

Miniaturized optical chemosensor for flow-based assays.

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Rok wydania

2011

Czasopismo

Analytical and Bioanalytical
Chemistry

Numer woluminu

399

Strony

1381-1387

DOI

10.1007/s00216-010-4384-2

Kolekcja

Naukowa

Język

Angielski

Typ publikacji

Artykuł

Streszczenie

A cost-effective, highly compact, and versatile optoelectronic device constructed of two ordinary light emitting diodes compatible with optosensing films has been developed. This fibreless device containing chemoreceptor, semiconductor light source, and detector integrated in a miniaturized flow-through cell of low microliter internal volume works as a complete photometric chemical sensor suitable for detection in flow analysis. The operation of the developed device under nonstationary programmable-flow conditions offered by sequential injection analysis has been demonstrated using Prussian Blue film as a model optical chemoreceptor. The unique spectroelectrochemical properties of the sensing material enable its use for optical sensing of redox species, whereby ascorbic acid and hydrogen peroxide have been chosen as model analytes. The reported SI-sensor system features fast and reproducible determination of both analytes in the submillimolar range of concentrations. The construction concept demonstrated in this work can be easily applied to other kinds of optical sensors based on absorbance sensing films.

Słowa kluczowe

Sensor, Sequential injection analysis, Optosensing, Light emitting diodes, Prussian blue

Adres publiczny

<http://dx.doi.org/10.1007/s00216-010-4384-2>

Strona internetowa wydawcy

<http://link.springer.com>