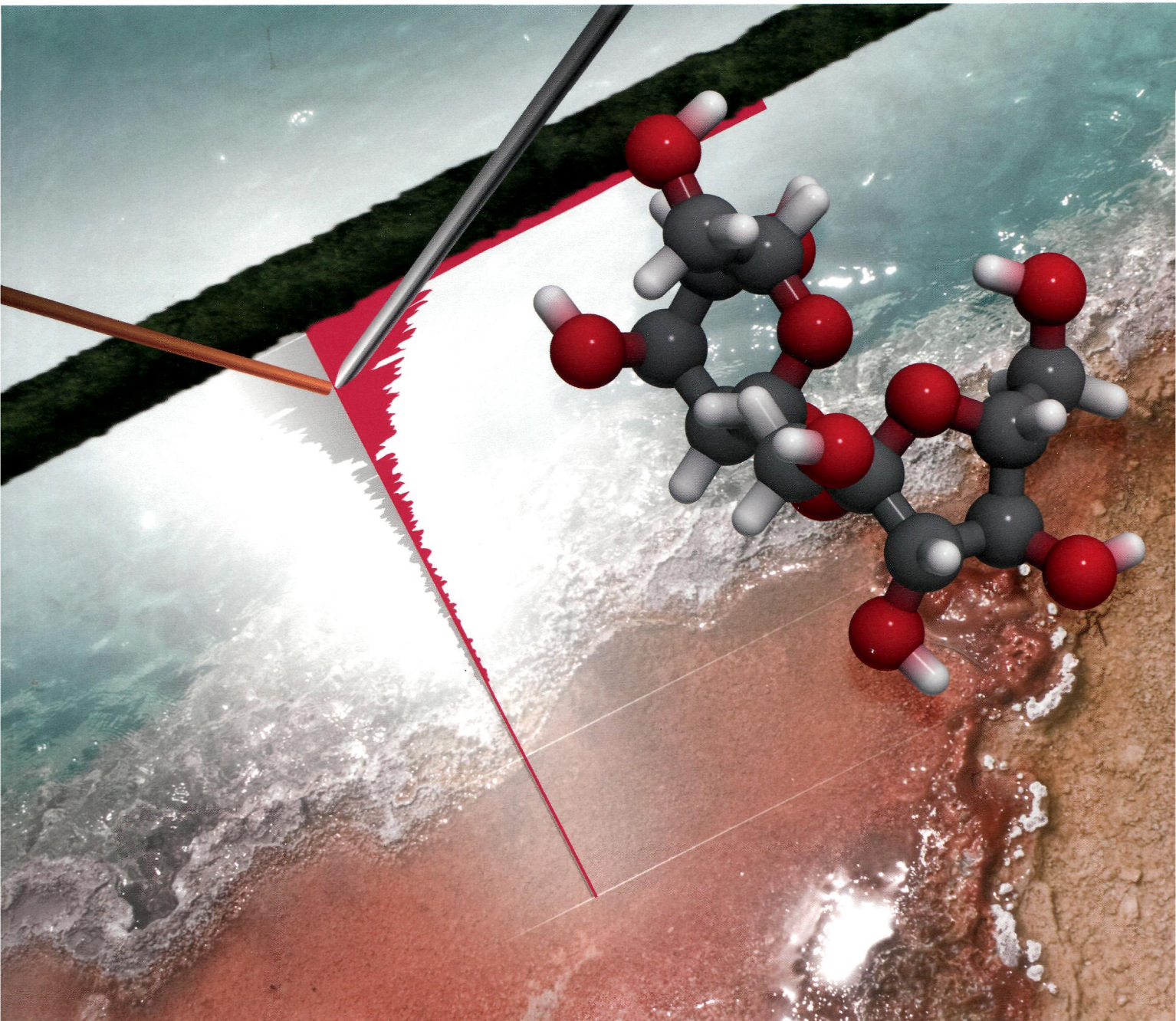


1714
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Analyst

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Volume 138 | Number 7 | 7 April 2013 | Pages 1911–2200



ISSN 0003-2654

RSC Publishing

HOT ARTICLE

Ingela Lanekoff, Julia Laskin *et al.*
Spatially resolved analysis of glycolipids and
metabolites in living *Synechococcus* sp. PCC 7002
using nanospray desorption electrospray ionization



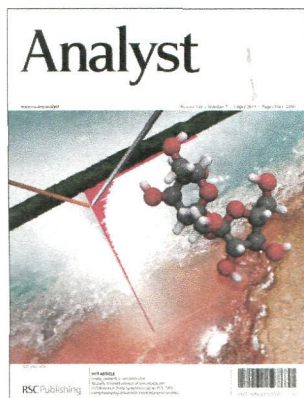
0003-2654(2013)138:7;1-C

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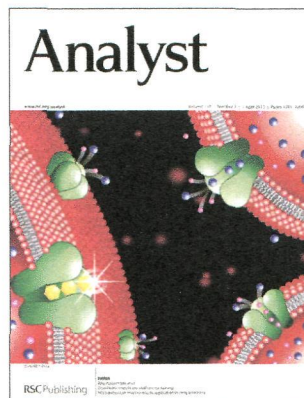
IN THIS ISSUE

ISSN 0003-2654 CODEN ANALAO 138(7) 1911–2200 (2013)



Cover

See Ingela Lanekoff, Julia Laskin *et al.*, pp. 1971–1978. Image reproduced by permission of Tomiann Parker, Battelle Memorial Institute, from *Analyst*, 2013, **138**, 1971.



Inside cover

See Ahu Arslan Yildiz *et al.*, pp. 2007–2012. Image reproduced by permission of Ahu Arslan Yildiz from *Analyst*, 2013, **138**, 2007.

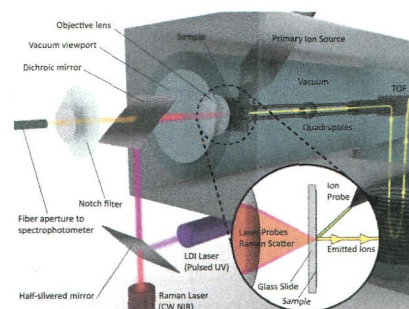
CRITICAL REVIEW

1924

Correlated imaging – a grand challenge in chemical analysis

Rachel Masyuko, Eric J. Lanni, Jonathan V. Sweedler* and Paul W. Bohn*

Correlated chemical imaging is an emerging strategy for acquisition of images by combining information from multiplexed measurement platforms to track, visualize, and interpret *in situ* changes in the structure, organization, and activities of interesting chemical systems, frequently spanning multiple decades in space and time.



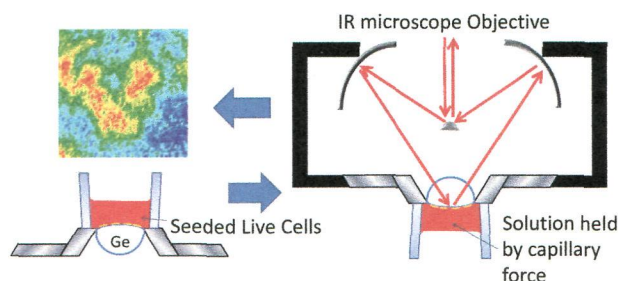
TUTORIAL REVIEW

1940

ATR-FTIR spectroscopic imaging: recent advances and applications to biological systems

Sergei G. Kazarian* and K. L. Andrew Chan

A tutorial review on ATR-FTIR imaging: a versatile, label-free and chemical specific imaging method for the analysis of biological systems.



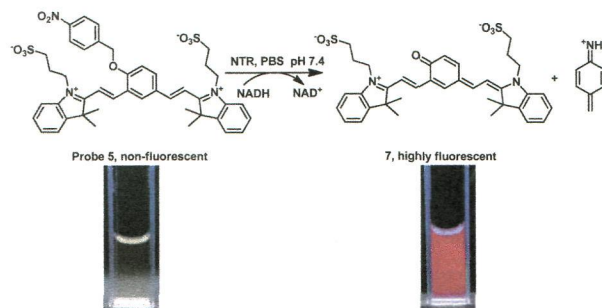
Федеральное государственное
бюджетное учреждение науки
Центральная научная библиотека
Уральского отделения
Российской академии наук (ЦНБ УрО РАН)

1952

A novel near-infrared fluorescent probe for selectively sensing nitroreductase (NTR) in an aqueous medium

Youmin Shi, Sichun Zhang* and Xinrong Zhang*

A novel near-infrared fluorescence probe was developed for NTR detection with excellent selectivity over 100 equiv. of other biological reductants.



1956

An electrochemical deamidated gliadin antibody immunosensor for celiac disease clinical diagnosis

Marta M. P. S. Neves, María Begoña González-García, Henri P. A. Nouws and Agustín Costa-García*

The first electrochemical immunosensor (EI) for the detection of antibodies against deamidated gliadin peptides (DGP) is described here.

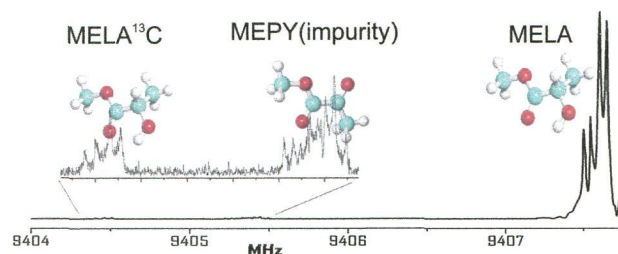


1959

Detection and characterization of impurities in commercial products with Fourier transform microwave spectroscopy

Biagio Velino, Laura B. Favero, Paolo Ottaviani, Assimo Maris and Walther Caminati*

Impurities with a concentration down to 0.01% in commercial samples can be characterized by FTMW spectroscopy.

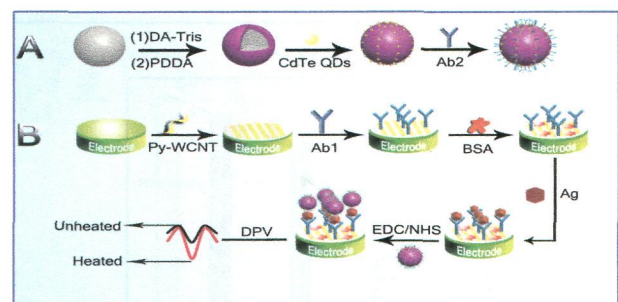


1962

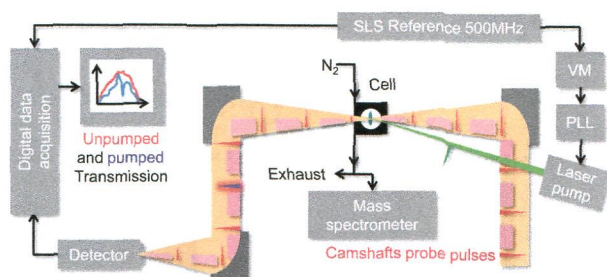
Ultrasensitive immunoassay based on dual signal amplification of the electrically heated carbon electrode and quantum dots functionalized labels for the detection of matrix metalloproteinase-9

Fang Jiang, Jing-Jing Zhang, Jian-Rong Zhang* and Jun-Jie Zhu*

A dual signal amplification strategy integrating electrically heated carbon electrode technique and quantum dots labels for detection of MMP-9.



1966



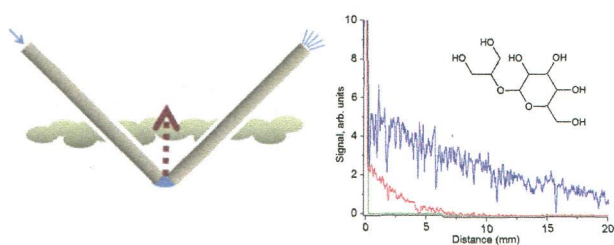
Transient mid-IR study of electron dynamics in TiO₂ conduction band

Jacinto Sá,^{*} Peter Friedli, Richard Geiger, Philippe Lerch, Mercedes H. Rittmann-Frank, Christopher J. Milne, Jakub Szlachetko, Fabio G. Santomauro, Jeroen A. van Bokhoven, Majed Chergui, Michel J. Rossi and Hans Sigg

The dynamics of TiO₂ conduction band electrons were followed with a novel broadband synchrotron-based transient mid-IR spectroscopy setup.

PAPERS

1971

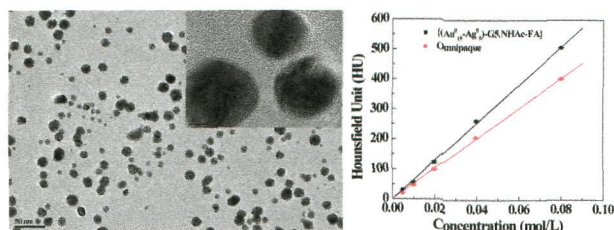


Spatially resolved analysis of glycolipids and metabolites in living *Synechococcus* sp. PCC 7002 using nanospray desorption electrospray ionization

Ingela Lanekoff,^{*} Oleg Geydebekht, Grigoriy E. Pinchuk, Allan E. Konopka and Julia Laskin^{*}

Mapping chemical gradients of endogenous molecules secreted by living bacterial colonies onto agar using nanospray desorption electrospray ionization mass spectrometry.

1979

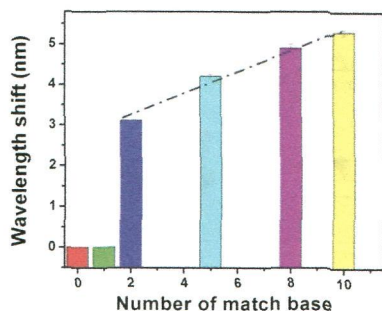


Facile formation of folic acid-modified dendrimer-stabilized gold-silver alloy nanoparticles for potential cellular computed tomography imaging applications

Hui Liu, Mingwu Shen, Jinglong Zhao,^{*} Jingyi Zhu, Tingting Xiao, Xueyan Cao, Guixiang Zhang and Xiangyang Shi^{*}

Folic acid-modified dendrimer-stabilized gold-silver alloy nanoparticles are easy to synthesize for potential computed tomography imaging applications.

1988



Label-free, disposable fiber-optic biosensors for DNA hybridization detection

Ming-jie Yin,^{*} Chuang Wu, Li-yang Shao, Wing Kin Edward Chan, A. Ping Zhang, Chao Lu and Hwa-yaw Tam

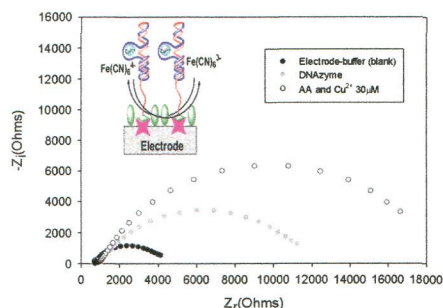
TCFMI-based DNA sensors can identify the number of matched bases of target ssDNA with a high sensitivity of 0.27 nm/matched-base.

1995

Label-free selective impedimetric detection of Cu^{2+} ions using catalytic DNA

Cristina Ocaña, Natalia Malashikhina, Manel del Valle* and Valeri Pavlov*

A highly sensitive and selective DNAzyme based impedimetric sensor for the detection of copper ions is reported.

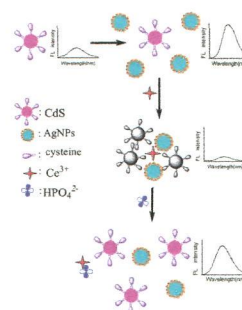


2000

Novel switchable sensor for phosphate based on the distance-dependant fluorescence coupling of cysteine-capped cadmium sulfide quantum dots and silver nanoparticles

Guang-Li Wang,* Huan-Jun Jiao, Xiao-Ying Zhu, Yu-Ming Dong and Zai-Jun Li

Switchable sensor for phosphate based on Ce^{3+} induced aggregation and phosphate modulated disaggregation of QDs and AgNPs.

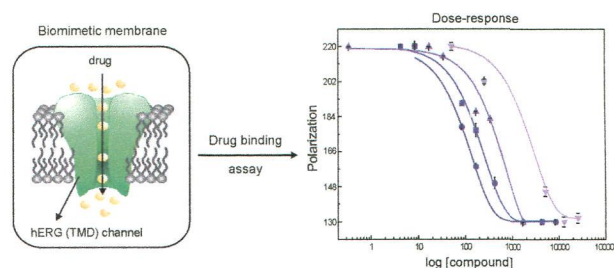


2007

Biomimetic membrane platform containing hERG potassium channel and its application to drug screening

Ahu Arslan Yildiz,* CongBao Kang and Eva-Kathrin Sinner

An artificial lipid membrane platform has been constructed to mimic the cell-membrane for cell-free expression of the hERG (human ether-à-go-go-related gene) potassium channel.

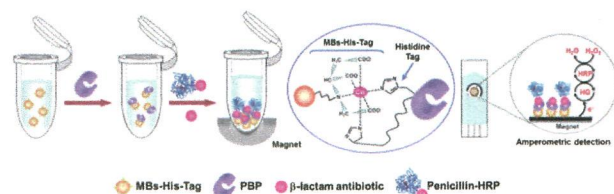


2013

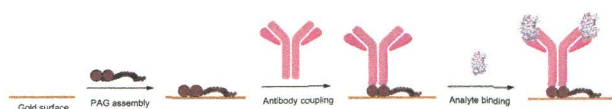
An amperometric affinity penicillin-binding protein magnetosensor for the detection of β -lactam antibiotics in milk

M. Gamella, S. Campuzano, F. Conzuelo, M. Esteban-Torres, B. de las Rivas, A. J. Reviejo, R. Muñoz and J. M. Pingarrón*

Detection of β -lactam antibiotics in milk based on an amperometric affinity penicillin-binding protein magnetosensor.



2023

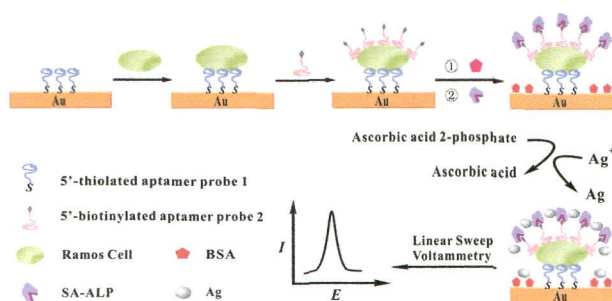


Site-directed antibody immobilization using a protein A–gold binding domain fusion protein for enhanced SPR immunosensing

Elena de Juan-Franco, Antonio Caruz, J. R. Pedrajas and Laura M. Lechuga*

We have implemented a method to improve the performance of SPR direct immunoassays based on the use of a fusion protein (PAG) for the oriented immobilization of antibodies.

2032

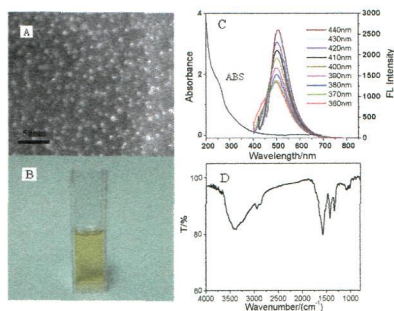


Aptamer-aided target capturing with biocatalytic metal deposition: an electrochemical platform for sensitive detection of cancer cells

Zi Yi, Xiao-Yan Li, Qing Gao, Li-Juan Tang* and Xia Chu*

A novel aptamer biosensor platform using biocatalytic metal deposition for intrinsic, specific and ultrasensitive electrochemical cancer cell detection.

2038

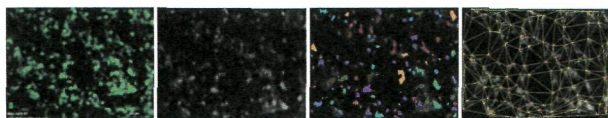


Electrogenerated chemiluminescence detection of trace level pentachlorophenol using carbon quantum dots

Jiezhen Li, Niya Wang, ThanhThuy Tran.T, Chen'an Huang, Lan Chen, Lijuan Yuan, Liping Zhou, Rui Shen and Qingyun Cai*

The environmental pollutant pentachlorophenol (PCP) is detected using a combination of carbon quantum dots and platinum as the working electrode. A detection limit of $1.3 \times 10^{-12} \text{ g L}^{-1}$ is achieved.

2044



Interaction analysis between binder and particles in multiphase slurries

Ki Yeon Cho, Young Il Kwon, Jae Ryoum Youn* and Young Seok Song*

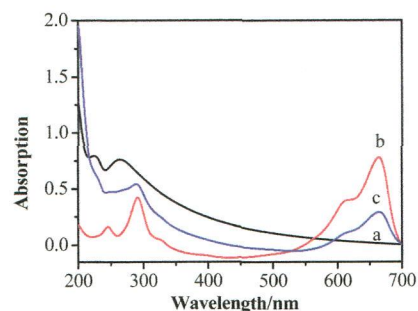
The dispersity index is used to evaluate the internal structure of battery slurries in a systematic, quantitative manner and the structure–property relationship is analyzed.

2051

Electrochemical recognition for carboxylic acids based on multilayer architectures of β -cyclodextrin and methylene blue/reduce-graphene interface on glassy carbon electrodes

Qian Han, Yonghua Wang, Yihan Huang, Liju Guo and Yingzi Fu*

A chiral interface has been designed for specific recognition of carboxylic acids using multilayer architectures of β -cyclodextrin and methylene blue/reduce-graphene on glassy carbon electrodes.

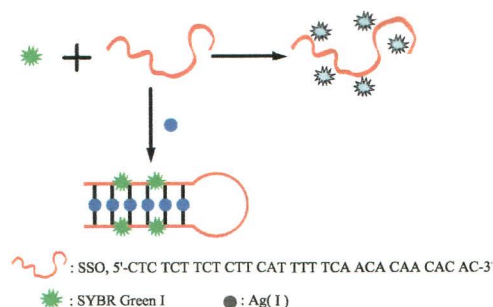


2057

Highly sensitive and selective detection of silver(I) in aqueous solution with silver(I)-specific DNA and Sybr green I

Qing Yang, Fan Li, Yan Huang, Hui Xu,* Linsheng Tang,* Lihua Wang and Chunhai Fan

Optical sensor for silver ions based on label-free fluorescence.

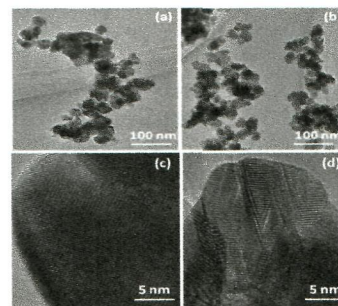


2061

Fabrication of Cr doped SnO₂ nanoparticles based biosensor for the selective determination of riboflavin in pharmaceuticals

N. Lavanya, S. Radhakrishnan, C. Sekar,* M. Navaneethan and Y. Hayakawa

Fabrication and testing of a riboflavin biosensor based on Cr doped SnO₂ nanoparticles.

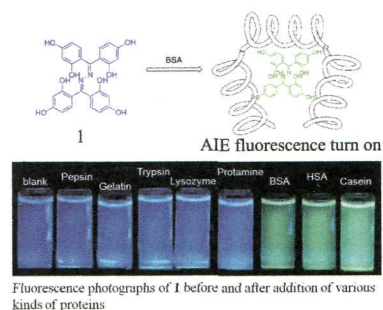


2068

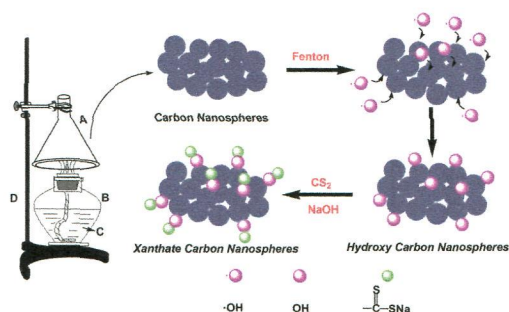
A ratiometric fluorescent probe for hydrophobic proteins in aqueous solution based on aggregation-induced emission

Lu Peng, Ruirui Wei, Kai Li, Zhaojuan Zhou, Panshu Song and Aijun Tong*

A fluorescent probe was developed for the ratiometric detection of hydrophobic proteins based on aggregation-induced emission.



2073

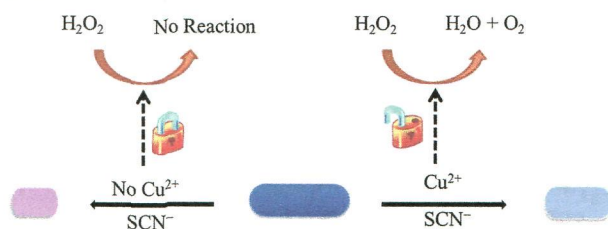


Facile synthesis of functionalized carbon nanospheres for determination of Cu^{2+}

Jiajia Zhang, Changming Cheng, Ying Huang, Lei Qian, Baozhan Zheng, Hongyan Yuan, Yong Guo* and Dan Xiao*

In this research, quantities of carbon nanospheres (CNSs) were prepared with a convenient and low cost method at atmospheric pressure and functionalized with the xanthate group in a simple way.

2080

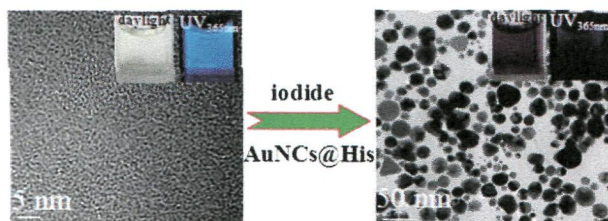


Label-free colorimetric sensing of copper(II) ions based on accelerating decomposition of H_2O_2 using gold nanorods as an indicator

Shasha Wang, Zhaopeng Chen,* Ling Chen, Ruili Liu and Lingxin Chen*

A novel label-free colorimetric strategy for sensitive detection of Cu^{2+} based on decelerating etching of GNRs using H_2O_2 as oxidant.

2085

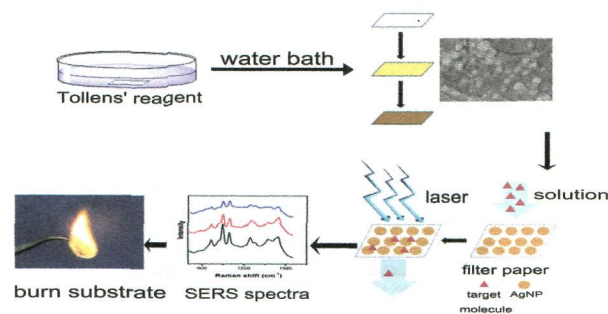


New colorimetric and fluorometric sensing strategy based on the anisotropic growth of histidine-mediated synthesis of gold nanoclusters for iodide-specific detection

Yifeng Wang, Haiyan Zhu, Xiaoming Yang, Yao Dou and Zhongde Liu*

A new colorimetric and fluorometric sensing strategy based on the anisotropic growth of the AuNCs@His for iodide-specific detection.

2090



Silver nanoparticles decorated filter paper via self-sacrificing reduction for membrane extraction surface-enhanced Raman spectroscopy detection

Yanjing Meng, Yongchao Lai, Xiaohong Jiang, Quanqin Zhao and Jinhua Zhan*

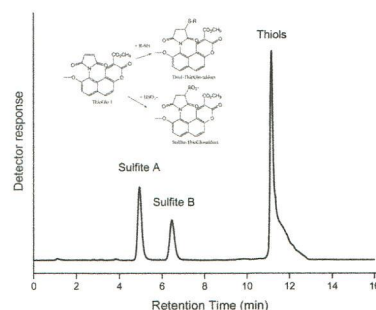
Silver nanoparticles decorated filter paper has been prepared via self-sacrificing reduction and achieved quantitative SERS detection by a flow-through method.

2096

Quantification of protein thiols using ThioGlo 1 fluorescent derivatives and HPLC separation

Signe Hoff,* Flemming H. Larsen, Mogens L. Andersen and Marianne N. Lund

A new HPLC based method for quantification of thiol compounds in biological systems without interference from sulfite.

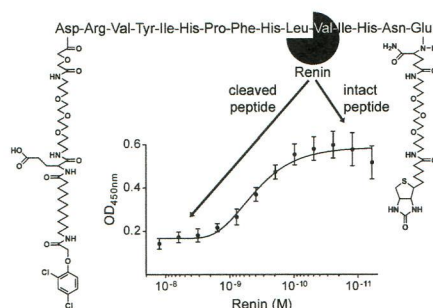


2104

Kinetic analysis of renin and its inhibitors by detecting double-labelled peptidic substrates with an immunoassay

Hans H. Gorris*

Double-labelled peptidic substrates of renin are first subjected to proteolysis in solution and then detected in a sandwich ELISA format.

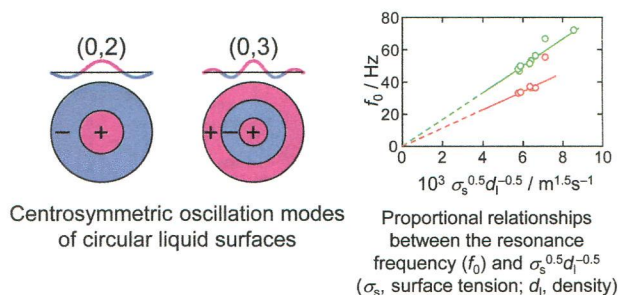


2110

Surface tension determination through measurements of resonance oscillation of a small surface using dielectric force by a localized alternating current electric field

Satoshi Tsukahara,* Tsuyoshi Tsuruta and Terufumi Fujiwara

Resonance oscillations of liquid surfaces caused by a localized alternating current electric field result in the determination of surface tensions.

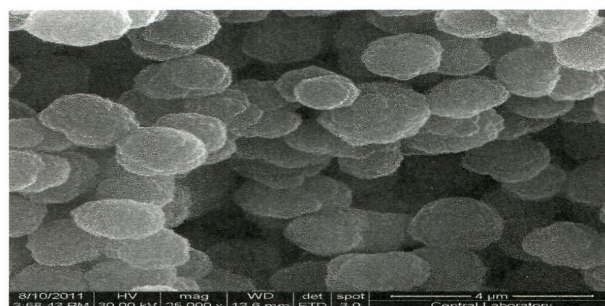


2118

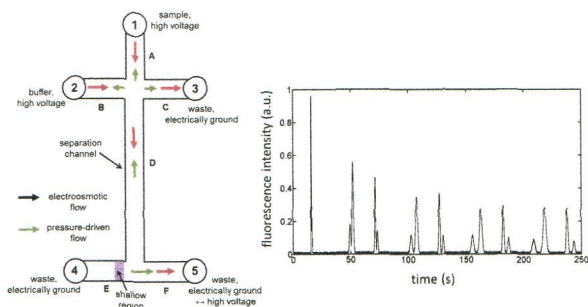
Preparation and electrochromatographic characterization of methacrylate-based weak cation exchange columns for capillary electrochromatography

Cemil Aydođan and Adil Denizli*

Glutamic acid modified monolithic columns are prepared and characterized and also applied to the separation of the biomolecules.



2126

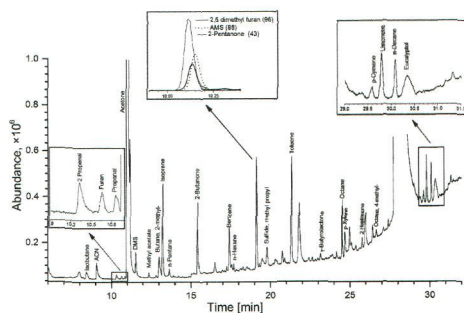


Microfluidic flow counterbalanced capillary electrophoresis

Ling Xia and Debashis Dutta*

This work reports the design of a microfluidic flow counterbalanced capillary electrophoresis system with on-chip pressure-generation capability.

2134

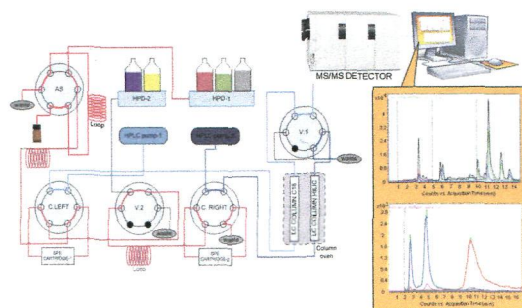


Blood and breath levels of selected volatile organic compounds in healthy volunteers

Paweł Mochalski,* Julian King, Martin Klieber, Karl Unterkofler, Hartmann Hinterhuber, Matthias Baumann and Anton Amann*

Gas chromatography with mass spectrometric detection (GC-MS) was used to identify and quantify volatile organic compounds in the blood and breath of healthy individuals.

2146

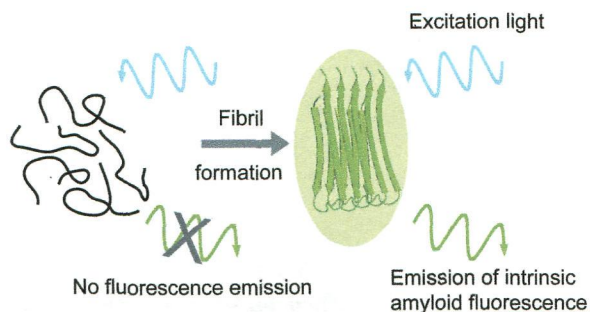


An approach for quantitative analysis of vitamins D and B₉ and their metabolites in human biofluids by on-line orthogonal sample preparation and sequential mass spectrometry detection

Carlos Ferreiro-Vera, Feliciano Priego-Capote* and María Dolores Luque de Castro

A method is proposed here for analysis of metabolites with orthogonal physico-chemical properties by SPE-LC-QqQ MS/MS in human serum, urine and breast milk samples.

2156



Protein amyloids develop an intrinsic fluorescence signature during aggregation

Fiona T. S. Chan, Gabriele S. Kaminski Schierle, Janet R. Kumita, Carlos W. Bertocini, Christopher M. Dobson and Clemens F. Kaminski*

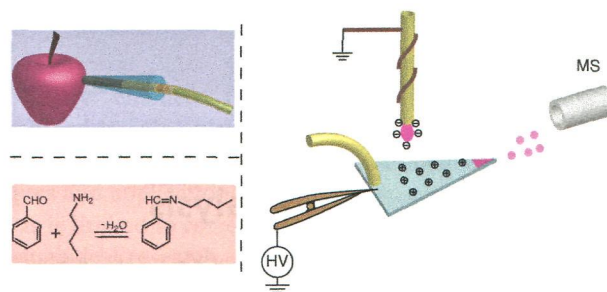
A structure-specific intrinsic fluorescence develops during the aggregation of a range of disease-relevant human polypeptides including amyloid-beta, lysozyme and tau.

2163

Development and applications of paper-based electro-spray ionization-mass spectrometry for monitoring of sequentially generated droplets

Wu Liu, Sifeng Mao, Jing Wu and Jin-Ming Lin*

Paper-spray ionization-mass spectrometry was utilized for the online analysis of continuous sub-microlitre droplets, and several applications in organic chemistry and biology were introduced.

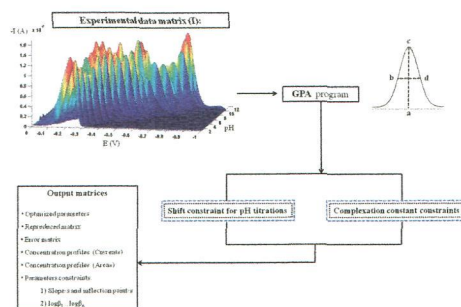


2171

Parametric Signal Fitting by Gaussian Peak Adjustment: implementation of 2D transversal constraints and its application for the determination of pK_a and complexation constants by differential pulse voltammetry

Santiago Cavanillas, Núria Serrano, José Manuel Díaz-Cruz,* Cristina Ariño and Miquel Esteban

An improved version of GPA method is presented which includes transversal constraints to increase the consistency of the full dataset resolution.

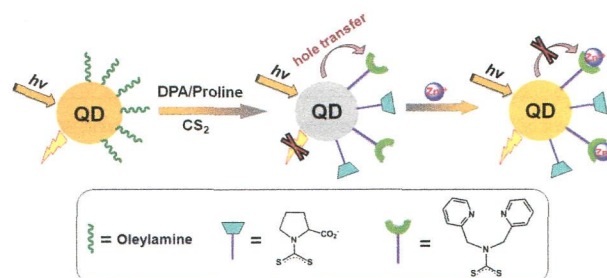


2181

A quantum dot-based "off-on" fluorescent probe for biological detection of zinc ions

Hu Xu, Zhiping Wang, Yan Li, Shijian Ma, Peiyi Hu and Xinhua Zhong*

A quantum dots-based fluorescence "off-on" probe for biological Zn^{2+} detection with high sensitivity and selectivity has been developed.



2192

Use of screen-printed microelectrodes working as generator/collector systems for the determination of the antioxidant capacity of phenolic compounds

Alice René, Cyril Cugnet, Didier Hauchard and Laurent Authier*

A new method using cheap homemade dual-electrodes has been developed to measure the antioxidant capacity of phenolic compounds.

