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SOFTSENSORS: NEW APPROACH FOR PROCESS MONITORING CELL GROWTH IN SMALL SCALE FERMENTATION SYSTEMS

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Process development and in particular the use of high throughput systems required sampling for controlling. One of the most important parameter is the cell growth, but sampling, sample dilution and analyzing is time consuming and generates high efforts in the case of high throughput fermentation systems. Sampling allows also only a look in the culture status at a certain time point, the information between two sample points is missing. Therefore we develop a new softsensor, which takes online signals of the bioreactor, which are correlated to cell growth to estimate the cell growth. The new approach based on multiple linear regression and on artificial neural network processed the common online signals of the bioreactors to estimate the cell growth as online signal during cultivation time. The cell growth estimated by softsensor was successful implemented in the multiple small scale bioreactor system and resulted estimated values with high confidence and low root mean squared error below 15 %.