

Wu Xianying

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Education

Nanyang Technological University (NTU), Singapore

Present

- *Master of Science in Chemical Modelling*

China Agricultural University (CAU), Beijing, China

2022.09 – 2026.06

- *Bachelor of Food Science and Engineering*

Research Project

1. Hemp Seed Oleosomes as Drug Carriers: *In vitro* Digestion & Mucus Permeability

2025 – 2026

- **Oleosomes Production:** Extracted and modified natural oleosomes from hemp seeds for **hydrophobic drug encapsulation**. Systematically evaluated the Particle Size Distribution (PSD), Encapsulation Efficiency (EE), and morphology via fluorescence imaging.
- ***In vitro* Digestion Kinetics:** Constructed an *in vitro* gastrointestinal digestion model referring to the **INFOGEST protocol**. Monitored the change of particle size, morphology across different digestive phases, and drug release in the end.
- **Mucus Permeability:** Evaluated the mucus permeability of the digested products using Transwell assays. Quantified D (Diffusion coefficient) and α (anomalous exponent) from fluorescence video of particle motion via **Multiple Particle Tracking (MPT)**.

2. Soy Protein Fibration & Enzymatic Modification for Plant-Based Meat

2023 – 2024

- **Fibration Process Development:** Led the development of a novel, **hydrocolloid-free fibration process**. Engineered the alignment of soy protein by controlling the composition of protein solution and **fluid dynamics** within a coagulation bath.
- **Enzyme Synthesis:** Synthesized a novel **protein crosslink enzyme** via bioprocessing (plasmid transduction, *E. coli* cultivation, and purification via Ni-NTA affinity chromatography).
- **Enzyme Modification:** Applied this enzyme to the fibrous tissue, significantly enhancing the **textural hardness** and reducing the **water solubility**.
- **Material Characterization:** Conducted comprehensive characterization of the protein tissue via **SEM**, **FTIR** spectroscopy and **solubility** assays.

Professional Experience

1. Process Monitoring & Quality Control (QA&QC) Intern

2025.07

Beijing Competitor Sports Science Technology Joint Stock Co., Ltd.

- Conducted on-site monitoring of protein powder production line, including **unit operations** like mixing, filling, and sealing, and executed **hazard analysis** to ensure continuous process stability.
- Performed raw material **sampling**, quantitative **protein detection**, and vacuum-water bath testing for packaging **integrity verification** in compliance with Good Manufacturing Practice (**GMP**).

2. R&D Data Intern

2025.02 – 2025.03

Sirio Pharma Co., Ltd

- Conducted a systematic **literature review** and data extraction across 200+ scientific papers, focusing on the mechanisms of 30 natural bioactive compounds.
- Constructed a **structured database** compiling experimental models, treatment parameters, dosages, and efficacy outcomes to support data-driven formulation development.

Technical Skill

- **Computational Foundations:** Linux CLI, Docker, WSL, server management via SSH and Webtop (for Remote Linux Desktop access), GROMACS compilation from source code, Python.
- **Process Engineering:** High-Speed Shear Homogenization, Microfluidic Homogenization, Plant Seed Oil Body Extraction, Drug Encapsulation in Lipid Carriers.
- **Biochemical & Biological Assays:** Protein synthesis (Plasmid Transduction, *E. coli* cultivation, Protein Expression, Ni-NTA Chromatography), *In vitro* Digestion (INFOGEST), Drug Release Test, Mucus Permeability Assays (Transwell).
- **Analytical & Characterization:** Multiple Particle Tracking (MPT), Malvern Particle Size Analysis, Advanced Microscopy (Fluorescence Microscopy, SEM), FTIR.