Hang Yin

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Education

09/2023-08/2024 **MSc. in Statistics, University College Dublin,** **Ireland**
GPA: 3.73/4.0 (First Class Honours)
Dissertation: *Monte Carlo Simulation of RAFT Polymerization*
Core Modules: Monte Carlo Inference, Stat Network Analysis, Mathematical Statistics, Time Series Analysis, Advanced Predictive Analytics, etc.

09/2019-06/2023 **BSc. in Statistics, Beijing Jiaotong University,** **China**
GPA: 3.16/4.0
Dissertation: *Research on Spin Glass System based on Ising Model*
Core Modules: Statistical Analysis of MATLAB, Data Analysis(R), Multivariate Statistical Analysis, Statistical Computation, Physics, etc.

Professional Experience

10/2023-01/2025 **Visiting Student/Researcher, Charles Institute of Dermatology,** **Ireland**
• Developed Monte Carlo simulation models to study polymerization mechanisms and kinetics.
• Enhanced simulation efficiency using algorithm optimization techniques.
Group Website: https://www.wenxinwang.group/staff.html

Publications

[1] 2025 (Accepted) **Yin H.**, Li Y., and Lyu J., Hybrid Stochastic Simulation for Accelerated Modeling of Free Radical and Degenerative Transfer Polymerization. *Macromolecular Theory and Simulations*. https://onlinelibrary.wiley.com/doi/10.1002/mats.202500062

[2] 2025 May Li Y., **Yin H.**, Yi S., Lyu J., and Wang W., Beyond Flory's Principle: Cyclization and Unequal Reactivity in Step-Growth Polymerization. *Science Advances*. https://doi.org/10.1126/sciadv.adu8884

Research Experience

05/2024-12/2024 **Monte Carlo Simulation of RAFT Polymerization** *(MSc Dissertation)*
This project aimed to investigate the necessity of intermediate states in RAFT polymerization:
- Simulated FRP, DT, and RAFT polymerization systems using standard SSA;
- Developed a hybrid algorithm that significantly enhanced simulation efficiency;
- Verified the performance and scalability of the new algorithm across different system sizes;
- Programming languages: R, Julia; Outcome: [1].

10/2023-05/2024 **Cyclization and Unequal Reactivity in Step-Growth Linear Polymerization**
Refined Flory's principle and introduced new mathematical formulations for Step-growth polymerization with cyclization and unequal reactivity:
- Applied Monte Carlo simulations to validate and improve theoretical models;
- Proposed a simulated annealing approach to estimate cyclization deviation;
- Programming languages: MATLAB, R; Outcome: [2].

12/2022-06/2023 **Research on Spin Glass System based on Ising Model** *(BSc Dissertation)*
Explored spin glass behavior using the Ising model under both classical and quantum

annealing frameworks:

- Simulated annealing dynamics of the Ising model and investigated hysteresis under magnetic fields;
- Applied both quantum and classical annealing to the Edwards-Anderson model and compared performance;
- Programming language: MATLAB.

Skills & Interests

Programming Languages:	R, Python, MATLAB, Julia, C++, SQL.
Statistical Methods:	Machine Learning, Predictive Modeling, Time Series Analysis, Monte Carlo Simulation, Statistical Inference.
Software & Tools:	Excel, Power BI, SPSS, PostgreSQL, Git.
Specialized:	Statistical Modelling, Monte Carlo Simulation, Algorithm Development.
Interests	Fitness training, Open water diving, Amateur astronomy.

Award

2021 Learning progress scholarship of Beijing Jiaotong University

Extracurricular Roles

Member of the UCD Math Society;
Member of the UCD Physics Society;
Vice Director of BJTU Science and Technology Association;
Member of the Study Section of the BJTU Students Union;
Member of the Astronomy Club of BJTU;
Beijing Metro Volunteers.