

A multicommutated tester of bioreactors for flow analysis.

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Streszczenie

Enzymes are often used in the modern analytical procedures allowing selective recognition and conversion of target analytes into easily detected products. In flow analysis systems, enzymes are predominantly applied in the immobilized forms as flow-through bioreactors. In this research the multicommutated flow analysis (MCFA) system for evaluation and comparison of analytical parameters of bioreactors has been developed. The MCFA manifold allows simultaneous testing up to four bioreactors, but if necessary their number can be easily increased. The system allows comparison of several parameters of tested bioreactors including activity, repeatability, reproducibility, operational and storage stability. The performance of developed bioreactor tester is presented using urea-urease model system based on plastic open-tubular bioreactor with covalently immobilized enzyme. Product of enzymatic reaction is detected using two different chemical methods and by dedicated optoelectronic ammonium detectors. Moreover, the utility of developed MCFA manifold for evaluation of other enzyme bioreactors is demonstrated.

Słowa kluczowe

Bioreactor, Flow analysis, Multicommutation, Urease, Alkaline phosphatase, Glucose oxidase

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