Kecai Xuan

Curriculum Vitae

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EDUCATION

JUL.2023 – PRESENT **Research Intern**
Department of Chemistry
University of Wisconsin - Madison

SEP.2020 – PRESENT **Undergraduate**
Department of Chemical Physics
University of Science and Technology of China

Major: Chemical Physics **Overall GPA**: 3.68/4.30 **Ranking**: 16/105

LITERATURE

Book: Introduction to Statistical Mechanics

Notes for Statistical Mechanics, highlighting on conceptual consistency and logical coherence, full of insights and discussions. Still under construction, available online at **Github**.

Article: The Analysis of USTC

Critical thoughts towards the rat race in our school, analyzed the cause and effect, claiming that the Truth and Liberty shall become our unshakable belief. Available online at **USTC Forum**.

Article: The Faults of Zhiyong

Pointing out the Org.Chem lecturer's misconducts in classical Chinese, reported this to the Forum of Students and Teachers and received cheers. Available online at **icourse.club**.

ACTIVITIES

OCT.2023 **Organizer of Monthly Reading, Student Union**

1. Discussed with the lecturer and polished the event copy.
2. Prepared the event and the venue.

OCT.2022 **Volunteer of the Chunlei Program, Student Union**

1. Helped collecting and selling the second-hand books at school.
2. Organized the charity sale for the children in remote area.

MAR.2022 - SEP.2022 **Menber of School Dancing Association**

1. Participated in the dancing teaching course as a learner.
2. Joined the ballroom dancing parties organized by the university.

SEP.2021 - SEP.2022 **Co-Captain of Frisbee School Team**

1. Second Prize, Shanghai Ultimate Frisbee Hat Competition, 2022.
2. Joined the exchange competition between USTC and HFUT.

SKILLS

EXPERT Mathematica, C#, LaTeX, Python

INTERMEDIATE Linux, MATLAB, LAMMPS, Gaussian

RESEARCH

Ab Initio Raman Spectra Calculation

1. Reviewed the classical, quantum theory of light scattering, and the basic relationship between the Raman polarizability tensor and the molecular states.
2. Found the difference prefactor between classical correlation and quantum correlation for AIMD calculation.
3. Working on the Python implement of CNEO to calculate the polarizability.

Supervisor: Prof. **Yang Yang**, TCI, UW-Madison
Supported by: Council on International Educational Exchange, USA.
Mid-Report: **Basic Theory of Raman Spectroscopy**

Physicochemical Properties of Bio-Phase Transitions and Effects on Intracellular Reactions and Functions

1. Simulated the liquid-liquid phase separation (LLPS) phenomenon in bio-systems.
2. Drawn and discussed the phase diagram of the LLPS.
3. Estimated and calculated the transport properties of the separated droplets.
4. Investigated and the mechanism of LLPS, speculated the relationship to the intercellular reaction and function.

Supervisor: Prof. **Zhonghuai Hou**, SCMS, USTC.
Supported by: College Student Research Program, Ministry of Education, China.
Final Report: **Liquid-Liquid Phase Separation**

SELECTED AWARDS

2023 **Chen Linyi Scholarship** (10%)
Mr. Chen Linyi

2022 **Outstanding student scholarship** (10%)
University of Science and Technology of China

2022 **Excellent Student Scholarship of GIES** (10%)
Guangzhou Institute of Energy Conversion, CAS

2021 **Huang Minglong Scholarship of SIOC** (10%)
Shanghai Institute of Organic Chemistry, CAS

2021 **Scholarship of Lu Jiaxi Talant Program** (5%)
University of Science and Technology of China

2021 **2nd Prize, Chinese Mathematics Competition**
Chinese Mathematical Society