

WinErs-Didaktik: BioProcessTrainer

Mit der Lernsoftware *BioProcessTrainer* können Sie Experimente mit *S.cerevisiae* in einem simulierten Bioreaktor durchführen. Es sind aerober und anaerober Betrieb in Batch-, Fedbatch- und kontinuierlicher Fahrweise möglich.

Bedienung des Reaktors:

- Animpfen und Probenahme
- pH- und Antischaum-Regelung
- Temperatur- und Füllstandsregelung
- pO₂-Regelung
- Simulation in Echtzeit und bis zu 15x beschleunigt

The screenshot displays the BioProcessTrainer software interface for *S. cerevisiae*. It includes several key components:

- Controller Panel:** Shows settings for Dissolved oxygen (Setpoint pO₂ at 60.0%), CV: Stirrer speed (high limit 1300 1/min, low limit 300 1/min, Gain 3.0, Ti 10.0 s, Td 10.0 s), and CV: Air flow rate (high limit 10.0 l/min, low limit 3.0 l/min, Gain 0.7, Ti 10.0 s, Td 10.0 s).
- Antifoam Panel:** Shows settings for Antifoam (Setpoint foam high at 0.01 L, Feedrate at 1 mL/min, Relative pumping time at 50.0%, Intervall at 10.0 s).
- pH Panel:** Shows settings for pH (Setpoint pH at 7.0, Gain at 1.0, Ti at 100.0 s, Td at 1.0 s).
- Gas mixing station Panel:** Shows flow rate controls for O₂, Air, and N₂, all currently at 0.0 L/min.
- Medium preparation Panel:** Shows settings for Substrate I (Glucose concentration at 5.0 g/L), Substrate II (Nitrogen source concentration at 0.0 g/L), and Volume at 8.0 L.
- Process Diagram:** A central schematic of the bioreactor showing substrate inlets, gas inlets (O₂, Air, N₂), stirrer speed (0 1/min), and various sensors (pO₂ at 95.8%, pH at 7.0, TR at 20.5 °C).
- History Panel:** A graph showing online trends and measurements over time, with a storage time of 1*2.000 s.
- Control Panel:** Includes buttons for Start new process, Interrupt process, Continue process, Stop process, Acceleration, Start, Stop, and Prepare inoculum.

Einstellen der Regelkreise für wichtige Prozessparameter

Gas-Mix- und Medium-Einstellungen

Online-Trends und Messungen zum Beobachten und Auswerten der Kultivierung