

Wei Wang, Ph.D.

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RESEARCH BACKGROUNDS

Surface plasmon resonance and its imaging techniques, electroanalytical chemistry, functionalized metal nanomaterials, molecular spectroscopy (electrogenerated chemiluminescence, fluorescence, UV-visible and Rayleigh scattering), patch clamp and chemometrics.

EDUCATION

- 2004.7 – 2009.1 **University of Science and Technology of China**
Ph.D. Nanoscience, electroanalytical chemistry, molecular spectroscopy
Advisor: Prof. Hua Cui
Dissertation: Synthesis, characterizations and properties of functionalized gold nanomaterials and their applications in chemiluminescence sensing
- 2000.9 – 2004.7 **University of Science and Technology of China**
B.S. Chemometrics
Advisor: Prof. Xue-Guang Shao
Thesis: Applications of independent component analysis in chemometrics

RESEARCH EXPERIENCES

- 2011.6 – present *Assistant Research Scientist* **Center for Bioelectronics and Biosensors, Biodesign Institute at Arizona State University**
- 2009.11 – 2011.6 *Postdoc* with Prof. Nongjian Tao
- Surface plasmon resonance microscopy and its applications in single cell imaging.
 - Electrochemical impedance microscopy.
 - Patch clamp technique and electrophysiology.
- 2005.7 – 2009.1 *Ph.D. candidate* **Department of Chemistry, University of Science and Technology of China**
- **Functionalized gold nanomaterials**
 - ◇ Synthesis and characterizations of gold nanomaterials of chemiluminescent activity, and their applications in chemiluminescence sensing.
 - ◇ Digital simulation of morphology-dependent extinction spectra of geometrically irregular metal nanomaterials.
 - **Molecular spectroscopy**
 - ◇ Mechanism study of nanomaterial-involved chemiluminescence reactions.
 - ◇ Fluorescence quenching and photobleaching.
 - ◇ Resonance Rayleigh scattering and time-dependent absorption spectra.
 - **Electrogenerated chemiluminescence (ECL)**
 - ◇ Mechanism study of traditional ECL reactions by virtue of electrochemical techniques.
 - ◇ Digital simulation of coupled electrochemical-chemical reaction processes.

2004.1 – 2005.7 Graduate student

Laboratory of Chemoinformatics,
University of Science and Technology of China

● **Signal processing methods in analytical chemistry**

- ◇ Resolution of overlapped chromatographic signals, e.g., GCMS and HPLC.
- ◇ Modeling and prediction of routine components from near-infrared spectra (NIR).

PUBLICATIONS

20. Xiaonan Shan, Shaopeng Wang, **Wei Wang**, Nongjian Tao, Plasmonic-Based Imaging of Local Square Wave Voltammetry, *Anal. Chem.*, 2011, in press.
19. **Wei Wang**, Kyle Foley, Xiaonan Shan, Shaopeng Wang, Seron Eaton, Vinay J. Nagaraj, Peter Wiktor, Urmez Patel, Nongjian Tao, Single cells and intracellular processes studied by a plasmonic-based electrochemical impedance microscopy, *Nature Chem.*, 2011, 3, 249-255.
18. Na Li, **Wei Wang**, Da-Yong Tian, Hua Cui, pH-dependent catalytic properties of Pd-Ag nanoparticles in luminol chemiluminescence, *Chem. Commun.*, 2010, 46, 1520-1522.
17. Da-Yong Tian, Chun-Feng Duan, **Wei Wang**, Hua Cui, Ultrasensitive electrochemiluminescence immunosensor based on luminol functionalized gold nanoparticle labeling, *Biosens. Bioelectron.*, 2010, 25, 2290-2295.
16. Ying Chai, Da-Yong Tian, **Wei Wang**, Hua Cui, A novel electrochemiluminescence strategy for ultrasensitive DNA assay using luminol functionalized gold nanoparticles multi-labeling and amplification of gold nanoparticles and biotin-streptavidin system, *Chem. Commun.*, 2010, 46, 7560-7562.
15. Da-Yong Tian, Chun-Feng Duan, **Wei Wang**, Na Li, Hao Zhang, Hua Cui, Ying-Yu Lu, Sandwich-type electrochemiluminescence immunosensor based on N-(aminobutyl)-N-ethylisoluminol labeling and gold nanoparticle amplification, *Talanta*, 2009, 78, 399-404.
14. **Wei Wang**, Xuan Yang, Hua Cui, Growth mechanism of flowerlike gold nanostructures: Surface plasmon resonance (SPR) and resonance Rayleigh scattering (RRS) approaches to growth monitoring, *J. Phys. Chem. C*, 2008, 112, 16348-16353.
13. **Wei Wang**, Hua Cui, Chitosan-luminol reduced gold nanoflowers: From one-pot synthesis to morphology-dependent SPR and chemiluminescence sensing, *J. Phys. Chem. C*, 2008, 112, 10759-10766.
12. **Wei Wang**, Tao Xiong, Hua Cui, Fluorescence and electrochemiluminescence of luminol-reduced gold nanoparticles: Photostability and platform effect, *Langmuir*, 2008, 24(6):2826-2833.
11. **Wei Wang**, Hua Cui, Zhao-Xiang Deng, Yong-Ping Dong, Ji-Zhao Guo, A general E-E/C mechanism for the counter-peak in luminol electrochemiluminescence, *J. Electroanal. Chem.*, 2008, 612, 277-287.
10. **Wei Wang**, Ji-Zhao Guo, Hua Cui, Light emission of singlet oxygen electrogenerated in alkaline aqueous solutions, *J. Univ. Sci. Technol. China*, 2008, 38, 594-600.
9. Hao Zhang, Hua Cui, **Wei Wang**, Ming-Juan Shi, Electrochemiluminescence of lucigenin/tributylamine system in ethanol solution, *J. Photochem. Photobiol. A*, 2008, 197, 55-61.
8. Ji-Zhao Guo, Hua Cui, Wei Zhou, **Wei Wang**, Ag nanoparticle-catalyzed chemiluminescent reaction between luminol and hydrogen peroxide, *J. Photochem. Photobiol. A*, 2008, 193, 89-96.
7. Hua Cui, **Wei Wang**, Chun-Feng Duan, Yong-Ping Dong, Ji-Zhao Guo, Synthesis, characterization, and electrochemiluminescence of luminol-reduced gold nanoparticles and their application in a hydrogen peroxide sensor, *Chem. Eur. J.*, 2007, 13: 6975-6984.
6. **Wei Wang**, Wen-Sheng, Cai, Xue-Guang Shao, Post-modification approach to independent

- component analysis for resolution of overlapping GC/MS signals: from independent components to chemical components, *Science in China Series B-Chem.*, 2007, 50, 530-537.
5. Hua Cui, Hao Zhang, Ming-Juan Shi, **Wei Wang**, Yong-Ping Dong, Ji-Zhao Guo, Electrogenerated chemiluminescence of Lucigenin in ethanol solution at a polycrystalline gold electrode, *Electroanalysis*, 2007, 19, 1703-1710.
 4. Chun-Feng Duan, Hua Cui, Zhi-Feng Zhang, Bo Liu, Ji-Zhao Guo, **Wei Wang**, Size-dependent inhibition and enhancement by gold nanoparticles of luminol-ferricyanide chemiluminescence, *J. Phys. Chem. C*, 2007, 111, 4561-4566.
 3. Xue-Guang Shao, **Wei Wang**, Wen-Sheng Cai, A new regression method based on independent component analysis, *Talanta*, 2006, 69, 676-680.
 2. Zhen-Yu Hou, **Wei Wang**, Wen-Sheng Cai, Xue-Guang Shao, A local regression method based on independent component analysis and its application in near infrared spectral analysis, *Comp. Appli. Chem.*, 2006, 23, 224-226.
 1. **Wei Wang**, Wen-Sheng Cai, Xue-Guang Shao, Progress in Fourier transform ion cyclotron resonance mass spectroscopy, *Prog. Chem.*, 2005, 17, 336-342.

PRESENTATIONS

- (2010) 5th Assay and Drug Discovery Technologies Conference, San Diego, USA
(2009) 12th International Symposium on Electroanalytical Chemistry, Changchun, China
(2008) 15th International Symposium on Chemiluminescence and Bioluminescence, Shanghai, China
(2007) 11th International Symposium on Electroanalytical Chemistry, Changchun, China

TEACHING EXPERIENCES

- (2007) Instrumental analysis, teaching assistant
(2006) Introduction of chemoinformatics, teaching assistant
(2005) Organic chemistry experiments, teaching assistant

SCHOLARSHIPS

- (2008) Zhuliyuehua Scholarship, run by Chinese Academic of Sciences (CAS)
(2007) Zhang Maosen Honorary Scholarship
(2004) The First Prize of National Scholarship, run by Ministry of Education (MOE)
(2003) Scholarship of Elite Student
(2001) Scholarship of Elite Student

REVIEWER ACTIVITIES

Reviewed over 10 manuscripts for *Biosens. Bioelectron.* and *Anal. Bioanal. Chem.* since 2010.