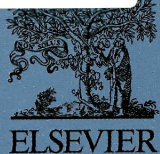


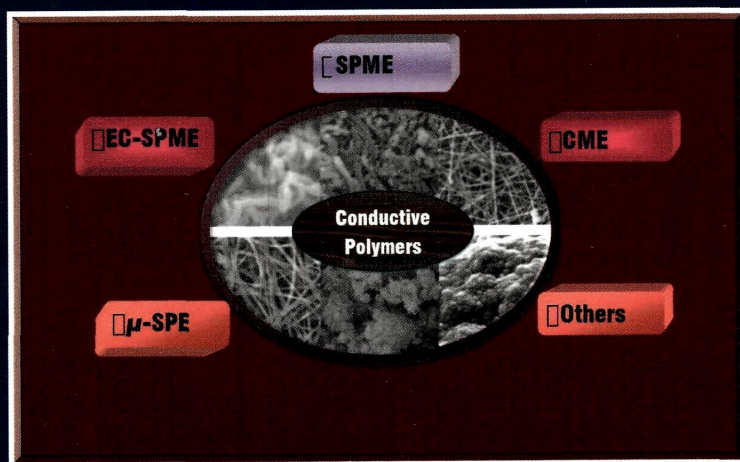
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VOLUME 767 12 MARCH 2013 ISSN 0003-2670

# ANALYTICA CHIMICA ACTA

AN INTERNATIONAL JOURNAL DEVOTED TO ALL BRANCHES OF ANALYTICAL CHEMISTRY



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## Review Article

Conductive polymer-based microextraction methods: A review

Habib Bagheri, Zahra Ayazi and Mehrnoush Naderi

*(Published on pp. 1-13 of this issue)*

# Analytica Chimica Acta

Volume 767, Pages 1-162 (12 March 2013)

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Editorial Board

Page iii

Review Article

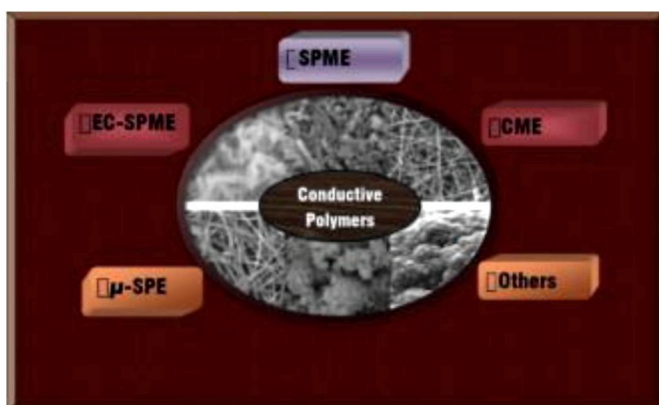
2┌  
**Conductive polymer-based microextraction methods: A review**

Review Article

Pages 1-13

Habib Bagheri, Zahra Ayazi, Mehrnoush Naderi

*Graphical abstract*



*Highlights*

► The structural and electronic properties of conductive polymers are discussed. ► Extraction methodologies based on the use of conductive polymers are described. ► Applicability of conductive polymers are compared with commercial sorbents.

Atomic Spectrometry

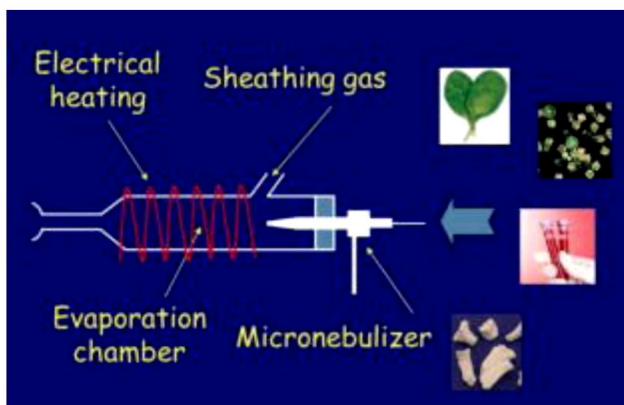
3┌  
**Total introduction of microsamples in inductively coupled plasma mass spectrometry by high-temperature evaporation chamber with a sheathing gas stream**

Original Research Article

Pages 14-20

Marco Grotti, Francisco Ardini, Josè Luis Todoli

### Graphical abstract



### Highlights

► The main features of high-temperature TISIS for use in ICP-MS have been evaluated. ► The sensitivity was 2–8 times higher than that measured for conventional systems. ► Limits of detection were lower for many elements. ► The system was applied to environmental, biological and clinical micro-samples.

Chemometrics

4

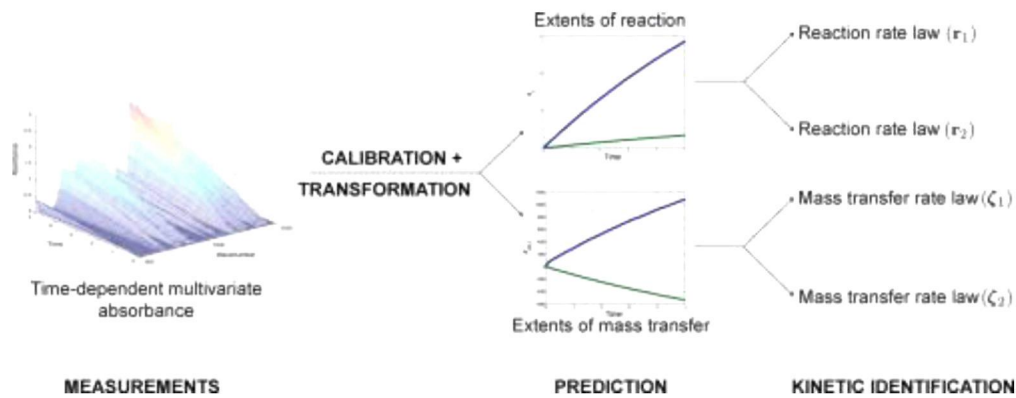
### Extent-based kinetic identification using spectroscopic measurements and multivariate calibration

Original Research Article

Pages 21-34

Julien Billeter, Sriniketh Srinivasan, Dominique Bonvin

## Graphical abstract



## Highlights

- Factorization of spectral data in RV- and RMV-forms.
- Prediction of extents of reaction and mass transfer from spectroscopic measurements.
- Reconstruction of all concentrations from the extents.
- Extent-based identification of each rate law independently of other rate processes.
- Illustration using simulated data from homogeneous and gas–liquid reaction systems.

5

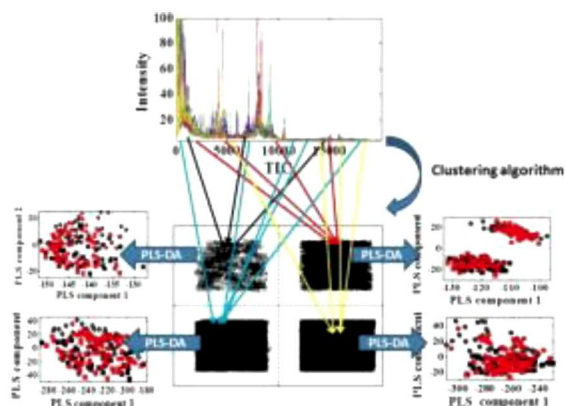
## Identification of discriminatory variables in proteomics data analysis by clustering of variables

Original Research Article

Pages 35-43

Sadegh Karimi, Bahram Hemmateenejad

## Graphical abstract



## Highlights

► A new method was suggested for identification of discriminatory variables. ► The method works based on the clustering of variables (CLOVA). ► CLOVA was used as an efficient method in proteomics data analysis. ► The method was applied successfully in cancer detection.

6

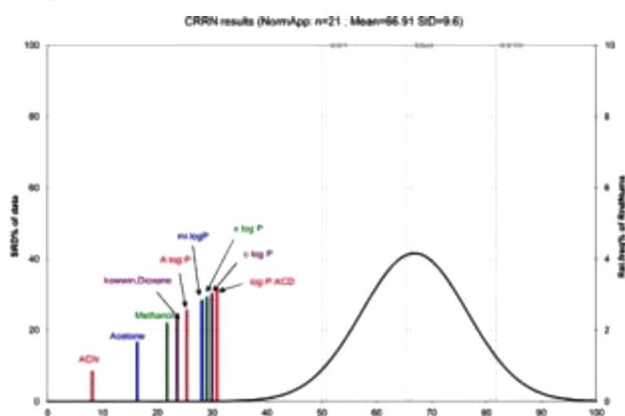
### Multivariate analysis of chromatographic retention data and lipophilicity of phenylacetamide derivatives

Original Research Article

Pages 44-49

Gyöngyi Vastag, Suzana Apostolov, Nada Perišić-Janjić, Borko Matijević

## Graphical abstract



## Highlights

► Chemometric were used for comparing lipophilic parameters of phenylacetamides. ► Nature of substituents affects to lipophilicity of investigated molecules. ► Sum of ranking difference could give similarity between used variables. ► The best variables could be distinguished by using sum of ranking difference. ► Study offers a possibility of significant reduction of experimentally work.

Electrochemistry

7

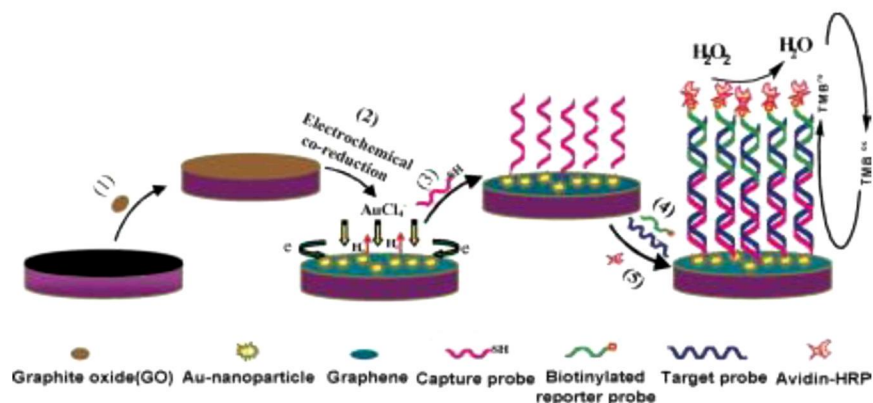
### A sandwich-type DNA biosensor based on electrochemical co-reduction synthesis of graphene-three dimensional nanostructure gold nanocomposite films

Original Research Article

Pages 50-58

Ai-Lin Liu, Guang-Xian Zhong, Jin-Yuan Chen, Shao-Huang Weng, Hong-Nan Huang, Wei Chen, Li-Qing Lin, Yun Lei, Fei-Huan Fu, Zhou-liang Sun, Xin-Hua Lin, Jian-Hua Lin, Shu-Yu Yang

## Graphical abstract



## Highlights

- ▶ Graphene-three dimensional nanostructure gold nanocomposite modified GCE is fabricated.
- ▶ A “sandwich-type” detection strategy is employed in this electrochemical DNA biosensor.
- ▶ The detection limit of the DNA biosensor is 3.4 fM.
- ▶ The new DNA biosensor exhibited a fast response, high sensitivity and selectivity.
- ▶ The new DNA biosensor has been used for an assay of PCR real sample.

8

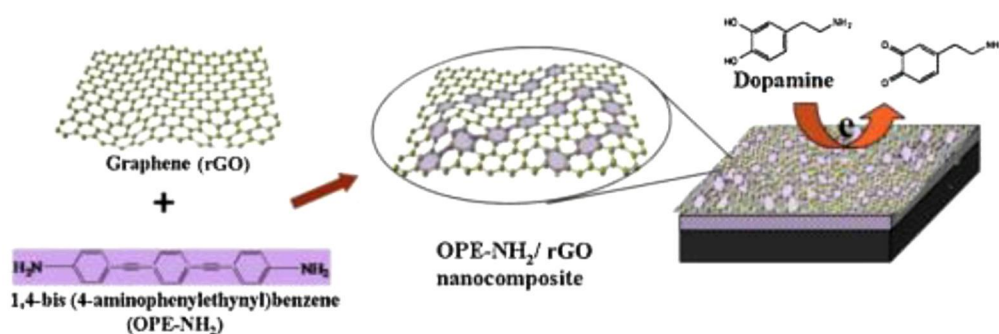
## Self-assembled oligo(phenylene ethynylene)s/graphene nanocomposite with improved electrochemical performances for dopamine determination

Original Research Article

Pages 59-65

Jianhui Deng, Meilin Liu, Fanbo Lin, Youyu Zhang, Yang Liu, Shouzhao Yao

## Graphical abstract



### Highlights

► A novel oligo (phenylene ethynylene)s/graphene nanocomposite (OPE-NH<sub>2</sub>/rGO) was synthesized. ► The OPE-NH<sub>2</sub>/rGO modified electrode exhibited improved electroactivity to dopamine oxidation. ► The sensor showed good performances for DA detection and can be used for human serum samples.

9

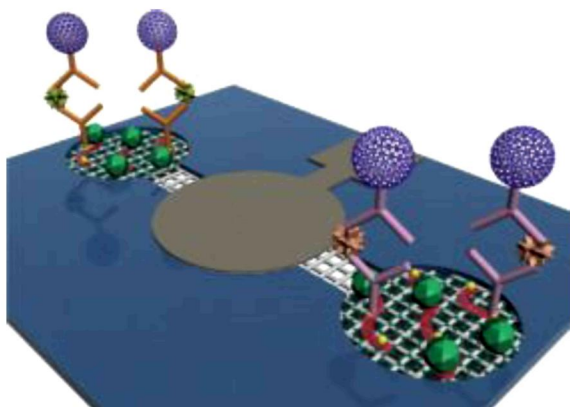
### Battery-triggered ultrasensitive electrochemiluminescence detection on microfluidic paper-based immunodevice based on dual-signal amplification strategy

Original Research Article

Pages 66-74

Weiping Li, Meng Li, Shenguang Ge, Mei Yan, Jiadong Huang, Jinghua Yu

### Graphical abstract



### Highlights

► The as-prepared GCA was employed as immunosensing platform for target capture. ► P-acid/NPS composites were used as signal amplification labels. ► Battery-triggered (constant-potential) ECL detection on this immunodevice. ► The cross-reactivity and cross-talk should be totally eliminated. ► The total immunoassay process could be completed within 15 min.

Extraction and Sample Handling

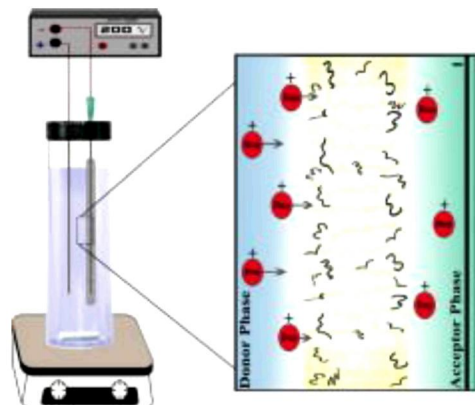
10

### Development and application of carbon nanotubes assisted electromembrane extraction (CNTs/EME) for the determination of buprenorphine as a model of basic drugs from urine samples

Original Research Article

Pages 75-80

### Graphical abstract



### Highlights

► Carbon nanotubes assisted electromembrane extraction (CNTs/EME) was developed. ► Carbon nanotubes reinforced hollow fiber was used in this research. ► The CNTs serve as a sorbent and provide an additional pathway for solute transport. ► In comparison with the EME method, this method showed higher extraction efficiency. ► Determination of buprenorphine, a model of basic drugs, in urine samples was performed.

11

**Rapid determination of triclosan in personal care products using new in-tube based ultrasound-assisted salt-induced liquid-liquid microextraction coupled with high performance liquid chromatography-ultraviolet detection**

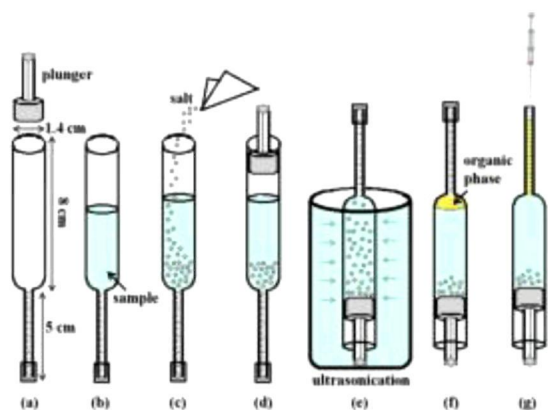
Original Research Article

Pages 81-87

Ming-Jen Chen, Ya-Ting Liu, Chiao-Wen Lin, Vinoth Kumar Ponnusamy, Jen-Fon Jen



## Graphical abstract



## Highlights

► In-tube based salt-induced liquid–liquid ultrasonic microextraction was developed. ► This method is applied for trace analysis of triclosan in personal care products. ► This is an efficient, easy, inexpensive and eco-friendly sample preparation method.

12

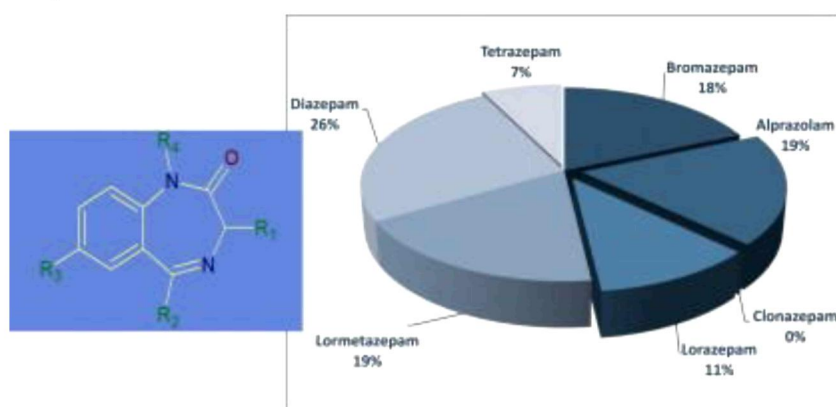
## A rapid ultrasound-assisted dispersive liquid–liquid microextraction followed by ultra-performance liquid chromatography for the simultaneous determination of seven benzodiazepines in human plasma samples

Original Research Article

Pages 88-96

Purificación Fernández, Cristina González, M. Teresa Peña, Antonia M. Carro, Rosa A. Lorenzo

## Graphical abstract



### Highlights

► A new method for the determination of benzodiazepines. ► Biological sample, plasma. ► Ultrasound-assisted-dispersive liquid–liquid microextraction. ► Comparative analysis by UPLC-PDA and HPLC-PDA.

Flow Analysis

13

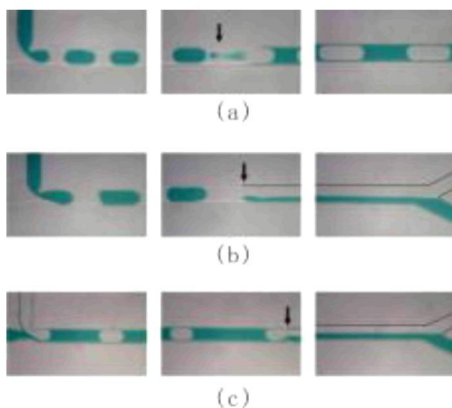
#### **Preparation of hybrid soda-lime/quartz glass chips with wettability-patterned channels for manipulation of flow profiles in droplet-based analytical systems**

Original Research Article

Pages 97-103

Zeqing Bai, Qiaohong He, Shanshi Huang, Xianqiao Hu, Hengwu Chen

### Graphical abstract



### Highlights

► Channels were wettability-patterned via UV-lithography of OTS coated in channel. ► Hybrid soda-lime/quartz glass chip facilitated UV degrading in-channel-coated OTS. ► Smooth profile switch of two-phase flows was realized in the patterned channels. ► Partition coefficients of drugs were determined via on-chip solvent extraction.

Mass Spectrometry

14

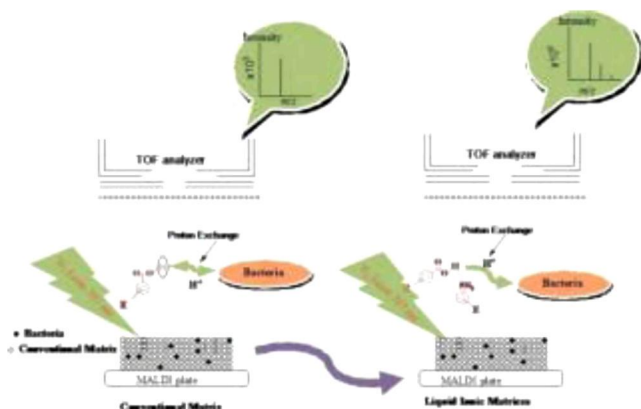
#### **Synthesis and application of ionic liquid matrices (ILMs) for effective pathogenic bacteria analysis in matrix assisted laser desorption/ionization (MALDI-MS)**

Original Research Article

Pages 104-111

Hani Nasser Abdelhamid, Judy Gopal, Hui-Fen Wu

## Graphical abstract



## Highlights

- Prepare and characterize two new series of ionic liquid.
- Apply the two series as matrices for pathogenic bacteria in MALDI.
- Enhance peaks signals and peaks number for MALDI-MS.
- Propose a reasonable mechanism based on physical parameters.

15

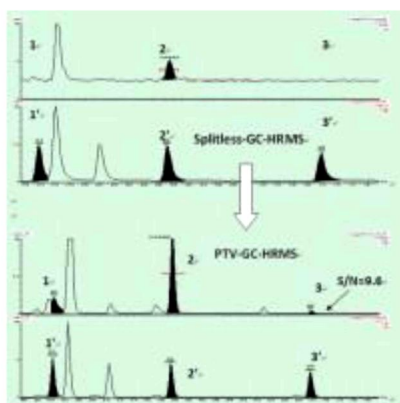
## Determination of dioxin-like polychlorinated biphenyls in 1 mL whole blood using programmable temperature vaporization large volume injection coupled to gas chromatogram and high-resolution mass spectrometry

Original Research Article

Pages 112-117

Haitao Shen, Rongfa Guan, Jingguang Li, Lei Zhang, Yiping Ren, Xiaomin Xu, Yang Song, Yunfeng Zhao, Jianlong Han, Yongning Wu

## Graphical abstract



## Highlights

► We developed and validated a PTV-GC–HRMS method to measure low level DL-PCBs. ► Liquid nitrogen was used in PTV external accessory equipment as fast cooling system. ► PTV's high-throughput and HRMS' high sensitivity and selectivity are well combined.

16

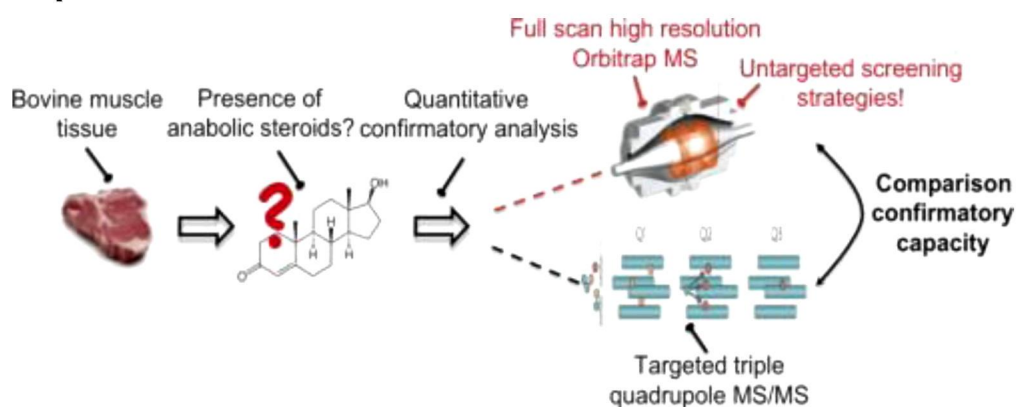
### High resolution orbitrap mass spectrometry in comparison with tandem mass spectrometry for confirmation of anabolic steroids in meat

Original Research Article

Pages 118-127

Lynn Vanhaecke, Lieven Van Meulebroek, Nathalie De Clercq, Julie Vanden Bussche

## Graphical abstract



## Highlights

► HRMS has great potential in residue analysis of steroids in animal derived matrices. ► HRMS enables untargeted screening strategies for new, initially unknown steroids. ► Good linearity, precision and selectivity were observed upon HRMS analysis. ► Sensitivity of HR-Orbitrap-MS was generally lower compared to QqQ method.

Sensors and Bioselective Reagents

17

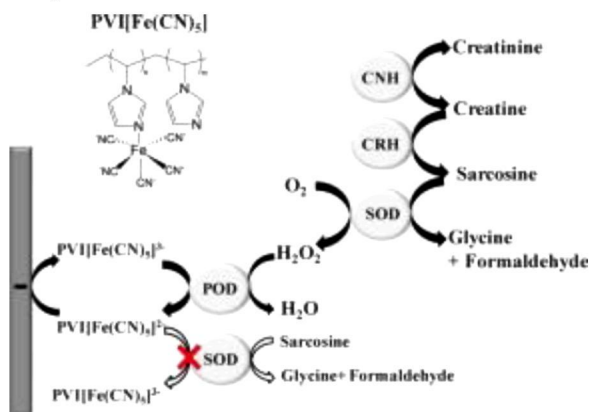
### Amperometric biosensor based on reductive H<sub>2</sub>O<sub>2</sub> detection using pentacyanoferrate-bound polymer for creatinine determination

Original Research Article

Pages 128-133

Chi-Hua Nieh, Seiya Tsujimura, Osamu Shirai, Kenji Kano

### Graphical abstract



### Highlights

- ▶ PVI[Fe(CN)<sub>5</sub>] has a low reactivity against sarcosine oxidase (SOD).
- ▶ PVI[Fe(CN)<sub>5</sub>] is suitable as a mediator for the SOD/peroxidase sensing system.
- ▶ The catalytic effects of mediator are related to the hydrophilic/phobic properties.
- ▶ The proposed biosensing method is applicable for urine creatinine determination.

18

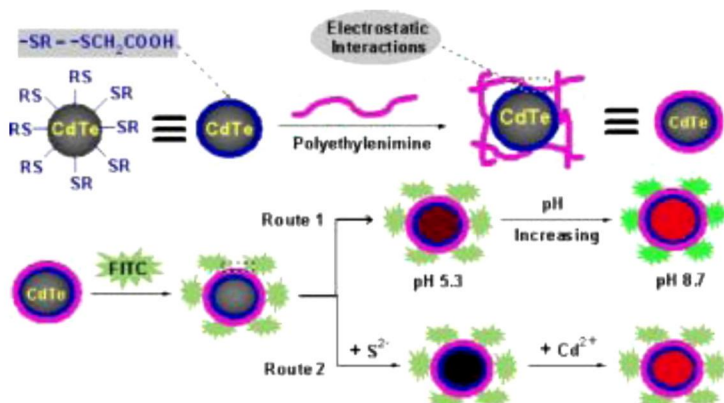
### An improved method for ratiometric fluorescence detection of pH and Cd<sup>2+</sup> using fluorescein isothiocyanate–quantum dots conjugates

Original Research Article

Pages 134-140

Rijun Gui, Xueqin An, Wenxue Huang

### Graphical abstract



### Highlights

- ▶ Dual-functional quantum dots were used for ratiometric fluorescence detection of pH and Cd<sup>2+</sup>. ▶
- Limit of detection for Cd<sup>2+</sup> was 12 nM. ▶ Experimental results confirmed high selectivity of this sensor.
- ▶ Perfect analytical performance was achieved in real samples.

19

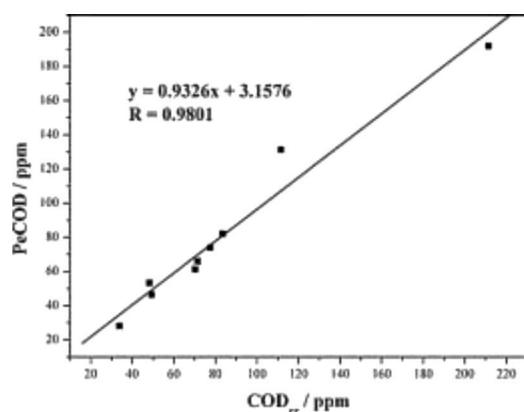
### Investigation on the application of titania nanorod arrays to the determination of chemical oxygen demand

Original Research Article

Pages 141-147

Chao Wang, Jiancheng Wu, Peifang Wang, Yanhui Ao, Jun Hou, Jin Qian

### Graphical abstract



### Highlights

- ▶ TiO<sub>2</sub> nanorod arrays were used for the determination of COD value for the first time. ▶ Obtained values correlated with conventional (i.e., dichromate) COD determination method. ▶ Described sensor shows long term stability and environmental friendly.

Separation Methods

20

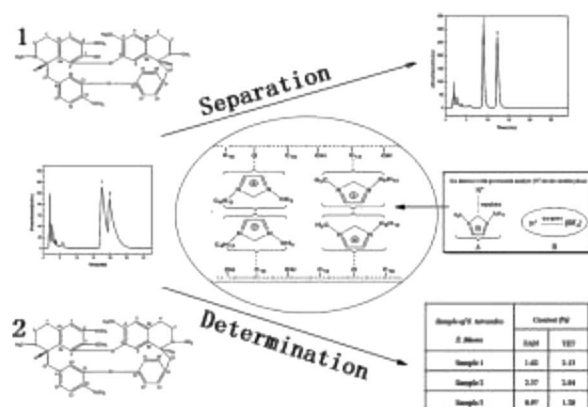
### Simultaneous determination of fangchinoline and tetrandrine in *Stephania tetrandra* S. Moore by using 1-alkyl-3-methylimidazolium-based ionic liquids as the RP-HPLC mobile phase additives

Original Research Article

Pages 148-154

Yan Tang, Ailing Sun, Renmin Liu, Yongqing Zhang

## Graphical abstract



## Highlights

- ILs are used as mobile phase additives to determine fangchinoline and tetrandrine.
- Effects of alkyl group, counterion, concentrations of IL and pH were investigated.
- The mechanism of the separation with ILs as mobile phase additives was discussed.

21

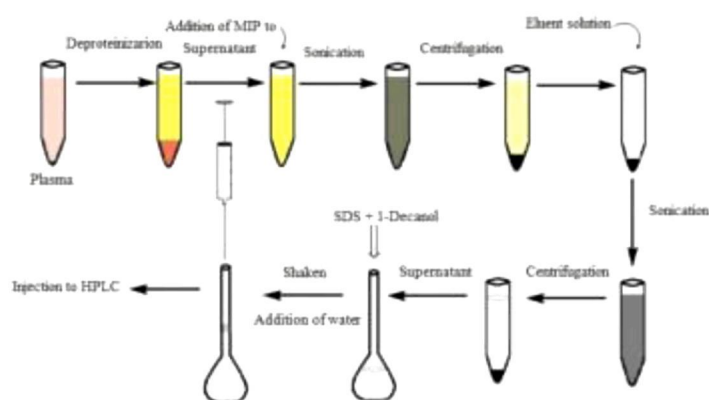
## Molecularly imprinted nano particles combined with miniaturized homogenous liquid-liquid extraction for the selective extraction of loratadine in plasma and urine samples followed by high performance liquid chromatography-photo diode array detection

Original Research Article

Pages 155-162

H. Ebrahimzadeh, K. Molaei, A.A. Asgharinezhad, N. Shekari, Z. Dehghani

## Graphical abstract



### ***Highlights***

► Synthesis of MIP as a selective sorbent for extraction of loratadine. ► For first time MISPE combined with MHLLE was applied to preconcentrate loratadine. ► Very high selectivity and affinity to LOT Grafting with lack of matrix effect. ► The method is applicable for clinical and chemical laboratories.