



生物科技學系
分子醫學與生物工程所
生物資訊及系統生物研究所
電話：03-5712121 轉 31983
E-mail：ysyang@cc.nctu.edu.tw
實驗室：酵素與蛋白質實驗室
實驗室網頁：<http://e021.life.nctu.edu.tw/~ysyang/>



楊裕雄 教授

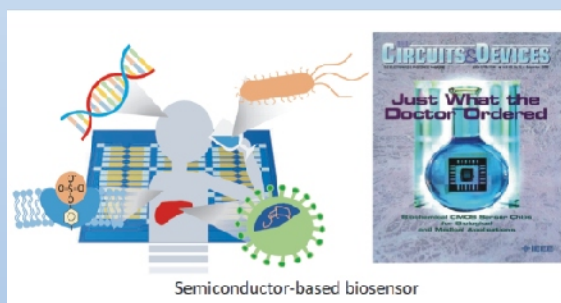
研究興趣

• 半導體元件於生物感測上之應用

針對生物檢測尚未被滿足之需求 (unmet needs)，整合生物分子檢測與半導體元件，尤其以超高靈敏、及時、無須標記與可攜式儀器之半導體電子元件為訴求，提供生醫電子領域新的發展方向。已研發之生醫感測元件有：

1. 補式金屬氧化半導體作為光感測器之酵素晶片光感測器。
2. 多晶矽奈米線場效電晶體生化感測元件。
3. 奈米碳管電晶體感測器。
4. 有機薄膜電晶體氣體感測。

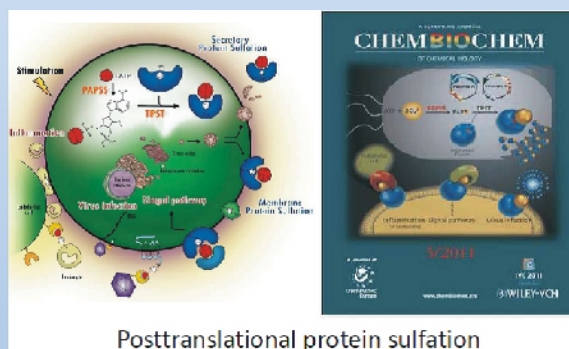
近期研究著重於細菌(細胞)檢測之產業應用。



Semiconductor-based biosensor

• 生物分子亞硫酸化酵素

亞硫酸化有毒物質是生物重要的解毒機制，許多重要的生物分子亦需藉由酵素催化之亞硫酸化反應進行調控，蛋白質轉譯後修飾及生物分子之亞硫酸化。我們的研究主要在了解酵素之催化反應機制、反應物之抑制、結構與功能，開發生物技術平台，分析蛋白質亞硫酸化之酵素活性及其後續蛋白質交互作用之影響，應用蛋白質微陣列晶片篩選受轉譯後修飾亞硫酸化之蛋白質，開發偵測蛋白質與亞硫酸化之蛋白質作用之方法及探討後續訊號傳遞。



Posttranslational protein sulfation



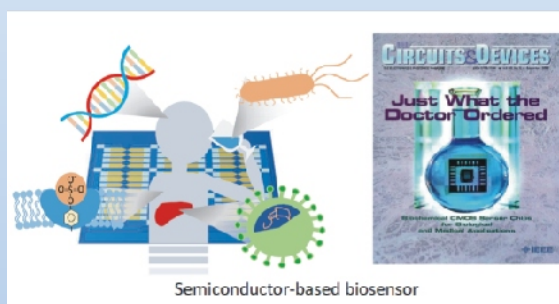
Professor, Department of Biological Science and Technology,
 Institute of Molecular Medicine and Bioengineering,
 Institute of Bioinformatics and Systems Biology
 TEL: 886-3-5712121 ext. 31983
 E-mail: ysyang@cc.nctu.edu.tw
 Lab: Laboratory of Enzyme and Protein Engineering
 Lab homepage: <http://e021.life.nctu.edu.tw/~ysyang/>

Yuh-Shyong Yang, Ph.D.

Research Interests

• Semiconductor-based biosensor:

We develop semiconductor-based sensing techniques and wish to provide solutions to unmet needs in molecular and cell/bacterial diagnosis. In particular, we are interested in using semiconductor device that can be developed to an ultra-high sensitivity, real-time, label-free biosensor and can be integrated to a portable instrumentation. We have developed 1. COMOS photodiode base enzyme sensor, 2. Polysilicon nanowire FET as biochemical sensor, 3. Carbon nanotube FET sensor and 4. OTFT-based gas sensor. Our recent focus is on the bacteria (cell) detection for industrial (commercial) applications.



• Biological sulfation enzyme:

Sulfation on xenobiotics is an important mechanism of detoxification. Many biologically important molecules are also regulated through sulfation catalyzed by specific sulfotransferase. We are interested in the mechanism, the inhibition and structure-function relationship of sulfotransferases. We developed sulfation platform techniques such as enzyme assay, production and purification of related enzymes and protein chip for the selection of proteins subjected to posttranslational sulfation modification, study on protein-protein interaction and identification following signal transduction.

