A chip calorimeter for the monitoring of conventional bioreactors at elevated cell concentrations

Regestein L, Wolf A, Schneider HJ, Maskow T, Mertens F, Büchs J (2012) A chip calorimeter for the monitoring of conventional bioreactors at elevated cell concentrations *Thermochimica Acta* 544, 10-16.

Details

Abstract

In conventional bioreactors, the assessment of metabolic heat via heat balancing is difficult. The reason is the influence of inherent variables such as power input due to stirring, environmental heat loss and evaporation. Thus, the aim of this study is to present a newly designed chip calorimeter which can be linked to any kind of bioreactor. This chip calorimeter with a new integrated real-time sample dilution was developed and tested during batch fermentation of the bacteria *Escherichia coli* VH33 and the yeast *Arxula adeninivorans* CBS8244. The presented device is operable up to an upper limit of 4 W L^{-1} for the volumetric metabolic heat production rate of these biological systems.

Involved units

Bio Pilot Plant Miriam Agler-Rosenbaum Read more

Leibniz-HKI-Authors

Lars Regestein

Details

Identifier

doi: https://doi.org/10.1016/j.tca.2012.06.004