

Chunhui Dai

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EDUCATION AND HONORS

University of Minnesota, Twin Cities

Department of Electrical and Computer Engineering

Aug. 2014 -

3M Fellowship

Binghamton University, State University of New York

Bachelor of Science in Electrical Engineering

Aug. 2012 - May 2014

Cumulative GPA: 3.973/4.00 | Tau Beta Pi Honor Society, Eta Kappa Nu Honor Society

Outstanding Senior in Electrical Engineering 2013-2014 | Outstanding Undergraduate Researcher 2013-2014 | 2013

Undergraduate Research Award | Dean's List: Fall 2012-Fall 2013 | 2013 Sodexo Scholarship

Hebei University of Technology, Hebei, China

School of Electrical Engineering and Automation

Sept. 2010 – May 2012

GPA: 3.93/4.00 | Dean's Scholarship: Fall 2011

PUBLICATION

1. A. Fraiwan, **C. Dai**, D. J. Hassett and S. Choi, "A Paper-based Microbial Sensor Array for Rapid Screening of Electricity-producing Bacteria," Hilton Head Workshop 2014: A Solid-state Sensors, Actuators and Microsystems Workshop, Jun. 8- 12th, 2014, Hilton Head Island, SC, USA, accepted
2. S. Chen, **C. Dai**, A. Fraiwan, and S. Choi, "A Miniaturized Parallel Analyses Platform for Rapid Electrochemical Discoveries of Microbial Activities," IEEE NEMS 2014, Apr. 13 - 16, 2014, Hawaii, USA, pp. 639-642
3. A. Fraiwan, **C. Dai**, N.K. Sidhu, A. Rastogi and, S. Choi, "A Micro-sized Microbial Fuel Cell with Electrochemical Sensing Functionality," IEEE NEMS 2014, Apr. 13 - 16, 2014, Hawaii, USA, pp. 635-638.
4. A. Fraiwan, **C. Dai**, T. H. Nguyen, and S. Choi, "A Paper-based Bacteria-Powered Battery having High Power Generation," IEEE NEMS 2014, Apr. 13 - 16, 2014, Hawaii, USA, pp. 394-397
5. **C. Dai**, S. Chen, A. Fraiwan, and S. Choi, "Direct Visualization of Electrogenic Bacteria in a Microfabricated Microbial Fuel Cell", IEEE Sensors, Nov. 4-6, 2013, Baltimore, Maryland, USA, pp.636-639.
6. **C. Dai** and S. Choi, "Technology and Applications of Microbial Biosensor", Open Journal of Applied Biosensor, Review Article, Vol. 2, pp. 93-93, 2013.

TECHNICAL SKILLS

- C/C++
- Universal Laser System
- PSPICE
- Eagle (PCB Artwork)
- MATLAB
- AutoCAD

PROFESSIONALEXPERIENCES

Paper-Based Bio-battery

Binghamton University, NY

Undergraduate Research Assistant

09/2013-05/2014

- Fabricated a paper-based bio-battery by only using commercial filter paper and wax paper.
- Integrated five series or parallel connected Bio-battery on one chip to increase the open circuit voltage or the current.

Paper-Based Microbial Fuel Cell (MFC) Array

Binghamton University, NY

Undergraduate Research Assistant

08/2013-11/2013

- Developed a 6-well Microbial Fuel Cell array which supports parallel analysis and comparisons of electrochemical activities of various microbes with small deviation
- Designed the configuration with polymer electrode layers and paper chamber layers
- Tested device performance by measuring the open circuit voltage (OCV) and the deviation between the chambers

Paper-Based Microbial Fuel Cell

Binghamton University, NY

Undergraduate Research Assistant-Binghamton University Summer Scholars and Artists Program **07/2013-11/2013**

- Microfabricated a paper-based microbial fuel cell (MFC) generating a high power which is capable for powering practical electronic devices and lighted up a LED using five this paper-based MFC in series
- Tested different material to figure out a cheap commercial parchment paper that can be used as paper Proton Exchange Membrane (PEM) and tested the performance of the paper PEM by measuring typical cyclic voltammogram

MFC for Direct Visualization of Electrogenic Bacteria

Binghamton University, NY

Undergraduate Research Assistant

03/2013-05/2013

- Designed a microfabricated transparent microbial fuel cell (MFC) for visualizing electrogenic bacteria in situ with real-time and simultaneous measurements of bacterial electron transfer using Auto CAD, and Universal Laser System VLS 3.5
- Observed the bacteria growth performance using microscopy and a data acquisition system (NI, USB-6212)

Junior Design Project, Mine Detecting Robot (MDR)

Binghamton University, NY

Member

01/2013-05/2013

- Designed circuits to control IR reflectivity sensors, IR communication, power supply, and MDR movement
- Simulated the designed circuits by using Pspice and drew a PCB schematic and layout by using EAGLE
- Soldered surface-mount and through-hole components for the PCB board

Literature Research on Microbial Biosensor

Binghamton University, NY

Undergraduate Research Assistant

12/2012-02/2013

- Studied technology, current challenges, and future directions of Microbial Biosensor from more than 100 review and research articles
- Presented several times to report the research status and documented the information in a 20 page review article

Signal and Systems Class Project, Multipath Issues in Communication Systems

Binghamton University, NY

Team Leader

11/2012-12/2012

- Explored the use of Discrete Time processing by using MATLAB to simulate the effects of multipath
- Fixed the effects by implementing different ways

OTHER EXPERIENCE

Signals and Systems

Binghamton University, NY

Course Assistant

08/2013-12/2013

- Previewed the contents and problems before class to answer students' in-class questions
- Cooperated with 2 more Course Assistants to conduct review sessions to more than 100 students before exams