Jiajia Wu

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Education

Zhejiang University, Hangzhou, China 2016 – 2018
Graduate study in Biomedical Engineering

Zhejiang University, Hangzhou, China 2012 – 2016
Bachelor of Engineering in Electronic Information Engineering GPA: 3.75/4.0 (Overall); 3.84/4.0 (Major)

Publications

1. **J. Wu**, Y. Lu, Z. Wu, S. Li, Q. Zhang, Z. Chen, J. Jing, S. Lin, L. Zhu, C. Li, Q. Liu. Two-dimensional molybdenum disulfide (MoS_2) with gold nanoparticles for biosensing of explosives by optical spectroscopy. *Sensors and Actuators B: Chemical*, 2018, 261(1), 279-287.
2. D. Ji, L. Liu, S. Li, C. Chen, Y. Lu, **J. Wu**, Q. Liu. Smartphone-based cyclic voltammetry system with graphene modified screen printed electrodes for glucose detection. *Biosensors and Bioelectronics*, 2017, 98, 449-456.
3. N. Li, Y. Lu, S. Li, Q. Zhang, **J. Wu**, J. Jiang, G. Liu, Q. Liu. Monitoring the electrochemical responses of neurotransmitters through localized surface plasmon resonance using nanohole array. *Biosensors and Bioelectronics*, 2017, 93, 241-249.
4. Y. Lu, Y. Huang, S. Li, Q. Zhang, **J. Wu**, Z. Xiong, L. Xiong, Q. Wan, Q. Liu. Fat taste detection with odorant-binding proteins (OBPs) on screen-printed electrodes modified by reduced graphene oxide. *Sensors and Actuators B: Chemical*, 2017, 252, 973-982.
5. S. Li, Q. Zhang, Y. Lu, D. Ji, D. Zhang, **J. Wu**, X. Chen, Q. Liu. One step electrochemical deposition and reduction of graphene oxide on screen printed electrodes for impedance detection of glucose. *Sensors and Actuators B: Chemical*, 2017, 244, 290-298.
6. W. Mao, L. Sun, J. Xu, **J. Wu**, X. Zhu. Analysis and design of high performance wireless power delivery using on-chip octagonal inductor in 65-nm CMOS. *System-on-Chip Conference (SOCC), 2015 28th IEEE International*, IEEE, 2015, 401-405.
7. Q. Zhang, Y. Lu, S. Li, **J. Wu**, Q. Liu. Peptide-based biosensors. In *Peptide Applications in Biomedicine, Biotechnology and Bioengineering*. Elsevier, 2018, 565-601. (Book Chapter)

Research Experience

Nano-plasmonic biosensor coupling electrochemistry to monitor heavy metal ions with DNA strands 2017-2018

- Deposited anodic aluminum oxide (AAO) to fabricate nanoarrays with gold nanoparticles through cyclic voltammetry (CV)
- Designed specific DNA strands that were sensitive to heavy mental ions and could self-assemble on gold nanoarrays
- Designed the reaction container with SolidWorks and had it printed by 3D printing technology in order to experiment efficiently and save samples
- Assembled DNA with nanoarrays and used the biosensor to detect Hg^{2+} through localized surface plasmon resonance (LSPR) spectroscopy
- Used electrochemical methods-differential pulse voltammetry (DPV) and square wave voltammetry (SWV) coupled with LSPR for Hg^{2+} detection to reach higher sensitivity

Optical biosensor of molybdenum disulfide (MoS_2) with gold nanoparticles for explosive detection 03/2017– 9/2017

- Synthesized the composites of MoS_2 with gold nanoparticles and evaluated the composites with transmission

electron microscopy (TEM), scanning electron microscope (SEM), Raman spectra, etc.

- Functionalized the nanocomposites with specially-designed peptides that could capture TNT molecules
- Experimented with the biosensor to detect explosives by absorption spectra with an optical system
- Analyzed data using softwares (MATLAB, FDTD Solutions, CrystalMaker, etc.) and composed the paper

Analysis and design of high performance wireless power delivery using on-chip octagonal inductor in 65-nm CMOS 09/2014–08/2015

- Optimized the length-width ratio of MOS transistors applied in the rectifier
- Employed Cadence to simulate the rectifier and achieved its optimal rectification efficiency

Industrial exhaust gas treatment by plasma technology 09/2013–09/2014

(Supported by Students Research Training Program)

- Conducted research on the application, main scientific problems, mechanism and degradation process of volatile organic compounds (VOCs) purification treatment by low-temperature plasma technology
- Carried out experiments to determine three VOCs and organized the report; won an "Excellent" evaluation

Patents

1. Q. Liu, S. Li, Q. Zhang, Y. Lu, **J. Wu**, "A method to reduce and deposit composites of graphene and 3-aminophenylboronic acid by one step for glucose detection", Publication No: 201610873894.4
2. X. Zhu, R. Huang, L. Shao, **J. Wu**, G. Sun, W. Wang, "An error codes detection based background calibration for split SAR ADC", Publication No: 201510173136.7
3. G. Xiao, T. Yang, B. Si, Z. Luo, C. Li, Z. Yan, M. Yan, T. Hu, S. Song, K. Sun, **J. Wu**, "A method and system using solar energy to treat sewage by spotlights and frequency division utilization", Publication No: 201510471612.3

Internships and Competitions

Assistant Application Engineer, Joulwatt Technology 08/2015–06/2016

(Background: Joulwatt Technology is a company headquartered in the United States and focuses on the research and application of power management chips)

- Built a behavior model of TRIAC dimmable boost solution based on chip JW1807 for LED drivers
- Optimized the system simulation, completed the evaluation board and tested its performance

A portable mobile device for non-invasive glucose detection, Second Prize in the 15th "Challenge Cup" University Student Extracurricular Scientific Works Competition of Zhejiang Province, Fourth Designer 05/2017

Photo-catalysis Sewage Treatment System, Second Prize in the 8th National University Student Social Practice and Science Contests on Energy Saving & Emission Reduction, Second Designer 03/2015–08/2015

Honors and Awards

10/2017 Academic Scholarship

06/2016 Outstanding Graduates of Zhejiang University; Certificate for Excellent Engineer Training Program

12/2015 First Class Scholarship for Excellence in Research and Innovation; Merit Student; Third Prize of the National Talents Training Base; Third Class Scholarship for Outstanding Students

12/2014 Scholarship for Excellent Social Practice; Outstanding Student Leader

12/2013 Merit Student; Third Class Academic Scholarship; Third Class Scholarship for Outstanding Students

Extracurricular Activities

- Supported education as a volunteer teacher in a rural area 07/2013
- Vice President of the Student Association Union of Zhejiang University 09/2012–06/2014

Skills

Computer skills: C; VHDL; MATLAB; Cadence; Altium Designer; SolidWorks; FDTD Solutions; CrystalMaker; etc.

Lab skills: electrochemistry workstation; SEM/TEM microscope; Raman spectroscopy; oscilloscope; etc.