DASGIP PhotoBioreactor

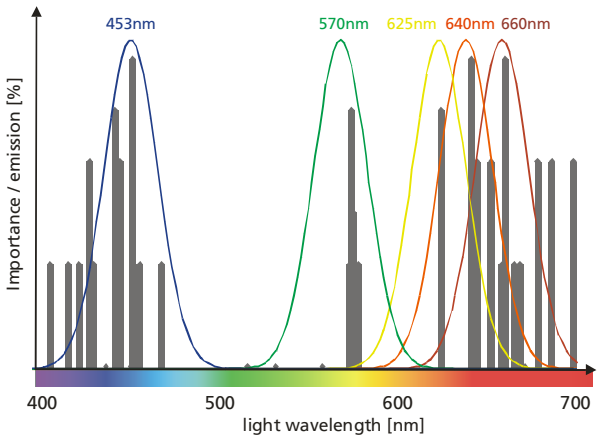
Advanced Cultivation of Phototrophic Organisms

Technology

The DASGIP PhotoBioreactor is specifically designed to use the advantages of the DASGIP Parallel Bioreactor Systems in phototrophic cultivation. Plant-suspensions, green or brown algae as well as phototrophic bacteria like cyanobacteria or green sulfur bacteria grow under customized and variable lighting conditions.

The unique arrangement of the DASGIP LED illuminators guarantees most effective and consistent light supply of the culture for highest photosynthesis and growth rates. Up to 4 illuminators per bioreactor serve optimized light spectra with defined wave lenghts to meet the specific photosynthesis requirements. The spectral composition of the LEDs supports all types of chlorophyll. According to their specific wave lengths the LEDs are combined into three groups with a defined spectral range.

The spectral composition as well as the light intensities can be controlled online via the DASGIP software by adjusting the set-points of these three groups.



Selection of diodes was aligned to the relevant chlorophyll absorption wavelengths

Parallel Design

Integrated into the DASGIP Parallel Bioreactor System various cultivation parameters such as temperature, agitation, pH, dissolved oxygen concentration, gassing or the redox potential can be continuously monitored and precisely controlled. Online Measurement of optical density and automated feeding with up to 8 dosing lines per reactor is supported.

Due to the parallel design of the software and the DASGIP Parallel Bioreactor Systems up to 16 vessels can be operated at the same time.

Users benefit from parallel sensor calibration procedures, online profile editors with user-defined functions and enhanced triggering automation. Range limits, set-point profiles and the freely editable DO cascade wizard can be changed online.

DASGIP PhotoBioreactor

Quality System certified by DQS ■ DIN EN ISO 9001 ■ Reg.-No. 63431

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Features at a Glance

- Latest LED technology applied
- Up to 4 illuminators can be internally installed per reactor
- Light spectra are optimized to meet various photosynthesis requirements with 453 nm, 572 nm, 625 nm, 640 nm, 660 nm and 780 nm
- Online adjustable setpoints are defined as photon flow rates
- Spectral light intensity of each spectrum can be controlled individually via DASGIP Control Software 4.0
- Also applicable as stand-alone device
- OPC connectivity allows different degrees of lab automation as well as communication with 3rd party supervisory process control systems
- Flash mode with adjustable cycle duration and pulse width
- Day/night simulation with eligible cycle times in on/off mode or with a triangle or cosine shape
- Controllable with third party systems via an analog interface

Suitable Bioreactors

DASGIP Bioblock Advanced Spinner DS1000

- **Working Volumes:** 400 - 1200 mL
- **Agitation:** Magnetic driven Pitched Blade Impeller, Speed: 2 - 250 rpm and 60 - 500 rpm
- **Aeration:** Headspace and/or submerged gassing with dip tube or metal sparger

DASGIP Bioblock Advanced Stirrer SR1000

- **Working Volumes:** 500 - 1500 mL
- **Agitation:** Overhead-driven Rushton Impeller, Speed: 30 - 1250 rpm or 100 - 1600 rpm
- **Aeration:** Headspace or submerged gassing with dip tube, stainless steel sparger or L-sparger

DASGIP Benchtop Bioreactor DR03

- **Working Volumes:** 0.7 - 2.7 L
- **Agitation:** Overhead-driven Pitched Blade Impeller, Speed 30 - 1250 rpm or 100 - 1600 rpm
- **Aeration:** Headspace and/or submerged gassing with dip tube, metal sparger or L-sparger

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