DEPARTMENT OF FOOD SCIENCE
FACULTY OF SCIENCE
UNIVERSITY OF COPENHAGEN

Invitation to Ph.D. defense

Thursday, 21st of April 2016 at 10:00

Auditorium A1-01.01 (Festauditoriet), Bülowsvej 17, Frb. C.

Multivariate Statistical Process Optimization in the Industrial Production of Enzymes

Industrial Ph.D. thesis by
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Summary

This thesis focusses on solutions for a more extensive use of full-scale historical production records in data mining, process optimization and problem-solving in the bioindustry. In modern biotech production, a massive number of diverse measurements, with a broad diversity in information content and quality, are stored in data historians. This data is rarely used outside its direct scope due to lack of efficient and suitable procedures for thoughtful data retrieval, evaluation, pre-processing and extraction of the information (modeling). This dissertation work is meant to address the challenges and difficulties related to 'recycling' of historical data from a full-scale manufacturing of industrial enzymes.

Specific chemometric modeling techniques designed for the complex data systems have been examined. These methods maintain the natural structure of the analyzed data by blocking information either in the row (production runs) or column (process parameter types) direction. The complex data structures are decomposed into intuitively interpretable solutions as the important patterns in the data are extracted and visualized. When these patterns are realized and understood, it can lead to a better process understanding in a faster way than traditional mechanistic modeling techniques.