Chair of Bioseparation Engineering
TUM School of Engineering and Design
Technical University of Munich

Bachelor's / Master's / Semester Thesis

Characterization and Modelling of an Innovative Dynamic Crossflow Filtration System

Keywords: Mechanistic Models, Process Optimization, Bioseparation, Circular Economy

Project Description

This Master's thesis focuses on the utilization of a Dynamic Crossflow Filter (DCF). Distinguished by a rotating membrane, this pioneering technology minimizes filter cake accumulation and facilitates the handling of high viscosities.

The DCF forms an integral part of a comprehensive downstream process focused on producing vegan mycoproteins from side products of the food industry. Specifically, the DCF will be utilized to separate fungal cells from the cell broth, playing a vital role in the purification process.

This project aims to lay the foundation for unlocking the full potential of the DCF within the final process. The outcomes of this thesis will serve as the basis for developing a digital twin capable of performing online optimizations in subsequent process runs.

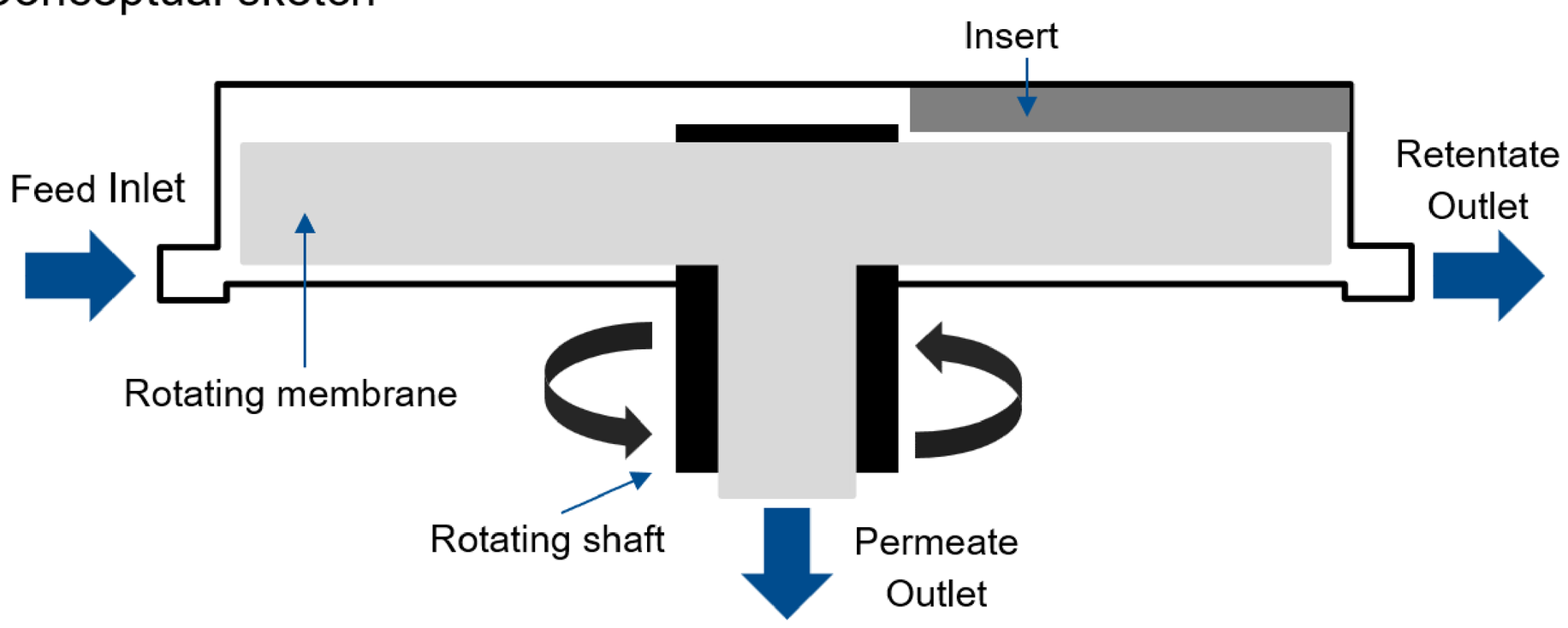
Research objectives

1. Conduct DCF commissioning
2. Perform initial experimental characterizations with model organisms
3. Improve and broaden existing mechanistic models for enhanced process representation

Profile

- Structured and independent workflow
- Proficiency in laboratory work
- Interest in new technologies
- Advantageous: knowledge in the fields of: modelling, simulation, python etc.

Conceptual sketch



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