**Zihan (Pepper) Yang** | zihan00@ucla.edu | Los Angeles, CA, 90025

## Education

**University of California, Los Angeles** — **Los Angeles, Sep 2022-present**
Doctor of Philosophy in Chemistry, Chemical Engineering — GPA:3.94/4.0

**Imperial College London** — **London, Oct 2021-Sep 2022**
Master of Research in Nanomaterials — Grade: Distinction

**University of California, Santa Barbara** — **Santa Barbara, Sep 2017-Mar 2021**
Bachelor of Science in Chemistry — GPA: 3.86/4.0

## Research and Lab Experience

**Sautet Group – Graduate Student Researcher** — **UCLA, Oct 2022-Present**
**Dynamic Modeling of Inverse Catalysts**

- Modeled $CO_2$ hydrogenation to methanol on inverse catalyst systems to high catalytic performance that outperforms current industrial catalysts.
- Identified key descriptors to predict active sites with high accuracy across large structural ensembles, reducing computational costs and significantly improving efficiency in catalytic simulations.
- Optimized catalyst performance to reduce costs, contributing to mitigating the greenhouse effect and addressing global energy shortages.

**2DWEB Group – Graduate Student Researcher** — **Imperial College London, Oct 2021- Sep 2022**
**Development of a Graphene-Based Sensor for Antibiotics Determination**

- Designed and optimized enzymatic functionalization for stable and accurate penicillin detection with a limit of detection of 0.18 mg/L for 2 hours, enhanced sensor performance and longevity from 2 cycles to 8 cycles.
- Improved signal-to-noise ratio by 68% for our designed sensor by optimizing hydrogel fabrication.

**Sewage Treatment Design - Summer Internship** — **China, Liangjie Environmental Tech Inc. Jul-Sep 2019-2021**

- Developed tailored sewage treatment plans, improving waste management efficiency for multiple factories based on analysis results, reducing waste output by 25%.

## Teaching and Volunteer Experience

- Teaching assistant for undergraduate chemistry lab classes. — UCLA, Oct 2022-June 2023
- Manager for GauchoExperiment club to provide scientific mentoring for local middle school students. — UCSB, Oct 2018-Feb 2019
- Event organizer for CAB family literacy program. — UCSB, Sep 2017-Jun 2018

## Awards

Member Phi Lambda Upsilon National Honorary Chemistry Society – Recognized for academic excellence in chemistry
Six UCSB College of Letters and Science Dean's Honors – Awarded for maintaining academic distinction
National Science League Chemistry Contest with Distinction – Ranked in the top percentile nationally
National Science League Physics Contest with Distinction – Earned top distinction in a national competition for physics

## Skills

Computational: first-principle DFT simulation with VASP, machine learning for heterogeneous catalytic systems. Proficient at both thermal and electrochemical catalysis simulations.
Programming & Software: Python, Linux, R, SQL, Material Studio, Microsoft Office, Origin, ChemDraw, Mnova.
Experimental: chemical and catalyst engineering, biomaterials handling, characterization techniques, NMR, HPLC, UV/Vis, FTIR, Raman, Microscopy, Profilometry.
Great communication skills, attention to detail, and interpersonal skills.

## Publications

- Catalytic activity of ensemble sites for $CO_2$ hydrogenation to methanol on a $ZrO_2$ on Cu inverse catalyst - In preparation
- Catalytic hydrogen dehydrogenation of DNEC with Pt dual atom catalyst system - In preparation

## Conference

**European Materials Research Society (E-MRS) Spring Meeting** — **France, Jun 2022**

- Oral presentation of my research on the development of a graphene-based sensor for antibiotic detection at one of Europe's leading materials science conferences, engaging with top researchers and advancing discussions on innovative sensor technologies.