technology, China; Academician, Chinese Academy of Sciences ; Academician, The world Academy of Sciences (TWAS); Academician, Chinese Academy of Medical Sciences; Elected President, Chinese Association for Biomaterials; Vice President, Chinese Chemical Society; Vice President, Chinese Pharmaceutical Association; Editor-in-Chief, Nano Today, Elsevier, Netherlands.

Research Interest: Prof. Yuliang Zhao is a pioneer in the study of nano safety, having proposed the toxicology study of engineered nanomaterials and establishment of the first research laboratory in 2001. His work focuses on understanding the biological effects of nanomaterials, with a particular emphasis on establishing reliable and valid analytical methods for discovering their effects in vivo. Dr. Zhao also aims to understand the chemical mechanisms of nanosafety and ensure the safe application of nanomaterials. As a result of his research, a list of ISO standard analytical methods has been adapted by ISO/IEC 168 member countries. He has also established a nanosafety assessment framework for occupational exposure to nanomaterials, and has made significant contributions to the development of a new-concept nanomedicine for cancer therapeutics.

Prize/Awards: TWAS Prize in Chemistry, CAS Outstanding Science and Technology Achievement Prize, National Prize for Natural Sciences (twice), The Ho Leung Ho Lee Foundation Science and Technology Progress Prize, China Award for Outstanding Contribution on Toxicology, Beijing Award for Leading Talent in Science & Technology, etc.

Abstract

Changes in the chemical and biological activities of materials at the nanoscale can lead to unique interactions with biological systems, which is directly relevant to many newly emerging frontier sciences in multidisciplinary fields such as nanomedicine, nanobiotechnology, nanotoxicology, nanobiomedical engineering, and cancer nanotechnology. So far, key discoveries related to nanomaterials (NMs) and their interactions with biosystems include that (i) NMs may be the best candidate for the development of the next-generation of medicine, known as nanomedicine; (ii) NMs could easily penetrate biological barriers and adsorb blood proteins, forming a protein corona; (iii) NMs hold the possibility of crossing cell membranes and inducing intracellular reactive oxygen species (ROS), and (iv) nanosizes and nanosurface chemistry largely determine functions and fates of NMs in vivo or in vitro. During the talk, we will discuss the latest achievements in nanomedicine, focusing on smart nanomaterials that target and regulate the tumor microenvironment to improve therapeutic outcomes for cancer treatment.