



Synthesis, Modelling and Evaluation of Pretreatments Technologies for Biofuels Production Systems

PhD student: André Rodrigues Gurgel da Silva – Supervisor: Prof. Ben-Guang Rong
Department of Chemical Engineering, Biotechnology and Environmental Technology

Introduction

Limited reserves of fossil fuels, greenhouse gas emissions, increase of global demand for energy and abundance of biomass waste are the main driving forces that lead the research of renewable energy sources. In this context Bioethanol rises as a technically feasible and commercialised alternative. The integration and intensification of the production route will increase the competitiveness of this renewable fuel allowing a gradual replacement of the fossil based model adopted nowadays.

Pretreatment

The main goal of the pretreatment step is to remove lignin and hemicellulose, reduce crystallinity of the cellulose and increase the porosity of lignocellulosic materials in order to the hydrolysis and fermentation steps achieve better yields. The most promising pretreatments are: steam, ammonia and carbon dioxide explosion, acid and alkalyne hydrolysis, oxidative and biological treatments.

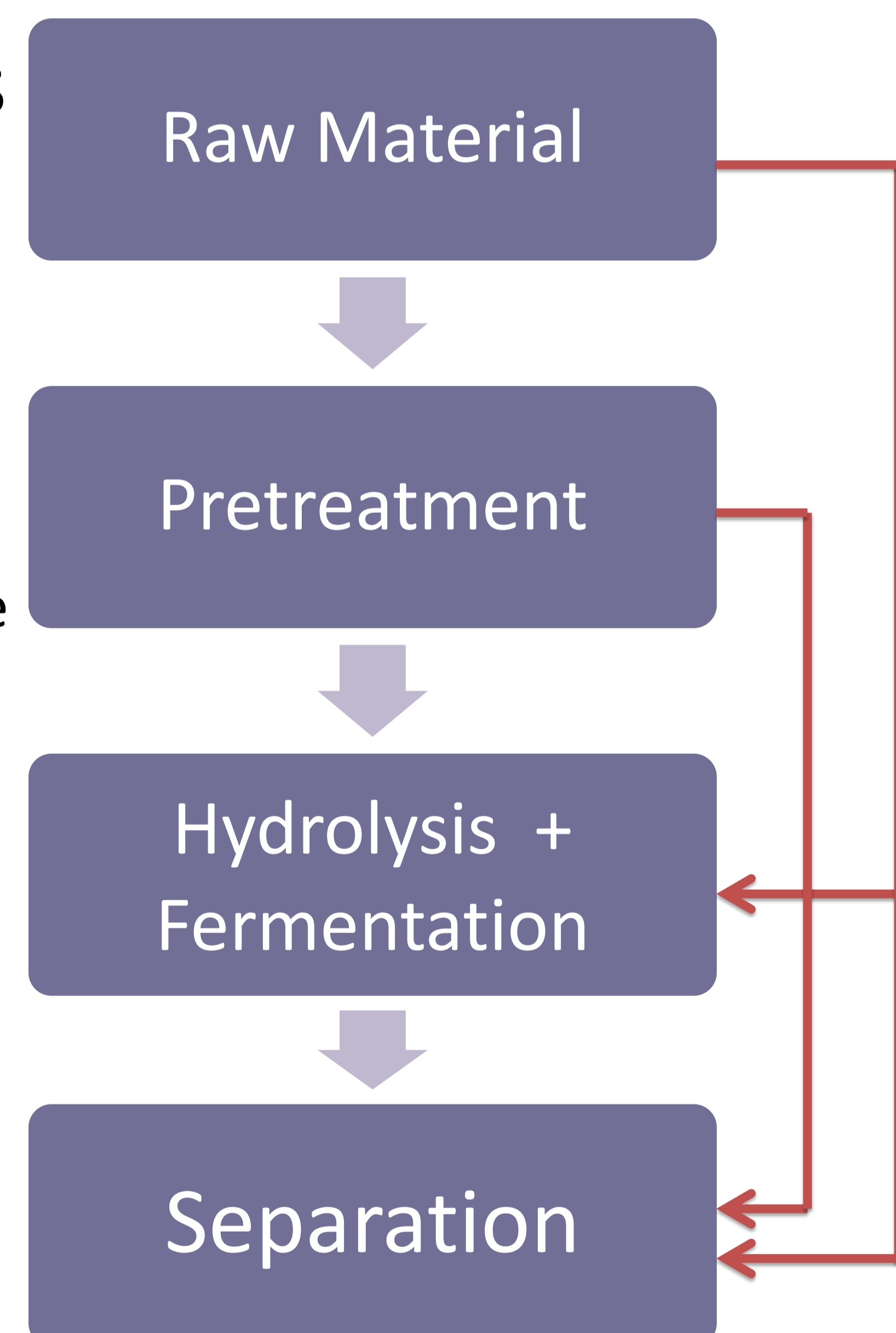
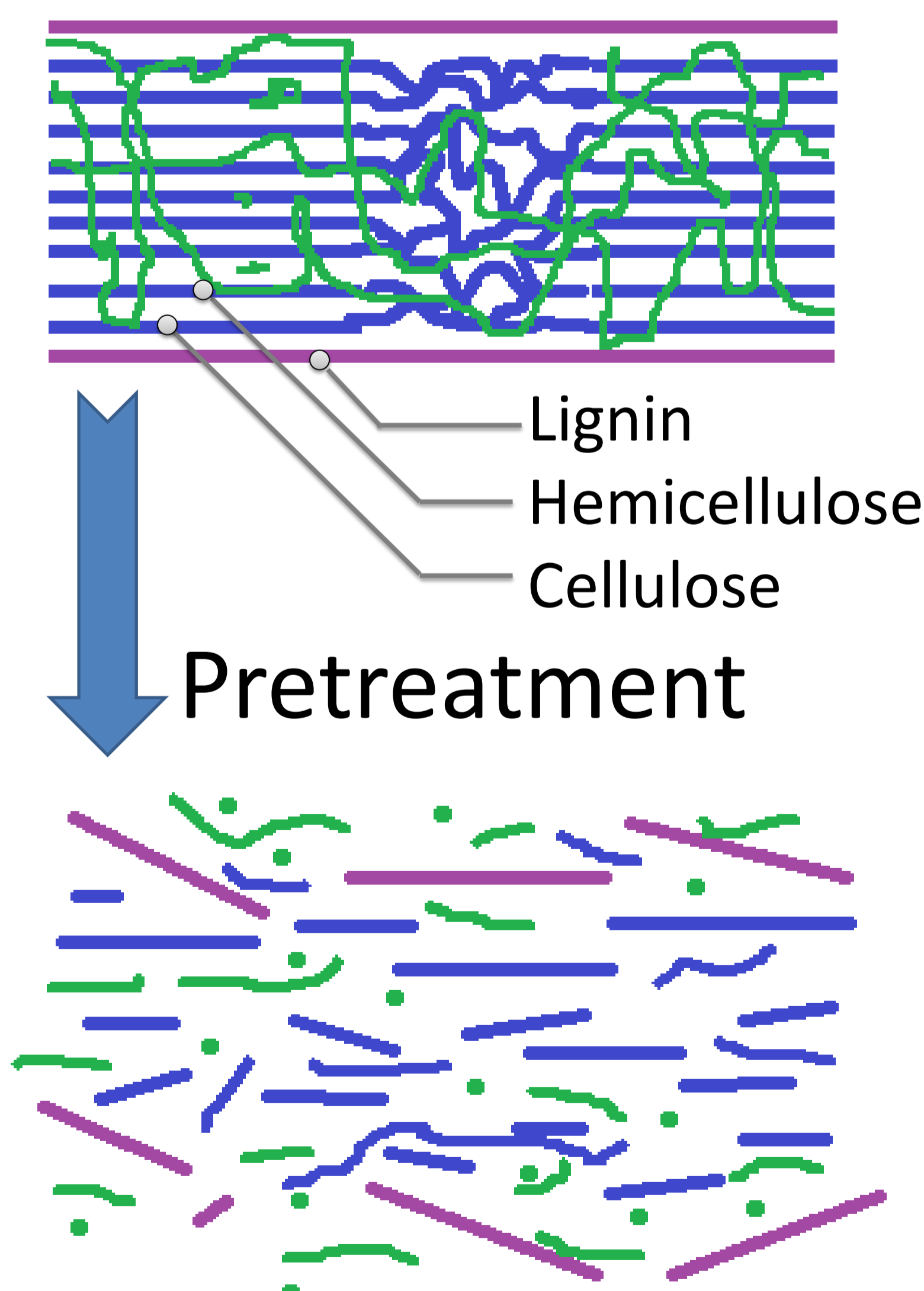
Objectives

Improve productivity of biorefineries focusing on the bioethanol pretreatment intensification and integration

Methodology

- Raw material characterization and identification of key factors that influence on the yield;
- Pretreatment setup using process simulation softwares;
- Data collection and setup refining;
- Model validation through experimental analysis;
- Economical analysis of the arranged settings.

Lignocellulosic Biomass



Acknowledgements

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References

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