

Yi Chen

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EDUCATION

UNIVERSITY OF CALIFORNIA, LOS ANGELES

Doctor of Philosophy, Chemistry (GPA: 3.99)

Master of Science, Chemistry (GPA: 3.99)

Los Angeles, CA

(Expected) June 2024

March 2021

FUDAN UNIVERSITY

Bachelor of Science, Chemistry (GPA: 3.62)

Shanghai, China

June 2019

SKILLS

Research: Electroplating and electrochemistry, Surface chemistry, Process development and optimization, Material characterization, DOE, Equipment management, Statistical data analysis, Six sigma

Characterization: SEM, XPS, FTIR, XRD, EDS, Confocal microscopy, Reflectometry

Semiconductor: Etching, ALD, General photolithography, Sputter, e-beam evaporator

Programming: Python, MATLAB, C++, Machine learning

People skills: Leadership, Proven communication and presentation skills, Multi-task ability, Problem-solving skills, Professional writing skills, Root cause analysis, Proficient in assimilating and applying new knowledge

Other software: SOLIDWORKS, Adobe Illustrator, Minitab, COMSOL Multiphysics, MS Office Suite

PUBLICATION

[1] **Chen, Y.**; Wang, J.; Hoar, B. B.; Lu, S.; Liu, C., Machine learning-based inverse design for electrochemically controlled microscopic gradients of O₂ and H₂O₂. *Proc. Natl. Acad. Sci. U.S.A.* **2022**, *119*, e2206321119.

LEADERSHIP EXPERIENCE

CHONG LIU RESEARCH GROUP

Los Angeles, CA

Interdisciplinary Project Leader

July 2020 – August 2023

- Led a team of three in a multidisciplinary project integrating electrochemistry and machine learning,
- Steered a four-member group in an electrochemistry-microbiology interdisciplinary project
- Orchestrated weekly team meetings to assess project progress and foster collaboration among interdisciplinary team members
- Fostered an inclusive environment by providing a platform for team members to share updates
- Formulated strategic next-step plans in collaboration with team members, ensuring alignment with project objectives
- Initiated post-meeting follow-up emails to recap discussions, disseminate action items, and maintain transparent communication channels

PROCESS DEVELOPMENT EXPERIENCE

CHONG LIU RESEARCH GROUP

Los Angeles, CA

Electrodeposition group specialist

Oct 2020 – Present

- Established a Pt electroplating recipe to achieve consistent Pt nanocrystal deposition on electrodes
- Developed and modified a mesoporous silica electrodeposition recipe enabling tunable silica surface morphology and thickness
- Developed a copolymer electrodeposition recipe

- Set up an ALD equipment and designed the gas supply pipelines
- Managed maintenance, user training, calibrations, and basic troubleshooting of ALD equipment
- Customized TiO₂ deposition recipes to meet different working temperature tolerance
- Wrote standard operating procedures of the ALD equipment

- Designed an electrochemical microfluidic system with tunable flow chamber height
- Modified an electrochemical microfluidic system to achieve stable electrochemical performance
- Developed a confocal microscopy setup for optical sensing of hydrogen peroxide and oxygen in the electrochemical microfluidic system

RESEARCH & WORK EXPERIENCE

CHONG LIU RESEARCH GROUP

Los Angeles, CA

Ph.D. Student for Inorganic Chemistry Research

Sept 2019 – Present

- Research on surface-modified electrode using porous material
 - Electrochemically coated Au and Pt electrode surfaces with porous silica or polymer
 - Fine-tuned the mesoporous silica surface morphology by modifying electrochemical condition
 - Conducted SEM imaging to measure surface morphology of the silica coating
 - Performed electrochemical measurement to evaluate the molecule permselectivity of the silica coating and the copolymer coating
 - Mentored an undergraduate student in collaborator's group on the synthesis and characterization of mesoporous silica materials
- Generate oxygen and hydrogen peroxide concentration gradient in an electrochemical microfluidic device
 - Led a team of three working on a multidisciplinary project and arranged weekly meetings
 - Developed micrometer-scale pattern on silicon wafer by photolithography and conducted deep reactive-ion etching (DRIE) to construct microwire arrays of the desired length
 - Developed a method for measuring microwire length using a standard optical microscope, eliminating the need for time-consuming and expensive scanning electron microscope (SEM)
 - Designed and fabricated an electrochemical microfluidic device suitable for optical imaging
 - Utilized electrochemical oxygen reduction reaction to establish oxygen or hydrogen peroxide gradient in a microfluidic system
 - Characterized oxygen and hydrogen peroxide concentration under confocal microscopy
 - Used Python, MATLAB, and ImageJ to analyze confocal microscope images
 - Used COMSOL Multiphysics to simulate oxygen reduction reaction on Au and Pt electrode surfaces under flow condition
 - Performed SEM imaging of fine features (around 10 nm) of microwire array electrodes
 - Presented research findings at five international and regional conferences/seminars

SELECTED PRESENTATIONS & SYMPOSIUM

2022 MRS Fall Meeting Symposium

Nov 2022

Title: Machine learning–based inverse design for electrochemically controlled microscopic gradients of O₂ and H₂O₂

2023 ACS Fall

August 2023

Title: Machine learning–based inverse design for electrochemically controlled microscopic gradients of O₂ and H₂O₂