**Design Strategies and Applications of Self-Immolative Chemical Probes for Biosensing**

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**Abstract:**

The biosensor field is largely depending on the use of bio-recognition agents such as enzymes, proteins, antibodies or aptamers etc. Irrespective of high selectivity, their high production cost and instability are key limiting factors that hindering the applicability of biological receptors toward next stage of biosensor development. Our lab research is focused on circumventing this issue by designing a novel class of stimuli-responsive chemical probes that are either fluorescent or electrochemical. They are highly selective and reveal their signaling properties only by a specific user-designated chemical reaction. These biomimetic probes are highly stable at room temperature for several months, readily produced in large scales at low-cost, and amenable for easy storage and transportation. Our research over the past years indicating that these potential substrates are robust alternative to the fragile biological receptors, without compromising selectivity and sensitivity. Design and synthesis of such stimuli-responsive latent probes and applying them as the analytical tool for analytes detection are ongoing research efforts in my research group. Design strategies and applications of several latent fluorogenic and electrochemical probes which were completed by our group will be introduced in this talk.



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Sheng-Tung Huang currently is a distinguished professor at Institute of Biochemical and Biomedical Engineering in National Taipei University of Technology (TAIPEI TECH). After graduating from the University of California, Riverside with Bachelor’s and Master’s degrees in Biochemistry, Sheng took up doctoral work in the new direction of synthetic organic chemistry at Brandeis University. Upon receiving his PhD in Bioorganic Chemistry in 1998, he undertook the position of a medicinal chemist at a leading Taiwan pharmaceutical company, Scinopharm. In 2000, Sheng taught in the capacity of an assistant professor and associate professor at the Department of Biochemistry in Taipei Medical University. He joined the Department of Chemical Engineering and Biotechnology at National Taipei University of Technology (TAIPEI TECH) in 2005, where he later became a full professor. He had served as the Chair of Institute of Biotechnology and as the Dean of International Affairs, and he is currently the Dean of Academic-Industrial Cooperation at TAIPEI TECH. His research interests include developing innovated fluorogenic and electrochemical active molecules for biosensors, bioelectronics and bio-imaging, synthesizing novel anti-cancer agents, design and synthesizing DNA intercalators for electrochemical gene detection and preparing new efficient water vapor impermeable packaging materials for new generation of bendable solar cells and bio-electronic devices.