Bingqiang Pan

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SUMMARY

Highly motivated master's student in Chemical Biotechnology at TUM with a robust research background in chemical engineering, polymers and sustainable materials like cellulose. Passionate about the intersection of chemical engineering and biotechnology, seeking to contribute to innovative research that leverages my expertise to address biological challenges.

EDUCATION

Technical University of Munich (TUM) Straubing, Germany
Master of Chemical Biotechnology 10/2023 - Present

- Supervised by Prof. Dr. Berna Özkale Edelmann for thesis on *Quantitative Analysis of Pressure-Induced Lineage Commitment in Singly Encapsulated Mesenchymal Stem Cells*
- **Current GPA:** 1.69
- **Relevant Courses:** Biogenic Polymers (1.0), Enzyme engineering (1.3), Applied Bioprocess Engineering (1.7), Conceptual Design of Bioprocesses (2.0), Enzymatic Biotransformations (2.3), Polymer Processing (2.3)

Zhejiang University (ZJU) Zhejiang, China
Bachelor of Chemical Engineering and Technology 08/2019 - 07/2023

- **Overall GPA:** 3.5/4.0
- **Relevant Courses:** Organic Chemistry (4.0/4.0), Industrial Microbiology (3.9/4.0), Biochemistry (3.6/4.0), Chemical Engineering Design (3.9/4.0), Process modeling and simulation (4.0/4.0), Chemical Reaction Engineering (3.6/4.0), Numerical computation method (4.0/4.0), Electrochemical engineering (4.0/4.0)

PUBLICATIONS

Sustainable route to prepare functional lignin-containing cellulose nanofibrils

- Authors: Kexia Jin; Da Zhang; **Bingqiang Pan**; Khak Ho Lim; Tiffany Abitbol; Wen-Jun Wang; Xuan Yang
- Accepted by Chemical Engineering Journal (October 2023).

RESEARCH EXPERIENCE

Conceptual study on antioxidants production from methanol with enzyme cascade and *Saccharomyces cerevisiae* 03/2024 – 11/2024
Supervisor: Prof. Dr.-Ing. Michael Zavrel, Ulf Stegemeyer, M. Sc TUM, Straubing, Germany

- Create a process simulation for conversion of methanol to tocotrienol with *Saccharomyces cerevisiae* and an enzyme cascade.
- Optimize the process to a production capacity of 10,500 tons/year, and perform economic analysis.
- Provide engineering targets for collaborating enzyme and strain engineering groups.

Reinforcement of biodegradable plastics using Lignin-containing Nanocellulose 07/2022 – 10/2023
Supervisor: Prof. Dr. Xuan Yang, Dr. Kexia Jin ZJU, Zhejiang, China
Co-supervisor: Prof. Dr. Tiffany Abitbol EPFL, Switzerland

- Reinforced PBAT with modified LCNF, improving its mechanical properties, UV resistance, water permeability and degradation performance.
- Optimized processing conditions for in-situ nanofibrillation of cellulose fiber using a twin-screw extruder.
- Investigated structure-activity relationships of composite materials using SEM, X-ray CT, DSC, contact angle measurements, and other analytical techniques.
- Achieved a 39% increase in Young's modulus , 30% improvement in UV resistance, 25% reduction in water permeability, and a 50% enhancement in degradation efficiency.

Conceptual Design of a 50,000 tons/a Butane-1,4-diol plant *03/2022 - 07/2022*
Adviser: Prof. Dr. Binbo Jiang ZJU, Zhejiang, China

- Compared existing plants and synthesis methods to determine the optimal process design for butane-1,4-diol.

- Selected plant location based on local legal, environmental, raw material and utility supplement considerations.
- Completed process simulation, equipment design for a plant with capacity of 50,000 tons/year with Aspen Plus.

Design of a core-shell composite molecular sieve for high crude oil removal *07/2021 - 05/2022*

Supervisor: Prof. Dr. Binbo Jiang, Dr. Yue Yu ZJU, Zhejiang, China

- Developed a core-shell composite molecular sieve with microporous core and mesoporous shell. Conducted a two-step hydrothermal reaction to load ZnO inside.
- Achieved a 20% higher conversion rate compared to single phase molecular sieve in high-acid crude oil deacidification.

SKILLS & INTERESTS

Programming: Python, C, MATLAB
Simulation & Design Software: SuperPro Designer, Aspen Plus, COMSOL
Molecular & Chemical Analysis Tools: YASARA, PyMOL, Avizo, OriginLab, GAMS
Languages: English (C1, IELTS: 7)**, German** (B2, TestDaF: 15)**, Chinese** (Native)
Interests: Photography, Electric Guitar, Cycling

AWARDS & HONORS

Zhejiang Provincial Government Scholarship | *The people's Government of Zhejiang Province, China* ***2022***
- Awarded to top 20% of students for academic excellence.

Second prize, Chemical Engineering Design Competition | *Zhejiang University* ***2022***
- Led a team of 5 in the Chemical Engineering Design Competition, won second prize for innovative and economically viable process design solutions.

Student Leadership Award | *Zhejiang University* ***2021***
- Led department of Student Association Instruction Center.
- Completed over 200 hours of volunteer work.