

# ANALYTICA CHIMICA ACTA

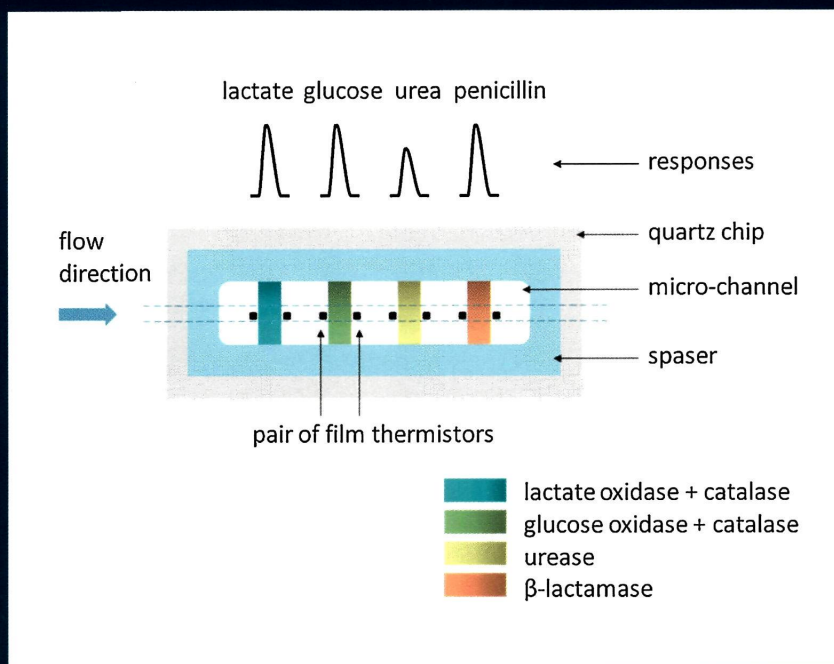
AN INTERNATIONAL JOURNAL DEVOTED TO ALL BRANCHES OF ANALYTICAL CHEMISTRY

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## Review Article

The enzyme thermistor—A realistic biosensor concept. A critical review

Maria Yakovleva, Sunil Bhand and Bengt Danielsson

*(Published on pp. 1-12 of this issue)*

# Analytica Chimica Acta

Volume 766, Pages 1-100 (5 March 2013)

Editorial Board

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Review articles

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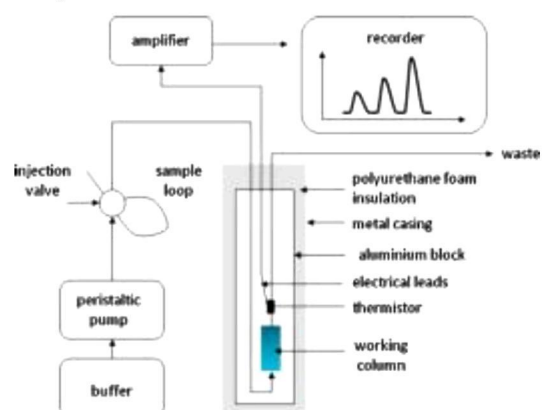
## The enzyme thermistor—A realistic biosensor concept. A critical review

Review Article

Pages 1-12

Maria Yakovleva, Sunil Bhand, Bengt Danielsson

### Graphical abstract



### Highlights

► Major principles and features of enzyme thermistor are described. ► Different types of enzyme thermistors are overviewed and compared. ► Applications of enzyme thermistor for determination of various analytes are presented. ► Advantages and drawbacks of the analytical method are highlighted.

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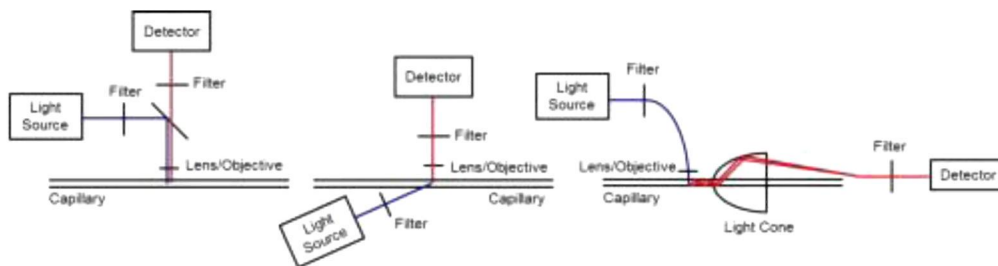
## Native fluorescence detection of biomolecular and pharmaceutical compounds in capillary electrophoresis: Detector designs, performance and applications: A review

Review Article

Pages 13-33

Bregje J. de Kort, Gerhardus J. de Jong, Govert W. Somsen

## Graphical abstract



## Highlights

► The use of native fluorescence detection in capillary electrophoresis is reviewed. ► Various detector designs are discussed, and their performances are evaluated. ► Specific attention is devoted to fluorescence detection in microfluidic systems. ► Applications of biomolecular and pharmaceutical compound analysis are described.

Chemometrics

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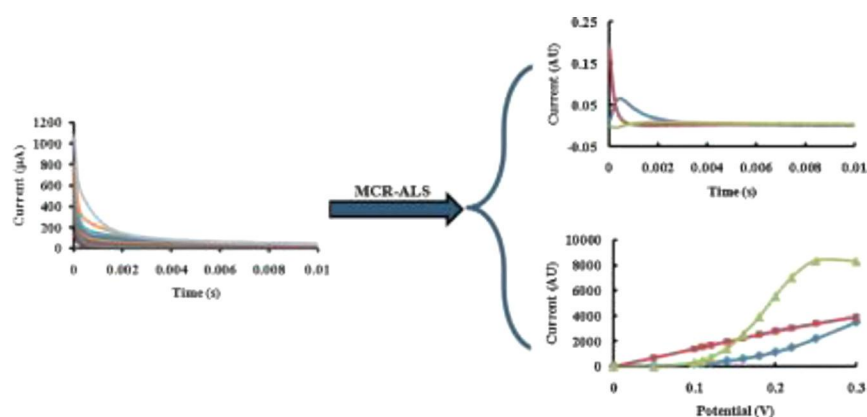
## Chemometrics assisted resolving of net faradaic current contribution from total current in potential step and staircase cyclic voltammetry

Original Research Article

Pages 34-46

Afsaneh Safavi, Bahram Hemmateenejad, Fatemeh Honarasa

## Graphical abstract





## Highlights

- ▶ A new method for treating of charging current in voltammetry has been proposed.
- ▶ Chemometrics analysis of voltammetric data revealed the presence of faradaic, step charging and induced charging currents.
- ▶ MCR-ALS analyses could separate the contribution of each current type in the total signal.
- ▶ The results were in agreement with previous theoretical models.

Electrochemistry

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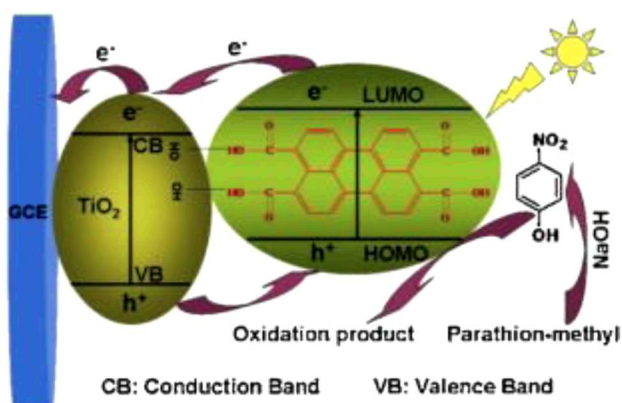
### A derivative photoelectrochemical sensing platform for 4-nitrophenolate contained organophosphates pesticide based on carboxylated perylene sensitized nano-TiO<sub>2</sub>

Original Research Article

Pages 47-52

Hongbo Li, Jing Li, Qin Xu, Zhanjun Yang, Xiaoya Hu

## Graphical abstract



## Highlights

- ▶ A novel enzymeless photoelectrochemical sensor for 4-nitrophenolate contained OPs.
- ▶ Sensors have performances of rapid response, good sensitivity and selectivity.
- ▶ PTCA as sensitizer can form ultrastable thin film and is economic as well.
- ▶ The strategy extends the application of PTCA for photoelectrochemical sensor.

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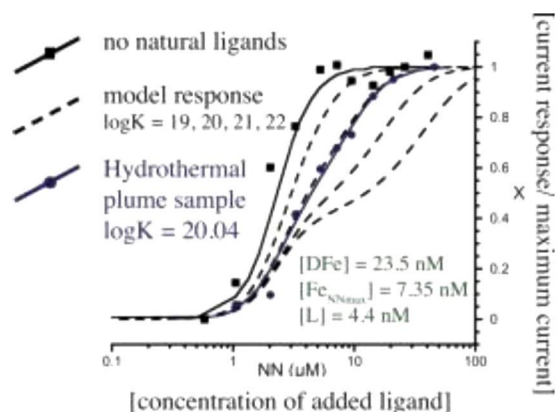
### Characterisation of iron binding ligands in seawater by reverse titration

Original Research Article

Pages 53-60

Jeffrey A. Hawkes, Martha Gledhill, Douglas P. Connelly, Eric P. Achterberg

### Graphical abstract



### Highlights

► We have applied the reverse titration technique for analysis of Fe(III) speciation. ► The technique can be used in waters with high Fe(III). ► We examine the technique with dFOB, coastal seawater and hydrothermal plume water.

Extraction and Sample Handling

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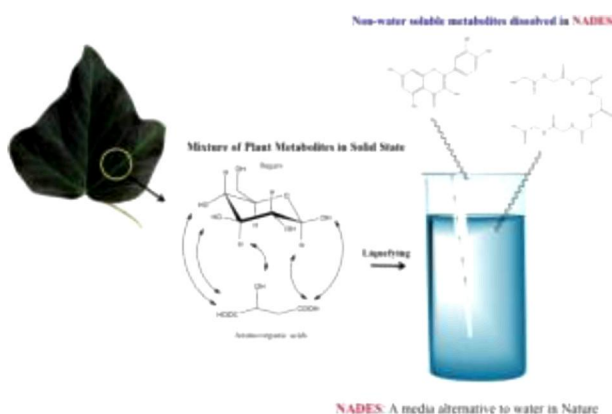
### Natural deep eutectic solvents as new potential media for green technology

Original Research Article

Pages 61-68

Yuntao Dai, Jaap van Spronsen, Geert-Jan Witkamp, Robert Verpoorte, Young Hae Choi

### Graphical abstract



## Highlights

► Natural products were used as a source for deep eutectic solvents and ionic liquids. ► We define own chemical and physical properties of natural deep eutectic solvents. ► Interaction between natural deep eutectic solvents and solutes was confirmed by NMR. ► The developed natural deep eutectic solvents were applied as green media.

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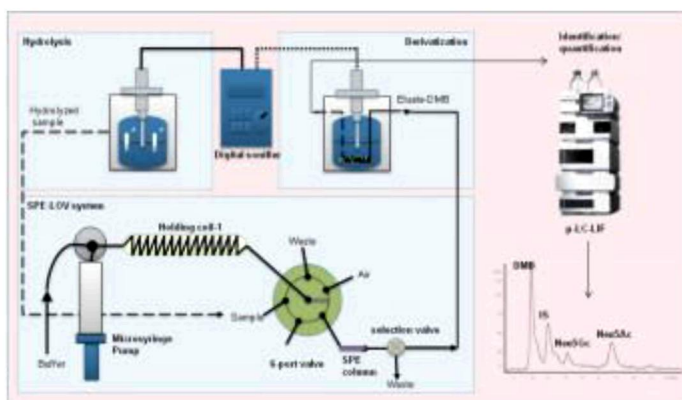
### Ultrasound-assisted hydrolysis and chemical derivatization combined to lab-on-valve solid-phase extraction for the determination of sialic acids in human biofluids by $\mu$ -liquid chromatography-laser induced fluorescence

Original Research Article

Pages 69-76

M.I. Orozco-Solano, F. Priego-Capote, M.D. Luque de Castro

## Graphical abstract



## Highlights

► Semiautomated approach for determination of sialic acids in different biofluids. ► Ultrasound-enhanced hydrolysis and derivatization to shorten the analysis time. ► Lab-on-valve approach for automated solid-phase extraction with high concentration and cleanup efficiency. ► Validation of the method by application to biological samples with different characteristics.

Mass Spectrometry

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### Coffee-ring effects in laser desorption/ionization mass spectrometry

Original Research Article

Pages 77-82

**Graphical abstract**



**Highlights**

- Coffee rings occur during sample preparation for MALDI-MS and LDI-MS.
- They partly contribute to chemical heterogeneity of sample deposits.
- Coffee rings may be hidden within sample spots.
- Occurrence of coffee rings permits partial separation of sample components.
- In some cases, formation of coffee rings can be suppressed during sample preparation.

Sensors and Bioselective Reagents

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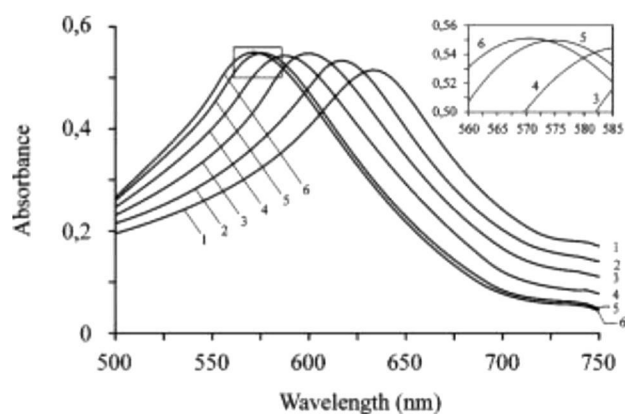
**Lectin sensitized anisotropic silver nanoparticles for detection of some bacteria**

Original Research Article

Pages 83-87

Vardan K. Gasparyan, Inga L. Bazukyan

**Graphical abstract**



## Highlights

► A novel approach for quantitative detection of bacteria in biological fluids was developed. ► Lectin sensitized anisotropic silver nanoparticles are able to bind as Gram positive as well Gram negative bacterial species. ► In this case the optical spectra of nanoparticles undergo a serious changes.

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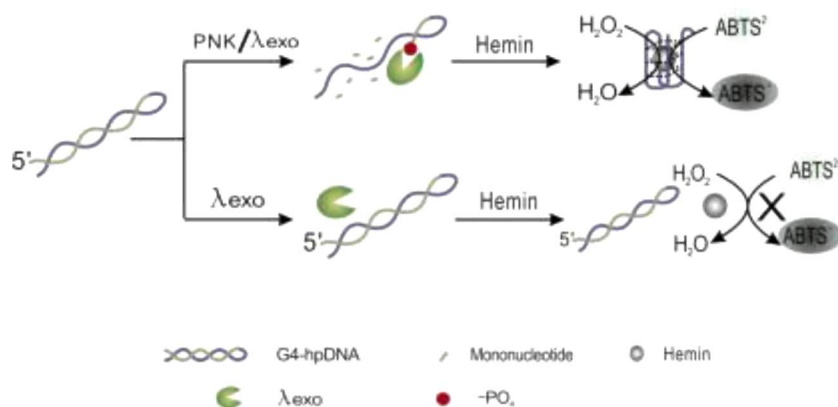
### Colorimetric assay for T4 polynucleotide kinase activity based on the horseradish peroxidase-mimicking DNAzyme combined with $\lambda$ exonuclease cleavage

Original Research Article

Pages 88-93

Cheng Jiang, Chunyan Yan, Jianhui Jiang, Ruqin Yu

## Graphical abstract



## Highlights

► The strategy was based on the coupled reaction triggered by polynucleotide kinase. ► The strategy was a colorimetric assay visible to the naked eye. ► The strategy had obvious advantages in controlling cost and simplifying operations. ► The strategy exhibited an improved signal to noise ratio and a wide linear range. ► The strategy could be extended to high-throughput phosphorylation investigations.

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### A rapid and highly sensitive portable chemiluminescent immunosensor of carcinoembryonic antigen based on immunomagnetic separation in human serum

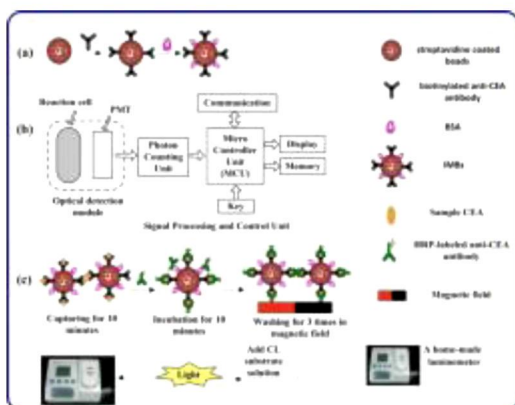
Original Research Article

Pages 94-99

Shuxue Qu, Juntao Liu, Jinping Luo, Yiqing Huang, Wentao Shi, Bin Wang, Xinxia Cai



## Graphical abstract



## Highlights

► The anti-CEA antibody can bound to the bead with a conjugation rate of 73%. ► IMBs could be stored for 2 months without reduction of biological activity. ► The limit of detection (LOD) of this method was as low as  $5.0 \text{ pg mL}^{-1}$  ( $S/N = 3$ ). ► The novel immunosensor was highly sensitive with an assay time of <35 min. ► There was a good agreement between our method and ELISA kit. ► A home-made luminometer was used to detect the optical signal.