

Dirk Weuster-Botz · Robert Puskeiler
Andreas Kusterer · Klaus Kaufmann
Gernot T. John · Matthias Arnold

Methods and milliliter scale devices for high-throughput bioprocess design

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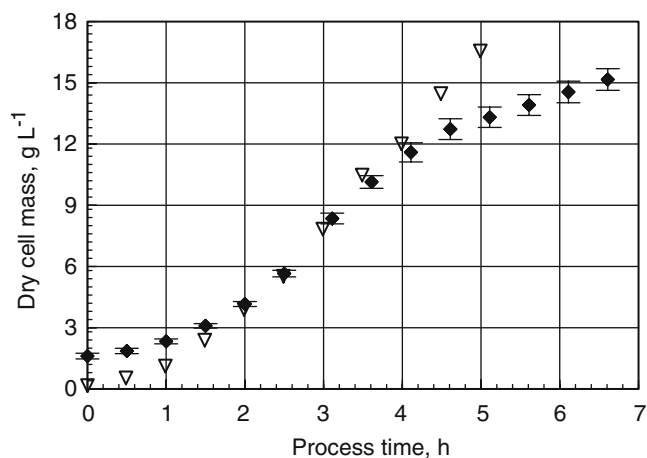
There have been two errors in the last two paragraphs of the Introduction. The correct version of these paragraphs is listed in the following:

Compared to the fully controlled laboratory stirred-tank bioreactor all of these approaches lack important features. The reported maximum oxygen transfer coefficients are rather low ($<0.11 \text{ s}^{-1}$), no closed-loop control of pH and or DO is available and fed-batch operation is not possible.

This paper presents new methods and devices for high-throughput bioprocess design on a 10-ml scale. Forty-eight bioreactors equipped with a magnetically driven gas-inducing impeller ensuring high oxygen

transfer coefficients of up to 0.4 s^{-1} [15–17] are operated sterile in a bioreaction block providing an electromagnetic drive, heat exchangers and sterile gas supply. A prototype sensor block is applied for individual DO-measurements via fluorescence lifetime of fluorophors immobilized inside the milliliter-scale bioreactors. The automation of titration, feeding and sampling is realized by a liquid-handling system. The development of a self-optimizing scheduling system for effective parallel control and data acquisition of 48 bioreactors is outlined. Forty-eight parallel operation of *E. coli* batch processes with different media compositions are studied on a 10-ml scale.

Figure 9 was printed without y-axis title. The complete figure is printed below:



The online version of the original article can be found at <http://dx.doi.org/10.1007/s00449-005-0011-6>

D. Weuster-Botz (✉) · R. Puskeiler · A. Kusterer
Lehrstuhl für Bioverfahrenstechnik,
Technische Universität München,
Boltzmannstr 15, 85748 Garching, Germany
E-mail: d.weuster-botz@lrz.tum.de
Tel.: +49-89-28915712
Fax: +49-89-28915714

K. Kaufmann
H + P-Labortechnik AG, Bruckmannring 17,
85764 Oberschleisheim, Germany

G. T. John
Precision Sensing GmbH, Josef-Engert-Str. 9,
93053 Regensburg, Germany

M. Arnold
DASGIP AG, Rudolf-Schulten-Str. 5,
52428 Julich, Germany