
FANG WEI

PERSONAL

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EDUCATION AND WORK EXPERIENCES

2006-PRESENT University of California, Los Angeles
Postdoctoral Scholar

2003 - 2006 Peking University **Beijing, P.R.China**
Assistant Professor in Department of Chemical Biology

1998 -2003 **Beijing, P.R.China**
Ph.D in Chemistry
Advisor: Professor Xinsheng Zhao
Thesis title: A Novel Method on Recognition of Single Nucleotide Polymorphism through Hairpin Design and Electric Potential Control

1994 - 1998 Peking University **Beijing, P.R.China**
B.S. in Chemistry
Advisor: Professor Xinsheng Zhao
Thesis title: Electrochemical Kinetics of NAD/NADH Analogue on Au electrode

RESEARCH EXPERIENCES

2006-PRESENT University of California, Los Angeles
Postdoctoral Scholar

- Salivary biomarker detection for oral cancer with electrochemical microarray
- mRNA biomarker detection for early diagnosis of tissue rejection in kidney transplanting with electrochemical microarray
- Immunoassay for botulinum toxin detection

2003-2006 Peking University
Assistant Professor

- Investigated folding mechanism of hairpin structure during the recognition of DNA by fluorescence spectra and theoretical calculation
- Characterized surface chemistry for protein microarray by fluorescence spectroscopy, micro-imaging and ATR-IR
- Constructed a simple nanoscale wire by micro-printing method

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- 1999-2003** **Peking University**
Ph.D. in Chemistry
- Developed genechip with in situ electrochemical control
 - Modified of compact, atomic-flat monolayers on silicon surface based on photo-induced reaction with Hydrogen-terminated Si (111)
 - Studied electron transfer process of monolayer modified Si(111) substrate via impedance and CV
 - Recognized SNP through structure constrain with hairpin oligonucleotide motif
 - Obtained fluorescence spectroscopy and imaging of SNP with bio-species
- 1998-2003** **Peking University**
Ph.D. in Chemistry
- Described friction with AFM/STM on covalently attached nanostructured self-assembly film fabricated from fullerene carboxylic acid and diazoresin
- 1997-1998** **Peking University**
Undergraduate in Chemistry
- Investigated chemical dynamic of surface electrochemical process of NAD on Au electrode
 - Investigated electron transfer through thin film on semiconductor electrode
 - Employed LB film technique based electrode modification
- 1996-1997** **Peking University**
Undergraduate in Chemistry
- Investigated dissociation kinetics of ClNO₃ in gas phase with laser lysis
 - Investigated the nonlinear spectroscopy of DDPC on water/air and water/glass interface with SHG

TEACHING EXPERIENCES

- Fall 2004, 2005**
- Teaching Assitant*
Physical Chemistry (Undergraduate course)
- Taught the chemical dynamics part
 - Constructed the interactive course webpage
 - Help in provided class lectures
- Spring 2005, 2006**
- Lecturer*
Experimental Chemical Biology (Graduate course)
- Taught the whole course about experimental techniques
 - Provided class lectures, developed course structure
 - Hosted the experiments of DNA chips, bio-nano detection, molecular biology and DNA analysis
 - Constructed the interactive course webpage

TECHNIQUES

- Skilled with multichannel electrochemical sensors and workstation
- Skilled with microfabrication of microchip
- Skilled with confocal micro-Raman spectroscopy
- Skilled with microarray spotter and scanner.
- Skilled with impedance study of semiconductor electrode
- Skilled with AFM and obtain STM by self-construct set-up
- Manipulated optical adjustment with SHG, TIRF and confocal imaging experiment
- Familiar with DNA folding computation software

AWARDS

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| 2006 | Teaching Award for Young Faculty, Peking University |
| 2003 | Outstanding Ph.D. in Dept. Chemistry, Peking University |
| 2001 | Creative Ph. D. Thesis (with sustention fund), Peking University |
| 1997 | GuangHua Award for outstanding undergraduate students, Peking University |

MEMBERSHIPS

- Member of American Chemical Society
- Member of Sigma Xi
- Member of Chinese Chemical Society

PATENTS

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|---|---|--------------------------------|
| 1 | WEI F , Zimmermann BG, WONG DT | US Patent 60/941,057 (pending) |
| | High specificity and high sensitivity detection based on steric hindrance & enzyme-related signal amplification | |
| 2 | ZHAO X, WEI F | CN1477210-A 2004-390998 |
| | Gene chip potential Scanning no-mark fluorescence detection method | |
| 3 | ZHAO X, WEI F , SUN B | CN1373228-A 2003-141480 |
| | Gene chip for recognizing full match and single-point mismatch, comprises hairpin-shaped probes having a detecting region and a stem region | |

PUBLICATIONS

- 1 **F. Wei**, C. L. Chen, L. Zhai, N. Zhang, and X. S. Zhao.
Recognition of single nucleotide polymorphisms using scanning potential hairpin denaturation.
J. Am. Chem. Soc. 127:5306-5307. 2005.
- 2 **F. Wei**, Peng Qu, Lin Zhai, Chunlai Chen, Haifang Wang, Xin Sheng Zhao
Electric potential induced dissociation of hybridized DNA with hairpin motif immobilized on silicon surface
Langmuir. 2006; 22(14); 6280-6285
- 3 **Fang Wei**, Bernhard Zimmermann, Na Li, Chih-Ming Ho, David Wong, Electrochemical Detection of Salivary RNA, 7th IEEE International Conference on Nanotechnology, Hong Kong, Aug 2-5, 2007

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- 4 Antoine Blin, **Fang Wei** and Chih-Ming Ho. A Facile Immuno-sensor with Surface Property Control by Conducting Polymer, IEEE international Conference on Nano/molecular Medicine and Engineering Conference, Macau, Aug 6-9.
 - 5 **F. Wei**, B. Sun, Y. Guo, and X. S. Zhao.
Monitoring DNA hybridization on alkyl modified silicon surface through capacitance measurement. *Biosens. Bioelectron.* 18:1157-1163. 2003.
 - 6 **F. Wei**, B. Sun, W. Liao, J. H. Ouyang, and X. S. Zhao.
Achieving differentiation of single-base mutations through hairpin oligonucleotide and electric potential control. *Biosens. Bioelectron.* 18:1149-1155. 2003.
 - 7 **F. Wei**, and X. S. Zhao.
The capacitance of mixed alkyl monolayers on Si(111) surface. *Thin Solid Films* 408:286-290. 2002.
 - 8 C. L. Chen, Z. Wang, W. J. Wang, **F. Wei**, and X. S. Zhao
Influence of secondary structure on kinetics and reaction mechanism of DNA hybridization *Nucleic Acid Research.* 2007, 35 (9), 2875-2884
 - 9 Lu, C. H., N. Z. Wu, **F. Wei**, X. S. Zhao, X. M. Jiao, J. Xu, C. Q. Luo, and W. X. Cao.
Fabrication and characterization of stable ultrathin film micropatterns containing CdS nanoparticles. *Adv. Funct. Mater.* 13:548-552. 2003.
 - 10 Yang LL, Kang J, Guan Y, **F. Wei**, Bai S, Zhang MF, Zhang ZF, Cao WX
3D-ordered macroporous materials comprising DNA
Langmuir 22 (26): 11275-11278
 - 11 Lu, C. H., **F. Wei**, N. Z. Wu, L. Huang, X. S. Zhao, X. M. Jiao, C. Q. Luo, and W. X. Cao.
Au nanoparticle micropatterns prepared from self-assembled films.
Langmuir 20:974-977. 2004.
 - 12 Cao, T. B., **F. Wei**, X. M. Jiao, J. Y. Chen, W. Liao, X. Zhao, and W. X. Cao.
Micropatterns of protein and conducting polymer molecules fabricated by layer-by-layer self-assembly and photolithography techniques.
Langmuir 19:8127-8129. 2003.
 - 13 Cao, T. B., **F. Wei**, Y. L. Yang, L. Huang, X. S. Zhao, and W. X. Cao.
Microtribologic properties of a covalently attached nanostructured self-assembly film fabricated from fullerene carboxylic acid and diazoresin.
Langmuir 18:5186-5189. 2002.
 - 14 Liao W, **F. Wei**, Liu D, et al.
FTIR-ATR detection of proteins and small molecules through DNA conjugation
Sens. Actuator B-Chem 114 (1): 445-450, 2006
 - 15 Liao, W., **F. Wei**, M. X. Qian, and X. S. Zhao.
Characterization of protein immobilization on alkyl monolayer modified silicon(111) surface.
Sens. Actuator B-Chem. 101:361-367. 2004.
 - 16 Yu B, Cong HL, Liu HW, **F. Wei**, et al.
Fabrication and characterization of stable ultrathin film micropatterns containing DNA and photosensitive polymer diazoresin
Anal. Bioanal. Chem. 384 (2): 385-390, 2006
 - 17 Lu, C. H., **F. Wei**, N. Z. Wu, X. S. Zhao, C. Q. Luo, and W. X. Cao.
Micropatterned self-assembled film based on temperature-responsive poly(N-isopropylacrylamide-co-acrylic acid).
J. Colloid Interface Sci. 277:172-175. 2004.

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- 18 Cao, T. B., **F. Wei**, L. Huang, Z. N. Gu, X. S. Zhao, and W. X. Cao.
Microtribological properties of a novel C-60-containing self-assembled film.
New J. Chem. 26:269-271. 2002.
 - 19 Guo S, Liao W, **F. Wei**, et al.
Protein biosensors based on scanning potential hairpin denaturation and fluorescence resonance energy transfer
Acta Phys.-Chim. Sin. 22 (8): 917-920 2006
 - 20 Liao, W., L. Hong, **F. Wei**, S. G. Zhu, and X. S. Zhao.
Improving phage antibody chip by pVII display system.
Acta Phys.-Chim. Sin. 21:508-511. 2005.
 - 21 Liao, W., **F. Wei**, W. X. Cao, and X. S. Zhao.
Monitoring layer-by-layer assembling of films containing diazo-resines by attenuated total reflection Fourier transform infrared spectroscopy.
Acta Phys.-Chim. Sin. 20:405-408. 2004.
 - 22 Hong, L., W. Liao, **F. Wei**, X. S. Zhao, and S. G. Zhu.
Phage antibody chip for discriminating proteomes from different cells.
Acta Phys.-Chim. Sin. 20:1182-1185. 2004.
 - 23 Huang, L., F. Huang, Y. K. He, **F. Wei**, X. S. Zhao, and W. X. Cao.
The self-assembly thin films from water-soluble C-60-containing polyelectrolytes: Synthesis, fabrication, AFM/FFM studies.
Acta Polym. Sin. :192-197. 2002.
 - 24 Huang, L., X. R. Hou, Y. K. He, X. L. Zheng, **F. Wei**, X. S. Zhao, and W. X. Cao.
Fabrication and AFM/FFM studies of C-60-containing polyelectrolyte self-assembled films.
Chin. J. Polym. Sci. 20:197-203. 2002.
 - 25 Huang, L., S. Fan, **F. Wei**, X. S. Zhao, J. X. Xiao, and B. Y. Zhu.
Synthesis of perfluoro-1-octanesulfonated fullerene and the friction properties of its thin film.
Chin. J. Polym. Sci. 20:397-400. 2002.
 - 26 Zhang, L. Z., **F. Wei**, X. S. Zhao, and H. Q. Yang.
Cyclic voltammetry study of an NAD analogue adsorbed on Au electrode.
Acta Phys.-Chim. Sin. 16:370-373. 2000.

PRESENTATION

- Fang Wei**, Xin Sheng Zhao, Achieving differentiation of Single-base Mutations through Hairpin Design and Electric Potential Control *Invited report at 13th International Symposium of Bioanalysis, Biotechnology and Nanotechnology*, Hunan, China, 2002
- Fang Wei**, Bin Sun, Xin Sheng Zhao Real time monitoring of DNA hybridization on silicon electrode *Conference on Chemistry Society of North China*, Baotou, 2001
- Fang Wei**, Yuan Guo, Bin Sun, Xin Sheng Zhao "Flat band potential of DNA modified silicon electrode" *11th Conference on Electrochemistry*, Nanjing, China, 2001
- Fang Wei**, Xin Sheng Zhao "EIS study of H-terminated silicon surface" *7th Conference on Chemical Dynamics*, ZhangJiaJie, China, 2000

POSTERS

Fang Wei, Chunlai Chen, Xin Sheng Zhao, "Label-free fluorescent recognition of single nucleotide polymorphisms by using hairpin probes and intercalating dye and scanning electric potential" *Abstract at 4th Cross Strait Workshop on Chemical Dynamics and Kinetics and 24th International Symposium of Free Radicals*, Taipei, 2004

Fang Wei, Lin Zhai, Xin Sheng Zhao, "SNP recognition via optimized structure of DNA probe" *Poster at the 4th Conference of Chemical Biology*, Wuhan, China, 2005

Fang Wei, Xin Sheng Zhao "Electrical potential control of SNP recognition" *Poster at the 24th Annual Conference of Chinese Chemical Society*, Changsha, Hunan, 2004

REFERENCES

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