Model-Based Monitoring of an Industrial Batch Pectin Extraction

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Citation (APA):
1. Pectin Extraction Process

Extraction by acidic hydrolysis from peels of citrus fruits

- Batch operation with several tanks
- The pectin quality can be characterized by intrinsic viscosity (IV) and degree of esterification (%DE)
- Process conditions (Temperature and pH) and proportions of peel/solvent vary within a limited range which is known to result in a desired particular KPI profile

2. Objective and Motivation

From recipe-driven to a model-based approach

- Lean and robust operation
- Waste, Time, Capacity, Product Quality
- Development of monitoring strategy scheme

3. Dynamic Modelling

First principle model describing the non-linear process in respect to the KPI

4. Identified Problems

- Lack flexibility for different peels
- Cross-scale application issues

5. Monitoring Strategy

Flexible model scheme that copes with raw material discrepancies by providing better initialization parameters for each different peel that arrives at the process line

6. References