

Chih-Tsun Yang

CHEMISTRY PH.D. STUDENT IN TOKMAKOFF GROUP AT THE UNIVERSITY OF CHICAGO
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Education

National Tsing Hua University

B.S. IN CHEMISTRY, MINOR IN COMPUTER SCIENCE

Hsinchu, Taiwan

Sep. 2014 – Jun. 2018

National Tsing Hua University

M.S. IN PHYSICAL CHEMISTRY

Hsinchu, Taiwan

Sep. 2019 – Aug. 2021

Research & Working Experience

Undergraduate Researcher & Research Assistant

PROF. CHIN-HUI YU'S LAB, DEPARTMENT OF CHEMISTRY, NTHU

Hsinchu, Taiwan

Jan. 2017 – Mar. 2019

Research Project Topic:

"Using Constrained Multi-Coordinate Driven Method to Study the Regioselectivity in Hydroxybenzyl Alcohol Formation Under Alkaline Aqueous Environments"

- Using the constrained reduced dimensionality algorithm, combined with commercial quantum calculation package (Gaussian 09), to study how phenol and formaldehyde form hydroxybenzyl alcohol in alkaline aqueous environment.

Computational Cluster & Lab Network Administrator:

- Managed and maintained the Linux-based computer cluster (40+ PCs) in our lab.
- Successfully compiled and deployed Gaussian 16 in our computational cluster.

Master's Student

PROF. LI-KANG CHU'S LAB, DEPARTMENT OF CHEMISTRY, NTHU

Hsinchu, Taiwan

Sep. 2019 – Aug. 2021

Thesis Topic:

"Investigating the Protein Dynamics of Human Serum Albumin in Hypothermic and Normothermic Conditions with Temperature Jump"

- Developed a tryptophan-based fluorescence temperature jump system to study the thermally-induced dynamic process of human serum albumin.

Side Project 1: Nanosecond Transient Absorption Spectrometer

- Constructed a nanosecond transient absorption spectrometer that uses ICCD as the detector.
- Programmed a script in PI's WinSpec to automatically acquire spectrum.

Side Project 2: Upgrade the Stopped-flow Apparatus in the Teaching Laboratory

- Repaired an old stopped-flow apparatus by replacing the ADC card and electronic components.
- Developed a new software in Java, including the data collecting routine and the user interface.

Research Assistant

DR. KUO-HUA HUANG'S LAB, INSTITUTE OF MOLECULAR BIOLOGY, ACADEMIA SINICA

Taipei, Taiwan

Sep. 2021 – Aug. 2022

Research Project Topic:

"Constructing Virtual Animal Models and Virtual Reality Environment to Allow Future Study on the Roles of Reciprocal Interaction in Zebrafish Social Behavior"

- Constructed a zebrafish 3D model and animated it in Blender.
- Developed a closed-loop VR, including image acquisition, real-time image processing, and scene updating in Python & Unity.
- Utilized Python to analyze the behavior motif of freely-swimming zebrafish to make the animation more realistic.

Teaching Experience

Volunteer Teaching Assistant of Undergraduate Courses

CENTER FOR GENERAL EDUCATION, NTHU

Hsinchu, Taiwan

2014 Fall – 2016 Spring

Forensic Science and Crime Prevention (2014 Fall, 2015 Fall) & Crime Investigation Technology (2015 Spring, 2016 Spring)

Teaching Assistant of Undergraduate Courses

DEPARTMENT OF CHEMISTRY, NTHU

Hsinchu, Taiwan

2019 Fall – 2020 Spring

Physical Chemistry Laboratory II (2019 Fall) & Physical Chemistry II (2020 Spring)

Language

Chinese Native

English Fluent; TOEFL iBT: 100 – R:24, L:28, S:23, W:25 (Apr. 9, 2022); GRE: 319 – V:151, Q:168, AW: 3.5 (July 2, 2022)

Technical Skills

CHEMISTRY & SCIENTIFIC INSTRUMENTS

Spectroscopy Time-resolved absorption/fluorescence, Temperature-jump method, Steady-state IR/ATR absorption, Steady-state UV-Vis absorption/fluorescence, Steady-state far-UV circular dichroism

Softwares Gaussian 09/16, GaussView, Chemdraw, OriginLab, Gnuplot, Autodesk Fusion 360

COMPUTER & PROGRAMMING

Programming C/C++, C#, Python, Java, MATLAB, LabVIEW, Unity 3D, VBA, VBScript, Bash/Shell, PHP/MySQL

System Admin Linux-based computer cluster management, Network management, Windows, Linux, macOS

Softwares Git, Typesetting with L^AT_EX engine, Microsoft Office, Adobe Illustrator, Blender

Honors & Awards

Excellent Poster Presentation Award

Taoyuan, Taiwan

2021 CHEMISTRY NATIONAL MEETING, CHEMICAL SOCIETY LOCATED IN TAIPEI

Mar. 13 – 14, 2021

“Thermally Induced Dynamic Processes of Albumins Probed with ICCD-embedded Confocal Fluorescent Temperature Jump System”

Physical Chemistry Thesis Award – Honorable Mention

Taipei, Taiwan

2022 CHEMISTRY NATIONAL MEETING, CHEMICAL SOCIETY LOCATED IN TAIPEI

Mar. 11 – 13, 2022

“Investigating the Protein Dynamics of Human Serum Albumin in Hypothermic and Normothermic Conditions with Temperature Jump”

College of Science Elite Student Award

Hsinchu, Taiwan

COLLEGE OF SCIENCE, NTHU

2021 Spring

Awarded to the exceptional-performing student in the College of Science at NTHU

Honorary Membership

Taipei, Taiwan

THE PHI TAU PHI SCHOLASTIC HONOR SOCIETY OF THE REPUBLIC OF CHINA

2021 Spring

Awarded to the excellence in academic performance as well as moral conduct

Presentations

1st author poster at the <2021 Chemical Society National Meeting>

Taoyuan, Taiwan

CHEMICAL SOCIETY LOCATED IN TAIPEI

Mar. 13 – 14, 2021

“Thermally Induced Dynamic Processes of Albumins Probed with ICCD-embedded Confocal Fluorescent Temperature Jump System”

Publications

- (1) Yang, C.-T.; Chu, L.-K. Protein dynamics of human serum albumin at hypothermic temperatures investigated by temperature jump. *Phys. Chem. Chem. Phys.* **2022**, *24*, 11079–11085.
- (2) Jian, H.-Y.; Yang, C.-T.; Chu, L.-K. Gaseous infrared spectra of the simplest geminal diol CH₂(OH)₂ and the isotopic analogues in the hydration of formaldehyde. *Phys. Chem. Chem. Phys.* **2021**, *23*, 14699–14705.
- (3) Wang, P.-Y.; Yang, C.-T.; Chu, L.-K. Differentiating the protein dynamics using fluorescence evolution of tryptophan residue(s): A comparative study of bovine and human serum albumins upon temperature jump. *Chem. Phys. Lett.* **2021**, *781*, 138998.