

Abstract Preview - Step 3/4

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Topic: Analysis (brewing raw materials, process, product, safety)

This abstract focus on: Practical development and application

Title: System and method for on-line monitoring of beer primary fermentation based on UV-VIS-SWNIR spectroscopy

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Text: **Aim:** This work aims at demonstrating a new system and method for on-line monitoring of beer primary fermentation.

Methods: The system is based on UV-VIS-SWNIR spectroscopy. It includes: 1) a fiber-optic probe and a universal probe adaptor specially designed for industrial fermenters; 2) a mini-spectrometer; 3) software specially developed for multivariate calculation of fermentation parameters; 4) graphical interface.

Results: Calibrations were developed for biomass (CFU/mL), Brix, pH, ethanol (%), color, apparent and real extract (%), RDF (%), ADF (%), n-propanol (mg/L), iso-butanol (mg/L), total amyl alcohols (mg/l), ethyl acetate (mg/L), amyl acetate (mg/L), acetaldehyde (mg/L), dimethyl-sulfate (mg/L); diacetyl (mg/L). In the calibrations correlation factors were always > 0.92. This allowed on-line calculation of all these parameters.

Conclusions: It was possible to monitor in real-time the course of a primary fermentation and perform an early detection of process deviations.

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