DOTS
a platform by sbi

DISSOLVED OXYGEN SENSOR PILLS

Dissolved Oxygen Monitoring In Shake Flasks

For Microbial and Cell Culture

Key Features

- Automated, online DO monitoring in shake flasks
- Novel, patented pill technology
- Unique pill identification algorithm removes the need for sensor spot alignment
- Broad portfolio of different pill forms for different cell culture and microbial applications

Benefits

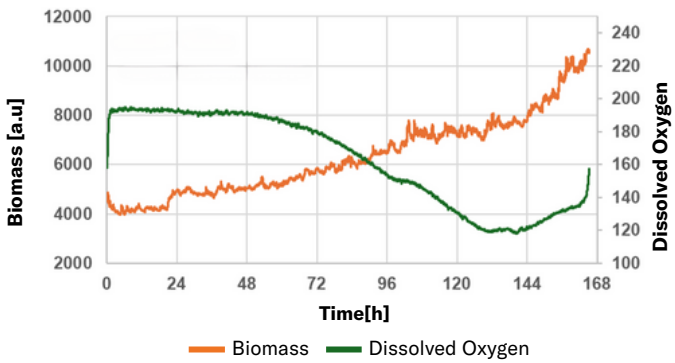
- Optimize your bioprocess in shake flasks by continuously monitoring DO
- Drop & Go: Easy handling and fast setup
- Use with any shake flask for reduced operating costs
- Connect with the DOTS Liquid Injection System for DO control in shake flasks with DO-based feeding

Exemplary Data

Cell Culture

CHO DP 12 Cell Culture

Inoculation: 0.32 million cells / mL, Corning flask, 250 mL, 24% filling volume (60 mL), 185 rpm, 25 mm

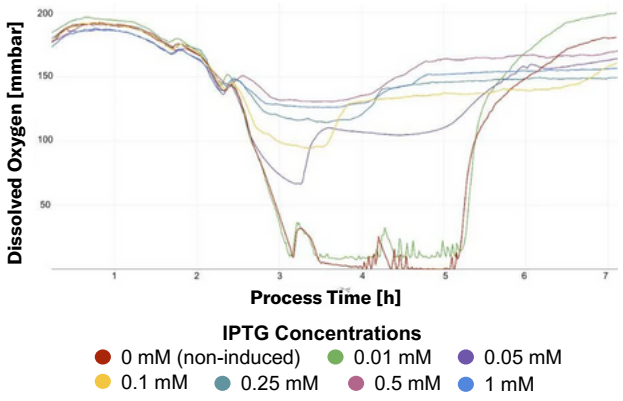


The DO Sensor pills, together with the MPS, allow for simultaneous measurement of biomass and dissolved oxygen (DO) in Corning flasks, producing well-correlated data curves.

Microbial

Optimizing Protien Expression

E. coli, Erlenmeyer flask, 250 mL 10% filling volume, 250 rpm and 37°C

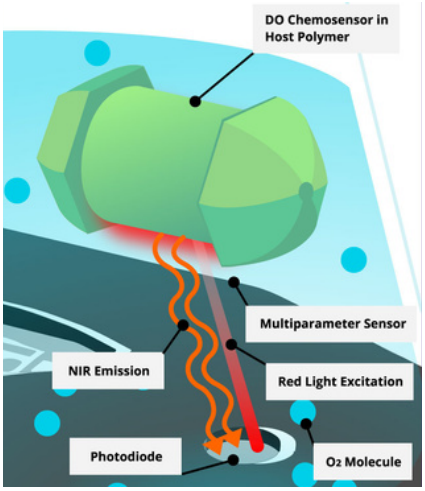


By leveraging dissolved oxygen as a metabolic marker, the DO-based "Smart Feeding" induction method enabled precise inductions at critical growth stages, balancing IPTG concentration and DO levels for efficient protein production.

Dissolved Oxygen Monitoring In Shake Flasks

How It Works

The DO Sensor Pill is dropped into the shake flask and circulates in the media. The pill is built with an integrated chemosensor, containing a luminescent dye indicator suitable for dissolved oxygen (DO) sensing. The indicator is excitable with red light (at a wavelength of 610-630 nm) and shows luminescence in the near-infrared (NIR) region (760-790 nm). Depending on the level of oxygen present in the solution, the amount of luminescence changes. The multiparameter sensor (MPS), which is placed underneath the shake flask, can monitor the phase shift which is then used to provide real-time DO data from the flask.



Compatible With Your...

Bioprocess

- **For a broad range of organisms and CHO cell types**
- **For most media compositions**

Lab Infrastructure

- **For different shake flask sizes**
  - From 100 mL - 2000 mL
- **For different shake flask types**
  - Nalgene, Corning, Glass, Thompson...
- **Compatible with every shaking incubator**
  - Clamps and Sticky Mats
- **For a broad range of shaking speeds and filling volumes**

Applications

- **Bioprocess characterization**
- **Cell Line/Strain Development Characterization and Selection**
- **Detect & avoid oxygen limitations**
- **Collect critical process parameters for an informed upscaling process**
- **Optimize process conditions with DO-based feeding**

Components

Optical DO Sensor Pill

Single-use pill with an integrated chemosensor for dissolved oxygen measurements.

Multiparameter Sensor (MPS) & Adapter

The MPS identifies & excites the pill and measures the emission, forwarding the data to the DOTS Software.

DOTS Software & USB Hub

The data of multiple sensors is bundled via an USB Hub. The powerful software allows for easy sensor handling and real-time data visualization.

Want to Smarten Your Shake Flask? Check Out the DOTS Platform!

Contact Us

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