PENG HUA

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The Hong Kong University of Science and Technology, HKSAR 999077

EDUCATION

The Hong Kong University of Science and Technology, HKSAR **Sep 2020 - Present**
Ph.D. candidate in Nanoscience & Technology
Expected Graduation Date: August 2026

The Hong Kong University of Science and Technology, HKSAR **Sep 2020 - Aug 2021**
Master of Chemical & Biomolecular Engineering
School of Engineering Excellent Student
GPA: 3.86/4.3

University of Missouri-Columbia, U.S.A. **Aug 2016 – May 2020**
Bachelor of Chemical Engineering
Member of Tau Beta Pi
GPA: 3.89/4.0 (Magna Cum Laude)

AWARDS AND HONORS

Best TA Award, HKUST	2023-2024
RedBird PhD Award, HKUST	2021-2022
Excellent Student Scholarship in Chemical and Biomolecular Engineering, HKUST	2020-2021
Magna Cum Laude Honors, University of Missouri-Columbia	2020
Honors Scholar, University of Missouri-Columbia	2020
Chemical Engineering Development Scholarship, University of Missouri-Columbia	2019-2020
Chan Scholarship in Chemical Engineering, University of Missouri-Columbia	2019-2020
High Dean's Honor Roll, University of Missouri-Columbia	2017-2020
Undergraduate Honor Research, University of Missouri-Columbia	2019
Excellent Student of Academic Innovation (Second Prize) , Shenzhen	2015-2016
Silver award in Honor Challenging Cup, Guangdong Province	2016

RESEARCH EXPERIENCES

Microscopic kinetics in soft condensed matter **Sep 2020 - Present**
Supervisor: Prof. Yilong Han *HKUST*

- Molecular dynamics simulation (LAMMPS) for predicting and analyzing 2D phase transitions.
- Design and 3D printing nanoparticles for computer chips cooling.
- Programmable self-assembly of microrobots using photolithography.

Statistical physics **Sep 2023 - Present**
Supervisor: Prof. Yilong Han *HKUST*

- Complex-network analysis and modeling to phase-space studies (MatLab, Python, SolidWorks, Blender).

- Image recognition with machine learning (YOLO, OpenCV) in identifying granular system at high speeds.

Machine Learning in Calcium Carbonate Nucleation Mechanism **Sep 2020 - Jul 2021**
Supervisor: Prof. Richard Lakerveld *HKUST*

- Measured the induction time of inorganic salt $CaCO_3$ by testing conductivity of the supersaturated solution.
- Further developed an algorithm capable of predicting nucleation mechanism by machine learning with MATLAB.

Machine Learning Assisted Discovery in Porous Carbon **Sep 2018 - Jul 2020**
Supervisor: Prof. Jian Lin *University of Missouri-Columbia, U.S.A.*

- Collecting and checking data of methane uptake in porous carbon with its influenced factors.
- Further explored the CO_2/CH_4 selectivity based on the multilayer perception model by training with the data of porous carbon for CO_2 uptake.

Electrochemical Performance of Cathode Material **Aug 2018 - Aug 2019**
Supervisor: Prof. Yangchuan Xing *University of Missouri-Columbia, U.S.A.*

- Conducted experiments including preparing and synthesizing $LiMn_{0.4}Ni_{0.4}Co_{0.2}O_2$ layered compounds, assembling coin cells under vacuum condition, operating $ARBIN$ battery tester independently.
- Selected material characterization methods and analyzed test data (MATLAB) independently.

Software Development **Jul 2015 - Jun 2016**
Company: PHIANS *Shenzhen, China*

- Modeling and visualizing 2D and 3D chemical structures.
- Participated in developing chemical laboratory simulation software using C#.

PUBLICATIONS

- Peng Hua, Yilong Han, "Searching for various melting scenarios of 2D crystals", *Matter* 7.1 (2024): 19-22.

SKILLS

Computer Languages	C, C#, C++, python, JAVA, Swift, Linux, MatLab
Software Skills	Aspen Plus, Sprint, SolidWorks, AutoCAD, COMSOL, Sketchup, Blender, LAMMPS, Adobe After Effects, Adobe Audtion, Premiere
Processing Skills	Casting forming, coating, calcinations, photolithography, Nanoscribe 3D printing, optical tweezers, image recognition & segmentation, molecular dynamics (MD) simulation, multi-physics (optical, magnetic/electric field, fluid dynamics) simulation, 2D & 3D product rendering, animation rendering