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Education

- 1987 - 1991 PhD, Department of Chemistry, Tulane University, USA
1985 - 1987 MS, Department of Chemistry, National Cheng Kung University, Taiwan
1977 - 1981 BS, Department of Chemistry, National Tsing Hua University, Taiwan

Experience

- 2014- Dean, College of Science, NCTU
2014-2014 Visiting scholar, NMI, University of Tübingen, Germany
2011-2013 Director of Chemistry division, National Science Council, Taiwan
2007-2007 Visiting scholar, Linköping University, Sweden
2007-2007 Dean of Student Affairs, NCTU
2004-2005 Panel of Biochemistry Division, National Science Council, Taiwan
2005-2005 Panel of Biochemistry Division, National Science Council, Taiwan
2004 -2006 Chair, Department of Applied Chemistry, NCTU
2002 -present Professor, Department of Applied Chemistry, NCTU
2001-2001 Visiting scholar, University of British Columbia, Canada
1993-2001 Associate professor, Department of Applied Chemistry, NCTU
1991 -1993 Post-doctoral Fellow, Pharmacology and Molecular Science Department,
School of Medicine, Johns Hopkins University, USA

Research Field

Protein Engineering, Enzymology, Bio-analysis, Bio-sensing, Bio-conjugation

Research Interests

We are “Cross-disciplinary Enzyme Research Lab” of the Applied Chemistry Department, NCTU. Our primary research interests include the following three major parts:

(a) **Enzyme-based Catalytic Biological Reactions:** We have developed all-around biological techniques and tools to synthesize various oligosaccharides and glucoside compounds which can be useful in many biomedical applications. Besides, we invented an “one-pot” protein purification process, including our unique controllable peptide cleavage technology (US Patent issued), which allows us to efficiently purify copious amount of proteins without running chromatography.

(b) Bio-sensors: In the past ten years, our lab has led an interdisciplinary bio-sensor R&D team crossing different departments of NCTU, and achieved several major technical milestones toward our ultimate goal of commercialization, including chip surface modification by molecule-level self-assembly, protein/antibody immobilization and biological signal read-out electrically or opto-electronically.

(c) Solid-state / Biological Interface Chemistry: Recently, we have been intensively focused on the design and synthesis of versatile chemical linkers which can interface between the solid-state nanoparticles (e.g. Si QDs, Au NPs) or substrate (e.g. QCM chip) and the biological system. Moreover, the chemical linkers sometimes can function as a anti-non-specific binding coating.

Recent publication

1. Hui-Jen Lin, Zhen-Yi Hong, Yaw-Kuen Li*, and Ian Liao* (2016, Jul). Fluorescent tracer of dopamine enables selective labelling and interrogation of dopaminergic amacrine cells in the retina of living zebrafish. *RSC Advances*, 6, 71589-71595.
2. Kazunori Okano, Hsin-Yun Hsu, Yaw-Kuen Li, Hiroshi Masuhara (2016, Jul). In situ patterning and controlling living cells by utilizing femtosecond laser. *Journal of Photochemistry and Photobiology C: Photochemistry Reviews*, 28, 1– 28.
3. Chang-Ching Tu, Kuang-Po Chen, Tsu-An Yang, Min-Yuan Chou, Lih Y. Lin, Yaw-Kuen Li* (2016, May). Silicon Quantum Dot Nanoparticles with Antifouling Coatings for 2 Immunostaining on Live Cancer Cell. *ACS Applied Materials and Interface*.
4. Chia-Yu Chang, Hui-Jen Lin, Bor-Ran Li*, Yaw-Kuen Li* (2016, May). A Novel Metallo- β -Lactamase Involved in the Ampicillin Resistance of *Streptococcus pneumoniae* ATCC 49136 Strain. *PLOS One*.
5. Hsi-Ho Chiu, Yin-Cheng Hsieh, Ya-Huei Chen, Hsin-Ying Wang, Chia-Yu Lu, Chun-Jung Chen, Yaw-Kuen Li* (2016, Apr). Three important amino acids control the regioselectivity of flavonoid glucosidation in glycosyltransferase-1 from *Bacillus cereus*. *Appl Microbiol Biotechnol*.
6. Chia-Yu Chang, Bor-Ran Li*, Yaw-Kuen Li* (2016). An L-ascorbate-6- phosphate lactonase from *Streptococcus pneumoniae* ATCC 49136 strain reveals metallo--lactamase activity. *International Journal of Antimicrobial Agents*. 47, 416-418.
7. Hsi-Ho Chiu, Mo-Yuan Shen, Yuan-Ting Liu, Yu-Lieh Fu, Yu-An Chiu, Ya-Huei Chen, Chin-Ping Huang, Yaw-Kuen Li* (2016). Diversity of sugar acceptor of glycosyltransferase 1 from *Bacillus cereus* and its application for glucoside synthesis. *Appl Microbiol Biotechnol*. 100, 4459-4471.
8. Tsui-Ming Kuo; Mo-Yuan Shen; Shih-Ying Huang; Yaw-Kuen Li; Min-Chieh Chuang, (2016). Facile fabrication of a sensor with a bifunctional interface for logic analysis of the New Delhi metallo-b-lactamase (NDM)-coding gene. *ACS Sensor*. 1, 124-130.
9. Choengpanya K, Arthornthurasuk S, Wattana-Amorn P, Huang WT, Plengmuankhae W, Y.K. Li, P.T. Kongsaree* (2015). Cloning, expression and characterization of β -xylosidase from *Aspergillus niger* ASKU28. *Protein Expr Purif.* 115, 132-140.

10. H. J. Lin, H. H. Lu, K. M. Liu, C. M. Chau, Y. Z. Hsieh, Y. K. Li*, I. Liau* (2015, Aug). Toward live-cell imaging of dopamine neurotransmission with fluorescent neurotransmitter analogues. *Chem. Comm.* 51, 14080-14083.
11. Gitanjal Deka, Kazunori Okano*, Hiroshi Masuhara, Yaw-Kuen Li, Fu-Jen Kao* (2014, Sep). Metabolic variation of HeLa cells migrating on microfabricated cytophilic channels studied by the fluorescence lifetime of NADH. *RSC Advances*, 4, 44100-44104.
12. Yin-Cheng Hsieh, Hsi-Ho Chiu, Yen-Chieh Huang, Hoong-Kun Fun,c,d Chia-Yu Lu, Yaw-Kuen Li*, Chun-Jung Chen* (2014, Sep). Purification, crystallization and preliminary X-ray crystallographic analysis of glycosyltransferase-1 from *Bacillus cereus*. *Acta Crystallographica Section F-Structural Biology and Crystallization Communications*, F70, 1228-1231.
13. Bor-Ran Li, Mo-Yuan Shen, Hsiao-hua Yu, Yaw-Kuen Li* (2014). Rapid construction of an effective antifouling layer on a Au surface via electrodeposition. *Chem. Comm.*, 50, 6793-6796.
14. Mo-Yuan Shen, Bor-Ran Li*, Yaw-Kuen Li* (2014). Silicon nanowire field-effect-transistor based biosensors: from sensitive to ultra-sensitive. *Biosensors and Bioelectronics*, 60, 101-111.
15. Chen-Fu Chao, Yi-Yun Chen, Chih-Yu Cheng*, and Yaw-Kuen Li* (2013). Catalytic function of a newly purified exo-beta-D-glucosaminidase from the entomopathogenic fungus *Paecilomyces lilacinus*. *Carbohydrate Polymers*, 93, 615-621.
16. K. Okano, A. Matsui, Y. Maezawa, P. Y. Hee, M. Matsubara, Y. Hosokawa, H. Yamamoto, H. Tsubokawa, Y-K. Li, F. J. Kao, and H. Masuhara (2013). In situ Laser Micropatterning of Proteins for Dynamically Arranging Living Cells. *Lab on A Chip*, 13, 4078-4086.
17. Mo-Yuan Shen, Cheng-Fu Chao, Yue-Jin Wu, Yu-Hsien Wu, Chin-Ping Huang* and Yaw-Kuen Li* (2013). A design for fast and effective screening of hyaluronidase inhibitor using gold nanoparticles. *Sensors and Actuators B: Chemical*, 181, 605-610.
18. C.-P. Huang, C.-F. Chao, M.-Y. Shen, T.-M. Chen, and Y.-K. Li (2012, Sep). Preparation of High-performance Water-soluble Quantum Dot for Biorecognition via Fluorescence Resonance Energy Transfer. *Chemistry – An Asian J.*, 7, 2848- 2853.
19. K. L. Shrestha, S-W. Liu, C-P. Huang, H-M. Wu, W-C. Wang* and Y-K. Li* (2011). Characterization and identification of essential residues of the glycoside hydrolase family 64 laminari- pentaose-producing-beta-1,3-glucanase. *Protein Eng. Des. Sel.*, 24, 617–625.
20. Y-H. Ma, C-P. Huang, J-S. Tsai, M-Y. Shen, Y-K. Li, L-Y. Lin (2011). Water-soluble germanium nanoparticles cause necrotic cell death and the damage can be attenuated by blocking the transduction of necrotic signaling pathway. *Toxicology Letters*, 207, 258– 269.