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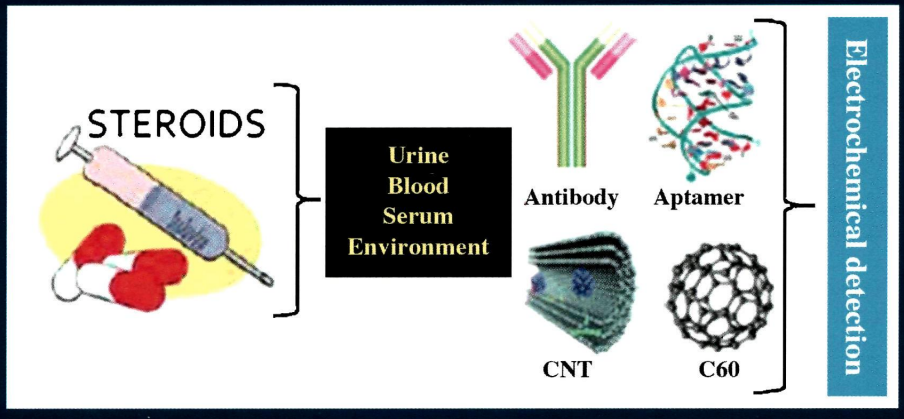

Review Article

A review on determination of steroids in biological samples exploiting nanobio-electroanalytical methods

Saurabh K. Yadav, Pranjal Chandra, Rajendra N. Goyal and Yoon-Bo Shim

(Published on pp. 14–24 of this issue)

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Volume 762, Pages 1-94 (31 January 2013)

Editorial Board

Page iii

Tutorial

2

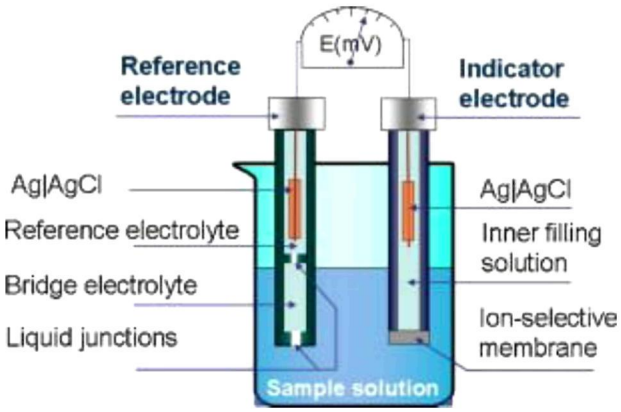
A tutorial on the application of ion-selective electrode potentiometry: An analytical method with unique qualities, unexplored opportunities and potential pitfalls; Tutorial

Review Article

Pages 1-13

Ernő Lindner, Bradford D. Pendley

Graphical abstract



Highlights

► Electrochemical cells for potentiometric measurement. ► Characterization of potentiometric electrodes. ► Measurement of ion activities and concentrations with potentiometric electrodes. ► Analysis of real samples: The role of the selectivity coefficient. ► Methods to evaluate the agreement between two methods.

Review article

3

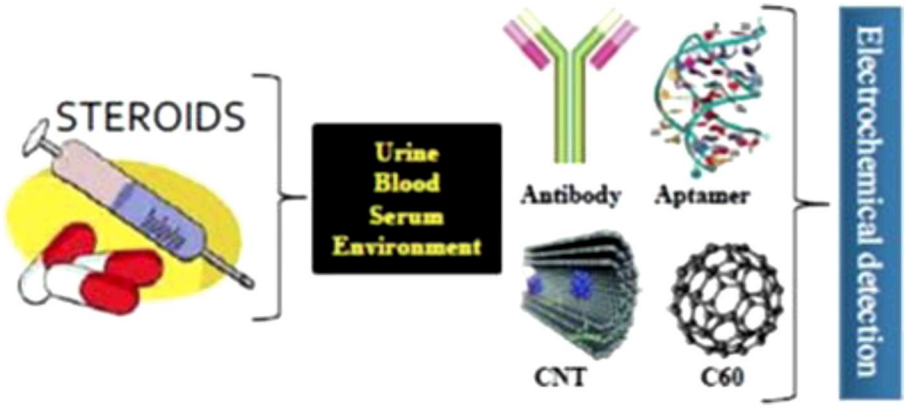
A review on determination of steroids in biological samples exploiting nanobio-electroanalytical methods

Review Article

Pages 14-24

Saurabh K. Yadav, Pranjal Chandra, Rajendra N. Goyal, Yoon-Bo Shim

Graphical abstract



Highlights

► Review article on steroids determination from 2009 to present. ► Nanomaterial, molecular imprinting polymer modified and immunosensors are discussed. ► Detection limit is similar to chromatographic techniques for many steroids. ► Future prospects using nanoconducting polymer modified sensor and microchips suggested.

Chemometrics

4

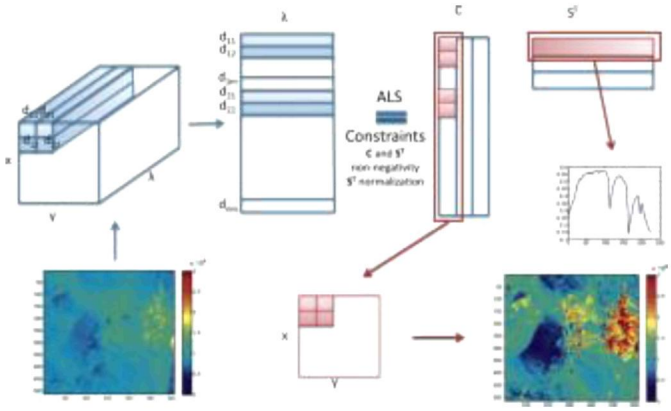
Application of Multivariate Curve Resolution Alternating Least Squares (MCR-ALS) to remote sensing hyperspectral imaging

Original Research Article

Pages 25-38

Xin Zhang, Romà Tauler

Graphical abstract



Highlights

► MCR-ALS is successfully applied to remote sensing hyperspectral images. ► Pure spectra and relative concentrations of image constituents were obtained. ► MCA-ALS results are favorably compared to results obtained by MVSA and VCA methods. ► Physical constraints were implemented to decrease the rotational ambiguities. ► MCR-BANDS is used to evaluate the presence and extent of rotational ambiguities.

Electrochemistry

5

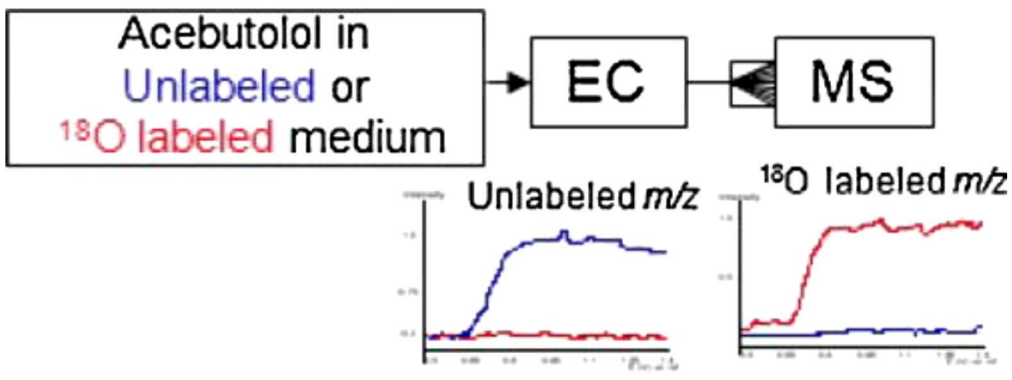
Voltammetry coupled to mass spectrometry in the presence of isotope ^{18}O labeled water for the prediction of oxidative transformation pathways of activated aromatic ethers: Acebutolol

Original Research Article

Pages 39-46

Ugo Bussy, Illa Tea, Véronique Ferchaud-Roucher, Michel Krempf, Virginie Silvestre, Nicolas Galland, Denis Jacquemin, Moa Andresen-Bergström, Ulrik Jurva, Mohammed Boujtita

Graphical abstract



Highlights

► Voltammetry coupled to mass spectrometry method as a useful tool for on-line predictions of electrochemical transformations. ► Evidence of the O-dealkoxylation reaction pathway of acebutolol in the presence of labeled water. ► New approach for on line EC-MS applications.

6

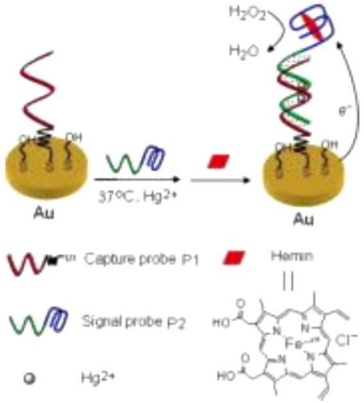
Electrocatalytic assay of mercury(II) ions using a bifunctional oligonucleotide signal probe

Original Research Article

Pages 47-53

Ziping Zhang, Jungang Yin, Zhaoyang Wu, Ruqin Yu

Graphical abstract



Highlights

► A bifunctional oligonucleotide was designed for Hg^{2+} electrochemical sensing. ► Electrocatalytic property of G4–hemin was investigated using cyclic voltammetry. ► Electrocatalytic reduction of H_2O_2 by G4–hemin provided amplified signal for Hg^{2+}. ► A simple and effective electrochemical Hg^{2+} biosensor was successfully developed.

Extraction and Sample Handling

7

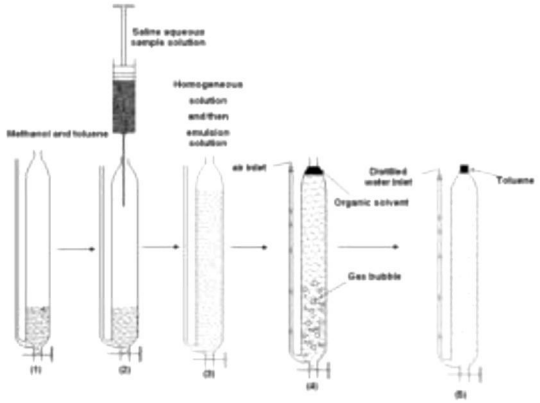
Homogeneous liquid–liquid microextraction via flotation assistance for rapid and efficient determination of polycyclic aromatic hydrocarbons in water samples

Original Research Article

Pages 54-60

Majid Haji Hosseini, Mohammad Rezaee, Saeid Akbarian, Farhang Mizani, Mohammad Reza Pourjavid, Masoud Arabieh

Graphical abstract



Highlights

► Homogeneous liquid–liquid microextraction via flotation assistance was developed based on applying low density organic solvents. ► In this research, a special extraction cell was designed to facilitate collection of the low-density solvent extraction. ► In this work, air flotation was used to break up the organic-in water emulsion and to finish the extraction process.

8

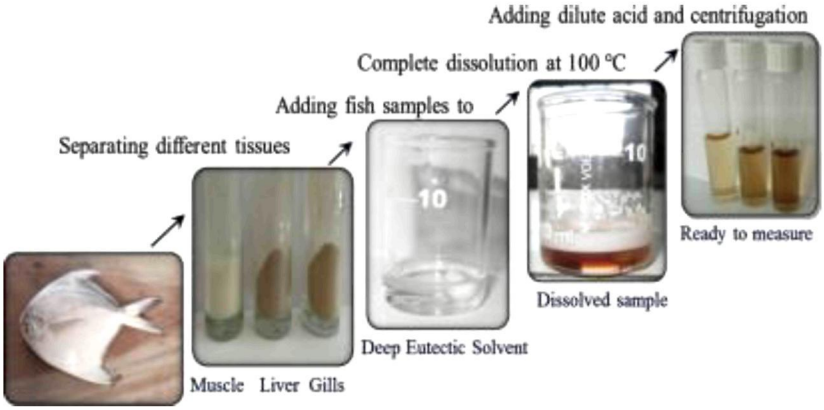
A novel digestion method based on a choline chloride–oxalic acid deep eutectic solvent for determining Cu, Fe, and Zn in fish samples

Original Research Article

Pages 61-67

Emadaldin Habibi, Kamal Ghanemi, Mehdi Fallah-Mehrjardi, Ali Dadolahi-Sohrab

Graphical abstract



Highlights

► A novel digestion method: lack of concentrated acids or oxidizing reagents. ► First report of using choline chloride–oxalic acid (ChCl–Ox) for digestion. ► Complete dissolution of biological samples in ChCl–Ox for solubilization metals. ► Extraction recoveries greater than 95%: validated by the fish protein CRM. ► Successfully applied in different fish tissues (Muscle, Liver, and Gills).

Mass Spectrometry

9

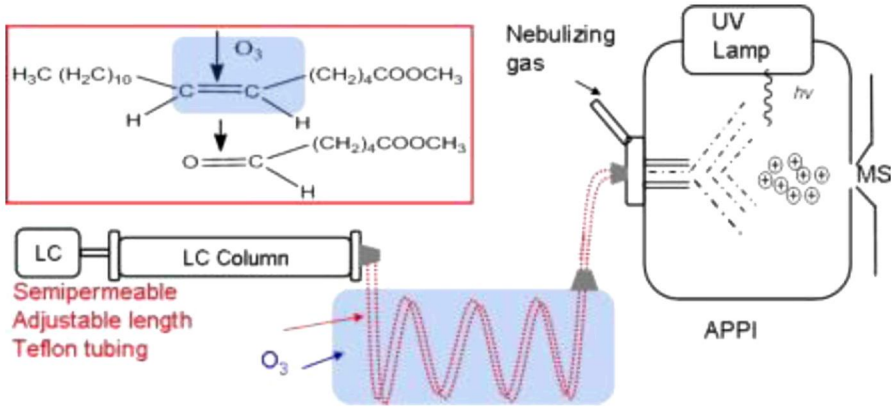
The direct determination of double bond positions in lipid mixtures by liquid chromatography/in-line ozonolysis/mass spectrometry

Original Research Article

Pages 68-75

Chenxing Sun, Yuan-Yuan Zhao, Jonathan M. Curtis

Graphical abstract



Highlights

► An ozonolysis reactor was coupled in-line with mass spectrometry (O_3-MS). ► Double bond positions in FAME were determined unambiguously without standards. ► LC directly connected to O_3-MS allowed double bond localization in lipid mixtures. ► LC/O_3-MS applied to bovine fat demonstrated practical use in lipid analysis.

Sensors and Bioselective Reagents

10

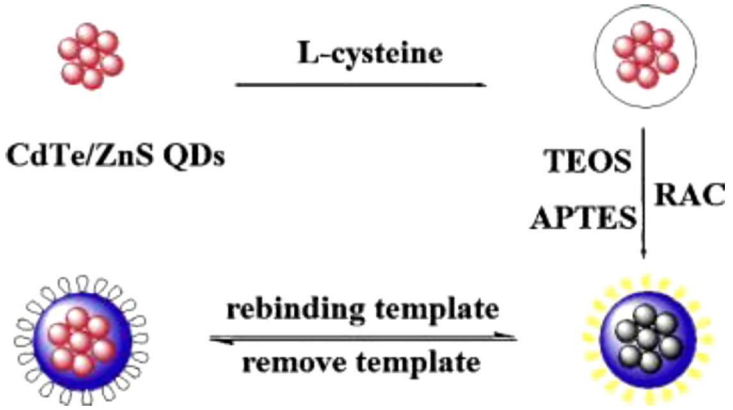
A novel dual-function molecularly imprinted polymer on CdTe/ZnS quantum dots for highly selective and sensitive determination of ractopamine

Original Research Article

Pages 76-82

Huilin Liu, Dongrui Liu, Guozhen Fang, Fangfang Liu, Cuicui Liu, Yukun Yang, Shuo Wang

Graphical abstract



Highlights

► We have developed a novel dual-function MIP-coated QDs material. ► The MIP-coated QDs combine the advantage of molecular imprinting and QDs. ► We used MIP-coated QDs as fluorescence sensing material for recognize RAC. ► We used QDs@MIP as sorbent to combine SPE with HPLC for the determination.

11

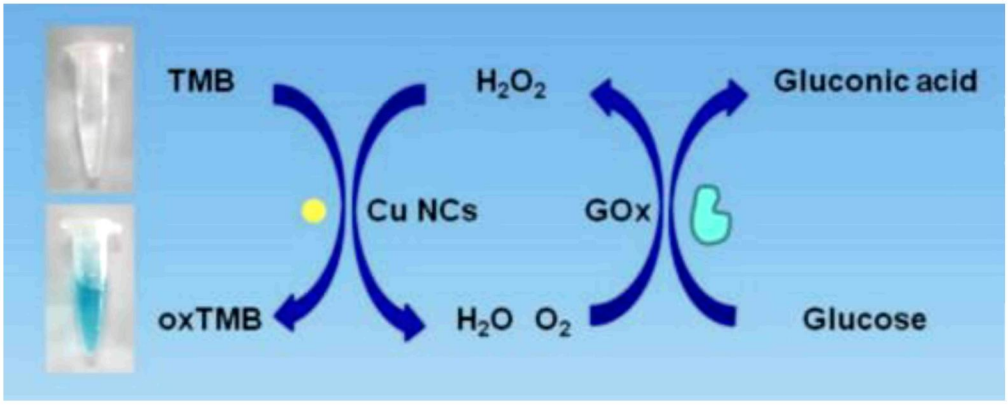
Copper nanoclusters as peroxidase mimetics and their applications to H_2O_2 and glucose detection

Original Research Article

Pages 83-86

Lianzhe Hu, Yali Yuan, Ling Zhang, Jianming Zhao, Saadat Majeed, Guobao Xu

Graphical abstract



Highlights

► Copper nanoclusters exhibit peroxidase-like activity for the first time. ► They can catalyze the oxidation of TMB by H_2O_2 to produce a blue color reaction. ► They have high stability and activity under harsh conditions. ► Copper nanocluster-based colorimetric assays for H_2O_2 and glucose were developed.

12

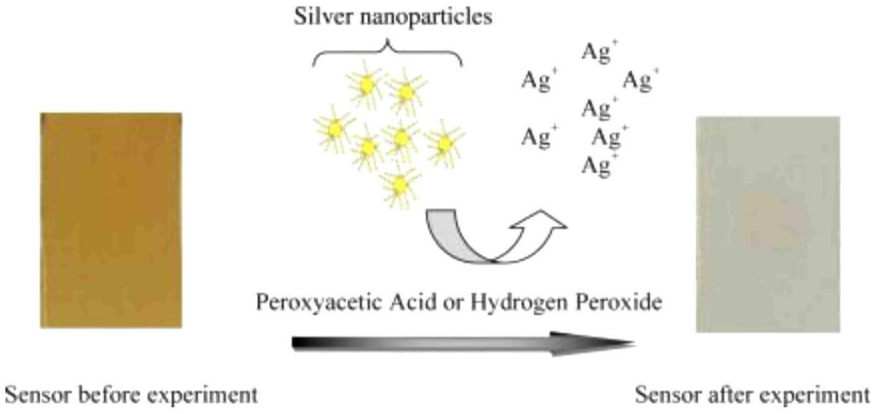
Localized surface plasmon resonance sensor for simultaneous kinetic determination of peroxyacetic acid and hydrogen peroxide

Original Research Article

Pages 87-93

Javad Tashkhourian, Mohammad Reza Hormozi-Nezhad, Javad Khodaveisi, Razieh Dashti

Graphical abstract



Highlights

► A sensor for determination of peroxyacetic acid and hydrogen peroxide is introduced. ► Sol–gel silica thin film containing Ag-NPs was synthesized as a sensor membrane. ► Change in the localized surface plasmon resonance intensity of Ag-NPs was observed. ► The analytical performance of this sensor has been evaluated in disinfectant solutions.