Mufeng Wei

PERSONAL

Ph. D. Candidate in Chemistry, Department of Chemistry, University of California, Berkeley

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Github: https://github.com/weimufeng

Personal website: https://weimufeng.github.io/

Google Scholar: https://scholar.google.com/citations?user=pT7H1ccAAAAJ&hl=en

EDUCATION

Wuhan No.2 High School, Wuhan, China Sep 2010 – Jun 2013

- Chinese Chemistry Olympiad (CChO): Gold Medal

Department of Chemistry, Tsinghua University, Beijing, China Sep 2013 - Jun 2017

- B.S. Fundamental Sciences (Chemistry and Biology); GPA: 3.7/4.0

School of Economics and Management, Tsinghua University, Beijing, China Sep 2013 - Jun 2017

- B.S. Business Administration

Department of Chemistry, University of California, Berkeley, CA, USA Aug 2017 – Dec 2022

- Ph. D. Candidate in Chemistry; Advisor: Ting Xu; GPA: 3.9/4.0

TECHNICAL SKILLS

Chemistry:

- **Polymer Synthesis**, **Polymer Characterization, Organic Synthesis and Characterization**
- **Simulation**: DFT, all-atom MD

Programming:

- **General Programming**: Python, R, Javascript
- **Data Analysis and Data Engineering:** MySQL, SQLite, PostgreSQL, MongoDB, Apache Cassandra, SQLAlchemy, Firebase, Apache Airflow, Spark
- **Web Development:** HTML, CSS, Javascript, Node js, Express, Flask, React
- **Miscellaneous:** Machine Learning, AWS, Natural Language Processing

Finance:

- Charted Financial Analyst (CFA) Level I: Passed

RESEARCH EXPERIENCE

1. Selective Cobalt-Catalyzed Chemodivergent Transfer Hydrogenation of Nitriles

Advisor: **Qiang Liu**, Assistant Professor, Department of Chemistry, THU Aug 2015 – Jun 2016

2. Gold Catalysis - Facilitated Synthesis of 5 - 7 - 6 Tricyclic Core Jun 2016 - Aug 2016

Advisor: **Mingji Dai**, Assistant Professor, Department of Chemistry, Purdue University

3. Selective Palladium-Catalyzed Transfer Hydrogenation of Aldehydes Sep 2016 - May 2017

Advisor: **Qiang Liu**, Assistant Professor, Department of Chemistry, THU

4. Crystalline Dioxin-Linked Organic Frameworks from Irreversible Reactions Aug 2017 – Jun 2018

Advisor: **Omar Yaghi**, Professor, Department of Chemistry, UCB

5. Backbone Photodegradable Polymers by Incorporating Acylsilane Monomers via Ring-opening Metathesis Polymerization Oct 2020 – Oct 2021

Advisor: **Dean Toste and Ting Xu**

6. Designing Artificial Enzymes for Neurotoxin Remediation in Water Nov 2018 – Now

Advisor: **Ting Xu**, Professor, Department of Materials Science & Engineering, UCB

PUBLICATIONS

- Zhihui Shao, Shaomin Fu, **Mufeng Wei**, Shaolin Zhou*, Qiang Liu*. Mild and Selective Cobalt-Catalyzed Chemodivergent Transfer Hydrogenation of Nitriles. *Angewandte Chemie International Edition*, **2016**, *55*,14653
- Yong Li, **Mufeng Wei**, Mingji Dai*. Gold Catalysis-Facilitated Rapid Synthesis of the Daphnane/Tigliane Tricyclic Core. *Tetrahedron*, 2016 (http://dx.doi.org/10.1016/j.tet.2016.11.005)
- Bing Zhang, **Mufeng Wei**, Haiyan Mao, Xiaokun Pei, Sultan A. Alshmimri, Jeffrey A. Reimer, Omar Yaghi. Crystalline Dioxin-Linked Covalent Organic Frameworks from Irreversible Reactions. *J. Am. Chem. Soc*. **2018,** *140*, 12719
- Banruo Huang, **Mufeng Wei**, Emma Vargo, Yiwen Qian, Ting Xu*, Dean Toste*. Backbone Photodegradable Polymers by Incorporating Acylsilane Monomers via Ring-opening Metathesis Polymerization**.** *J. Am. Chem. Soc*. **2021**, *143*, 17920
- **Mufeng Wei**, Baichuan Na, Mirai Kii, Ting Xu*. Designing Artificial Enzymes for Organophosphate Bioremediation in Water. *In manuscript*
- **Mufeng Wei,** Ting Xu*. Design of Enzyme-Mimetic Random Heteropolymers by Machine Learning. *In manuscript*

CODING PROJECTS

Random Heteropolymers Workflow: https://github.com/weimufeng/rhp_workflow

- Built a python program that uses Monte-Carlo methods to simulate the copolymerization of multiple monomers.
- Performed analysis of random heteropolymer sequences on window hydrophobicity, average hydrophobicity, sequence hydrophobicity distribution, and hydrophobicity patterns distribution.
- Used machine learning to predict conformation parameters and catalytic rates of random heteropolymers.

Quantitative Trading: https://github.com/weimufeng/AI_For_Trading_Udacity_Nanodgree

- Implemented the momentum strategy and breakout strategy.
- Built a smart beta portfolio against an index and optimize a portfolio using quadratic programming.
- Analyzed 10-k financial statements by NLP to generate alpha factors.
- Built a deep learning model to classify the sentiment of messages.
- Built a backtester.

E-Commerce Application: https://github.com/weimufeng/E-Commerce

- Built an E-Commerce web application by React.

Data Engineering: https://github.com/weimufeng/Data_Engineering_Udacity_Nanodegree

- Data modeling with Postgres and Apache Cassandra.
- Built a cloud data warehouse using AWS.
- Managed big datasets with Spark.
- Built, scheduled, automated, and monitored data pipelines using Apache Airflow.

WORK EXPERIENCE

Mingji Dai Lab in Purdue University - Visiting Scholar Jun 2016 – Aug 2016

- Developed catalysis for facilitated synthesis of 5 - 7 - 6 tricyclic core.

Berkeley Chem 1A, 3A, 3B – Graduate Student Instructor 2017, 2018, 2019, 2020, 2021

- Taught general chemistry, organic chemistry to around 60 students.

FIRHealth Venture Capital – Intern Analyst Jan 2022 – Jun 2022

- Analyzed business plans and financial reports and evaluated company performances and risks.
- Completed market research reports on cell and gene therapy, next-generation sequencing, and CGT CDMO.