

國立清華大學第 23 屆新進人員研究獎得獎人簡介

魯才德博士師承清華大學化學系廖文峯教授，攻讀博士班期間致力於過渡金屬配位錯合物的設計、合成、鑑定、光譜方法開發以及反應性的探討。2009 年取得博士學位後，於廖文峯教授實驗室延續完成博士班期間研究工作，並在科技部補助赴國外從事博士後研究獎學金的支助下，於 2011 年前往麻省理工學院化學系 Stephen J. Lippard 教授實驗室，在此期間，主要致力於探索抗老化相關金屬酵素-human CLK-1 的作用機制，此兩個階段的研究歷程啟發了魯博士於獨立研究生涯開端。

魯博士於 2013 年回台，加入中原大學化學系，並於 2017 年回到母校的生物醫學工程所任教。在其建立的生物無機化學及工程實驗室中，期望開發含過渡金屬為主的錯合物、奈米粒子及骨架材料，從這些金屬錯合物及材料的設計、製備及鑑定，並利用過渡金屬獨特的氧化還原、催化、導電性以及磁性，期望能達到控制具生物活性的一氧化氮、氫氣、二氧化碳分子的生成、傳遞、控制釋放及轉換，進而應用於生物醫藥及生醫材料的開發。

猶記 19 年前進入清華大學就讀，身為清華大學的校友，今日獲頒清華大學的新進人員研究獎是我莫大的榮幸！在此感謝指導老師及合作夥伴們一路以來的教導、支持、激勵及愛護；感謝從以前到現在的實驗室同仁們，很高興有此機會一起打拼，讓實驗室越來越茁壯；感謝家人們及摯愛的太太一直以來的支持。

Dr. Tsai-Te Lu received his Ph.D. degree (2009) from Department of Chemistry at National Tsing Hua University under the supervision of Prof. Wen-Feng Liaw. In addition to the support from NTHU President's Scholarship during his graduate study, Lu graduated with The Phi Tau Phi Scholastic Honor. After one-year postdoctoral research in the Liaw lab, Lu was awarded the Postdoctoral Research Abroad Program Fellowship to pursue the postdoctoral research in Prof. Stephen J. Lippard's lab (Department of Chemistry at MIT) through 2011 to 2013. After the training in synthetic inorganic chemistry and enzymology, Lu started his independent research career in Department of Chemistry at Chung Yuan Christian University from 2013 and joined Institute of Biomedical Engineering at National Tsing Hua University in 2017.

Research interests of the Lu lab focus on bioinorganic chemistry and engineering, which aims to develop metal-based medicine and biomaterials. One of our research objectives is translational application of nitric oxide and nitroxyl on development of regenerative medicine and novel therapeutic approaches for treatment of cancer, diabetes, and neurodegenerative diseases. Bottleneck for this translational application is (a) short lifetime of nitric oxide/nitroxyl (b) concentration-/location-/target-dependent activity of nitric oxide/nitroxyl, (c) lack of vehicle for oral and intracellular delivery of nitric oxide. Inspired by the natural dinitrosyl iron unit $[\text{Fe}(\text{NO})_2]$, Lu adopted his background in synthetic and bioinorganic chemistry to engineer the biomimetic dinitrosyl iron complexes (DNICs) as (i) a chemical tool for controlled delivery of nitric oxide/nitroxyl and (ii) a novel therapeutic approach for treatment of cancer and diabetes.

As an alumnus of NTHU, it is my great pleasure to receive the Young Investigator Award from NTHU. Without the continuous and interactive discussion, support, mentoring, contribution, and stimulation among former advisor, collaborators, students, and beloved family, I would not be able to achieve this intermediate milestone.