

# Xu (Melissa) HUANG

+86 13982026448 | meli.ssa@sjtu.edu.cn

## EDUCATION

### Shanghai Jiao Tong University (SJTU)

Shanghai, China

*BS in Chemical Engineering and Technology*

Sep. 2019 – Jun. 2023 (expected)

- Major GPA (Junior Year): 4.0/4.0, Average Score: 94.7/100, Ranking: 1/23; admitted on basis of performance on national college admissions exam: top 0.1%
- Courses & Scores: Computer Simulation In Chemical Engineering Process(100), Chemical Process Control(97), Chemical Technology(97), Instrumental analysis (97), Applied Electrochemistry(96), Thermodynamics in Chemical Engineering (95), Electrochemical System(95), Chemical Engineering(94), Elements of Chemical Reaction Engineering(94), Physical Chemistry(93), Organic Chemistry(92)

### Osaka University

Osaka, Japan

*Exchange Student*

Oct. 2022 – Feb. 2023 (expected)

- Program: University-wide Student Exchange Virtual Program
- Course & Lecturer : Introduction to Information Science(in progress), Tatsuhiko Tsuchiya

## RESEARCH EXPERIENCE

### Computer-Aided Synthesis Planning

Jul. 2022-Present

*Independent Research*

Advisor: Yiming Mo, Mo Research Lab, Zhejiang University (ZJU, Working Remotely)

- **Method:** Used the open source RDKit and the rdchiral package to construct a model about retrosynthesis based on molecular similarity in Python, involving the process of atom-mapping, calculating fingerprints, calculating similarity scores, extracting reaction templates, proposing candidate precursors and so on, which analyzed reactions from both the open patent literature and the reaction database of energetic material synthesis collected individually
- **Result:** realized retrosynthesis planning by proposing suitable precursors for the given target compound

### Magnesium-Air Battery Based on Dual-Layer Gel Electrolyte

Dec. 2021 – Present

*Team leader*

Advisor: Yanna Nuli, Electrochemistry and Energy Technology Institute, SJTU

- **Method:** synthesized the PEO organic gel and the PAM hydrogel as electrolyte, and used glove box to dry the PEO gel, then assembled magnesium-air battery with the dual-layer gel electrolyte in different types, like the sandwich type and the cable type
- **Result:** made a battery which could stably run for over 60h with a low voltage, and it endowed a loose needle-like discharge product to take place of the passive magnesium hydroxide layer, which prevented the corrosion of Mg and promoted the utilization of Mg anode

### The Optimization of an Automatic Platform for Microflow Synthesis

Oct. 2021 – Present

*Team Leader*

Advisor: Yuanhai Su, Continuous-Flow Reactor Technology Research Group, SJTU

- **Method:** analyzed the kinetic mechanism and screened the structures of the photomicroreactor to optimize an automatically continuous-microflow platform
- **Result:** increased the space-time yield of the organic synthesis for quadricyclane to 40 times higher than the previously reported synthetic process

### Investigation on Covalent Modification of Black Phosphorus

Oct. 2020 – Oct. 2021

*Team member*

Advisor: Gang Liu, Brain-Inspired and Smart Bionic Device Lab, SJTU

- **Method:** focused on the covalent modification of black phosphorus nanosheets and used the capture and release effects of BPNSs-TPA on electrons to construct a resistive random access memory (RRAM)
- **Result:** completed the anti-oxidative passivation of black phosphorus and tested the constructed RRAM which showed stable erasing and writing over 150 times

## PUBLICATIONS

1. Yang, L., Ding, Y., Huang, X., Gao, Y., Hua, C., He, Y.\*, Economics of Processes Involving CO<sub>2</sub> in Circular Economy, Circular Economy Processes for CO<sub>2</sub> Capture and Utilization, Elsevier, 2022, Invited book chapter (in press)

## SELECTED AWARDS AND HONORS

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National Scholarship (top 0. 2% in SJTU)	2022
Excellent League Leader of SJTU (top 0. 3% in SJTU)	2022
Xinpu Farming-Reading Scholarship	2022
National Scholarship (top 0. 2% in SJTU)	2021
Excellent Student Cadre of SJTU (top 0.3% in SJTU)	2021
National Scholarship for Encouragement (top 3% in SJTU)	2020
Three Good Student of SJTU (top 3% in SJTU)	2020
Excellent League Member of SJTU (top 3% in SJTU)	2020

## ADDITIONAL INFORMATION

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### Leadership in Student Organizations

- Carried on a crucial reform in the organizational structure and handled general affairs, as the president of Students Management Commission of SJTU Library, which has over 500 students
- Planned a series of school activities, as a Student Union officer
- Organized a long-term voluntary work in traffic control on a daily basis, as the vice captain of Traffic Safety Volunteer Group in Security Department
- Maintained dormitory order in times of COVID-19, as the vice dormitory administrator

### Volunteering in Social Services

- Devoted over 600 hours to various voluntary works, for instance, by helping out in Shanghai Marathon
- Participated in charity works, for instance, by being a team leader and interviewer of the Green Grid Charity Group