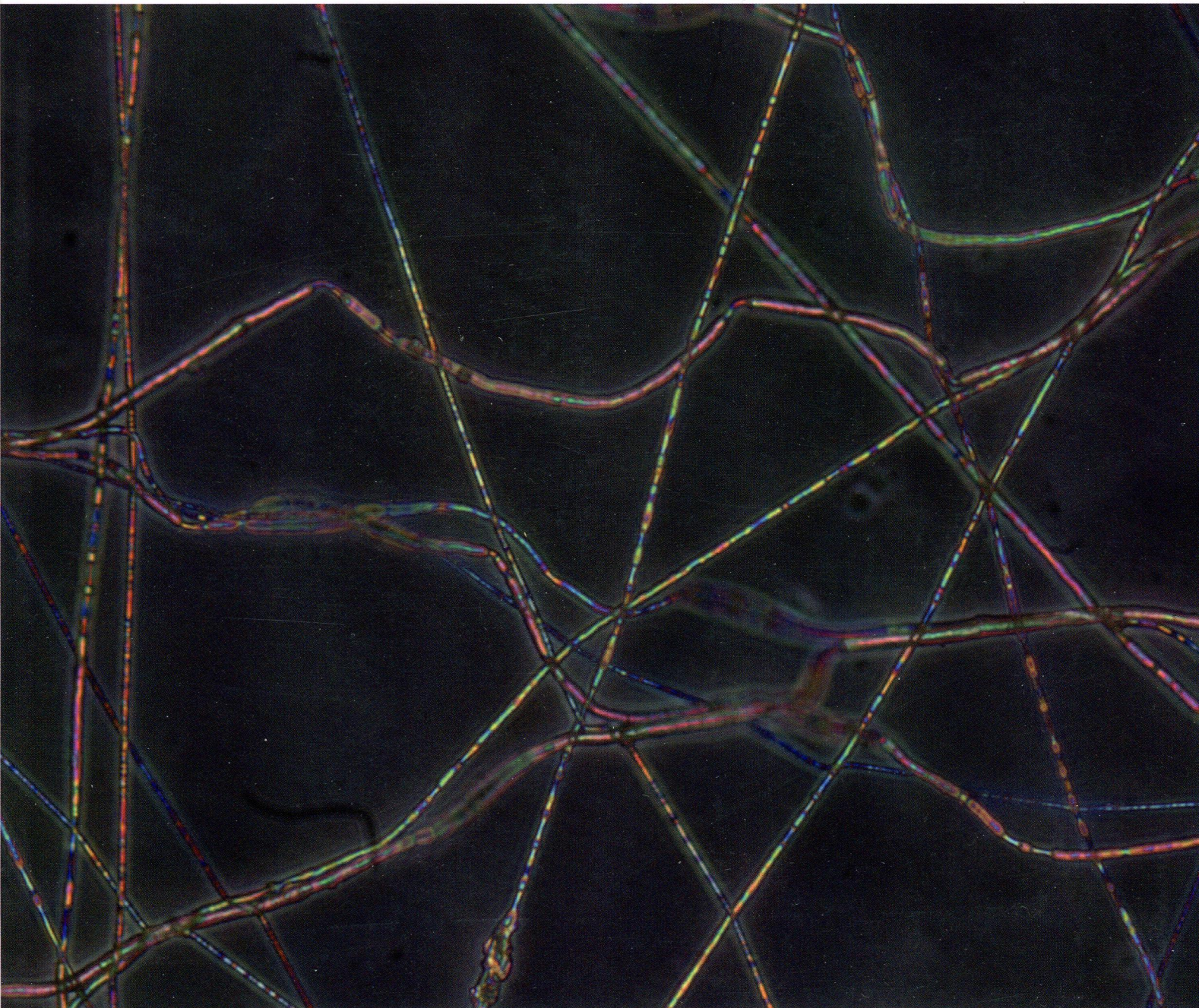


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MINIREVIEW

Suwan N. Jayasinghe

Cell electrospinning: a novel tool for functionalising fibres, scaffolds and membranes with living cells and other advanced materials for regenerative biology and medicine



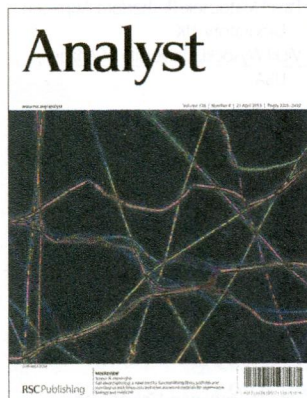
0003-2654 (2013) 138:8;1-B

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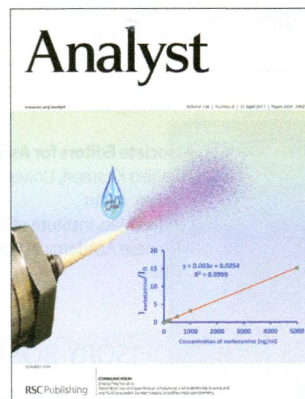
IN THIS ISSUE

ISSN 0003-2654 CODEN ANALAO 138(8) 2201–2492 (2013)



Cover

See Suwan N. Jayasinghe, pp. 2215–2223. Image reproduced by permission of Suwan N. Jayasinghe from *Analyst*, 2013, **138**, 2215.



Inside cover

See Zhong-Ping Yao *et al.*, pp. 2239–2243. Image reproduced by permission of Zhong-Ping Yao from *Analyst*, 2013, **138**, 2239.

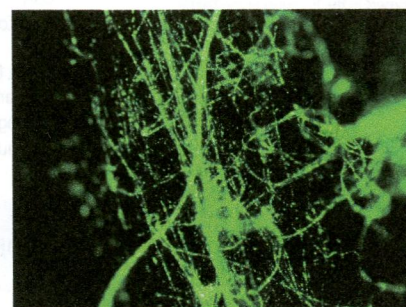
MINIREVIEW

2215

Cell electrospinning: a novel tool for functionalising fibres, scaffolds and membranes with living cells and other advanced materials for regenerative biology and medicine

Suwan N. Jayasinghe*

Cell electrospinning, a platform biotechnology offers a plethora of opportunities for directly engineering and reconstructing living three-dimensional tissues and organs.



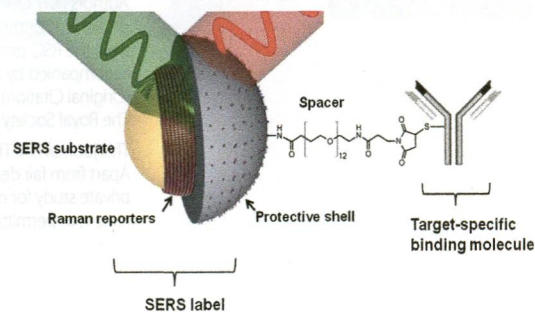
TUTORIAL REVIEW

2224

Rational design and synthesis of SERS labels

Yuling Wang and Sebastian Schlücker*

Surface-enhanced Raman scattering (SERS) labels are a new class of nanotags for optical detection. Physical and chemical concepts for the rational design and synthesis of SERS labels including their bioconjugation are summarized.

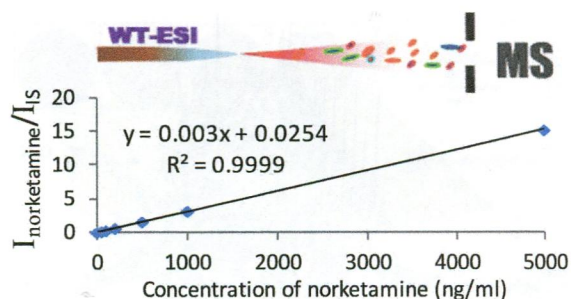


2239

Rapid detection and quantitation of ketamine and norketamine in urine and oral fluid by wooden-tip electro-spray ionization mass spectrometry

Pui-Kin So, Tsz-Tsun Ng, Haixing Wang, Bin Hu and Zhong-Ping Yao*

Wooden-tip ESI-MS allows direct detection and quantitation of ketamine and norketamine in urine and oral fluid.

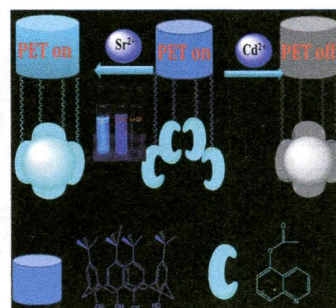


2244

A highly efficient PET switch on-off-on fluorescence receptor based on calix[4]arene for the selective recognition of Cd²⁺ and Sr²⁺

Pinkesh G. Sutariya, Alok Pandya, Nishith R. Modi and Shobhana K. Menon*

A novel PET based substituted calix[4]arene fluoroionophore has been synthesized and used for the selective recognition of Cd²⁺ and Sr²⁺ by emission spectra. The detection limit of the synthesized receptor was found to be 0.94 pM for Cd²⁺ and 1.04 pM for Sr²⁺.

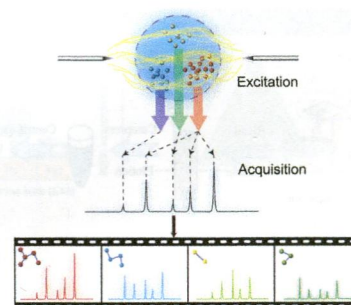


2249

Corona discharge radical emission spectroscopy: a multi-channel detector with nose-type function for discrimination analysis

Yunfei Tian, Peng Wu, Xi Wu, Xiaoming Jiang, Kailai Xu and Xiandeng Hou*

An optical nose using corona discharge is built for discrimination analysis of volatile organic compounds, wines, and even isomers.

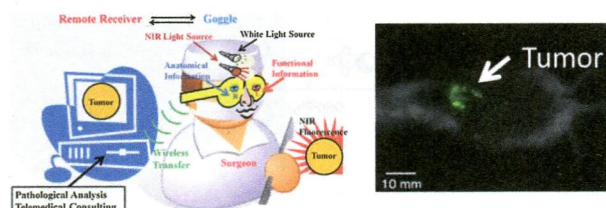


2254

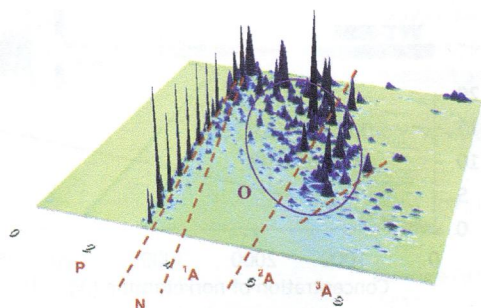
Intraoperative detection of liver tumors aided by a fluorescence goggle system and multimodal imaging

Yang Liu, Walter J. Akers, Adam Q. Bauer, Suman Mondal, Kyle Gullicksrud, Gail P. Sudlow, Joseph P. Culver and Samuel Achilefu*

We demonstrated the feasibility of detecting liver tumors by fluorescence and multimodal imaging aided by a fluorescence goggle system.



2258

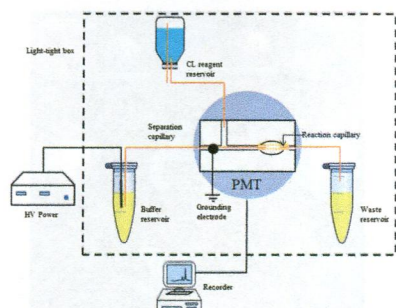


Oxygen speciation in upgraded fast pyrolysis bio-oils by comprehensive two-dimensional gas chromatography

Badaoui Omais, Julien Crepier, Nadège Charon,*
Marion Courtiade, Alain Quignard and Didier Thiébaud

Detailed molecular quantification by GC × GC enables the characterisation of oxygenated compounds present in upgraded biomass fast pyrolysis oils.

2269

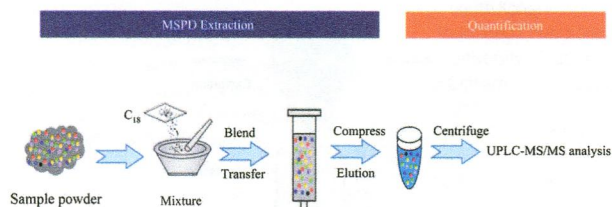


Highly sensitive analysis of four heme proteins by dynamically-coated capillary electrophoresis with chemiluminescence detector using an off-column coaxial flow interface

Zian Lin,* Xiaobo Sun, Yao Lin and Guonan Chen*

Dynamic coating of the surface in capillary electrophoresis with chemiluminescence detection (CE-CL) using an off-column coaxial flow interface was developed for the determination of four heme proteins.

2279

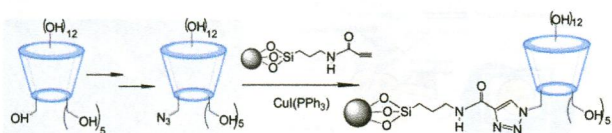


Highly efficient sample preparation and quantification of constituents from traditional Chinese herbal medicines using matrix solid-phase dispersion extraction and UPLC-MS/MS

Xiao-Lan Cheng, Lian-Wen Qi, Qi Wang, Xin-Guang Liu, Besma Boubertakh, Jin-Yi Wan, E-Hu Liu* and Ping Li*

MSPD extraction with UPLC-MS/MS for the simultaneous determination of constituents from herbal medicine.

2289



Enantioselective separation of dansyl-DL-amino acids and some racemates on "click" functionalized native α -cyclodextrin based sub-2 μm columns

Feng Ai, Yong Wang, Hui Chen, Yanhui Yang,
Timothy Thatt Yang Tan* and Siu-Choon Ng*

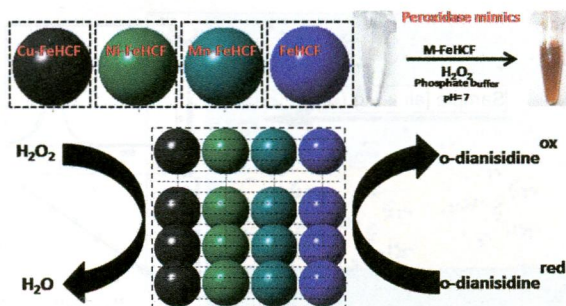
A structure-defined native α -cyclodextrin chiral stationary phase (CSP) using sub-2 μm silica particles was prepared via "click" reactions, which was found to be effective in resolving 11 pairs of dansyl-DL-amino acids (DAAs).

2295

Novel synthesis of super peroxidase mimetic polycrystalline mixed metal hexacyanoferrates nanoparticles dispersion

Prem C. Pandey* and Ashish K. Pandey

Controlled synthesis of biocompatible mixed MHCF nanoparticles with a variety of transition metal ions.

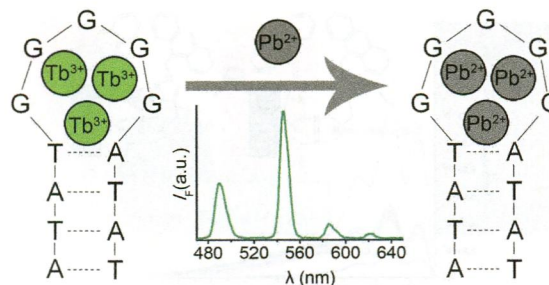


2302

Hairpin oligonucleotides anchored terbium ion: a fluorescent probe to specifically detect lead(II) at sub-nM levels

Yueteng Wei, Ru Liu, Yaling Wang, Yuliang Zhao, Zhifang Cai and Xueyun Gao*

Tb-GH5 (GH5: designed oligonucleotides with hairpin structure) probe emits bright, sharp fluorescence. Lead ions compete with terbium ions causing the terbium ions to depart from GH5 decreasing fluorescence.

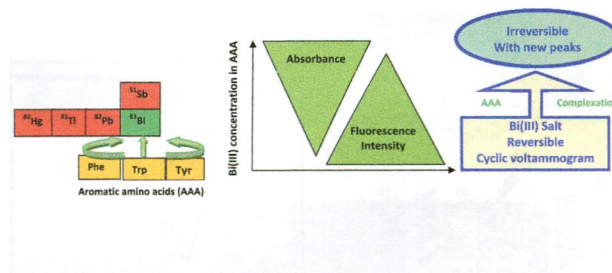


2308

Aromatic amino acids in high selectivity bismuth(III) recognition

Sumanta Kumar Ghatak, Debarati Dey, Souvik Sen and Kamalika Sen*

The extraordinary response of the aromatic amino acids towards Bi(III) is established using three analytical parameters, absorbance, fluorescence and cyclic voltammetry.

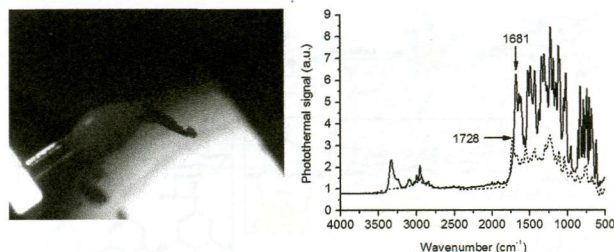


2315

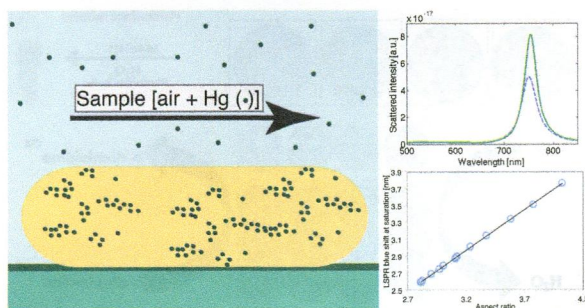
Analysis of single particle photodegradation using photothermal infrared microspectroscopy

Jonathan G. Moffat, Mark D. Eddleston, Peter S. Belton, William Jones and Duncan Q. M. Craig*

The increasing use of high throughput methods, coupled with the need to develop approaches to anticipate long term stability issues, has necessitated the introduction of testing approaches whereby extremely small samples may be rapidly analysed.



2323

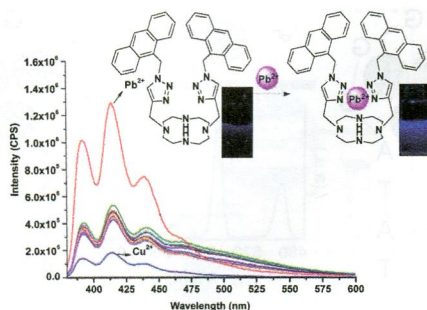


Elemental mercury vapor interaction with individual gold nanorods

Jay Z. James,^{*} Donald Lucas and Catherine P. Koshland

We show that single gold nanorods can act as highly sensitive mercury vapor sensors with attogram resolution.

2329

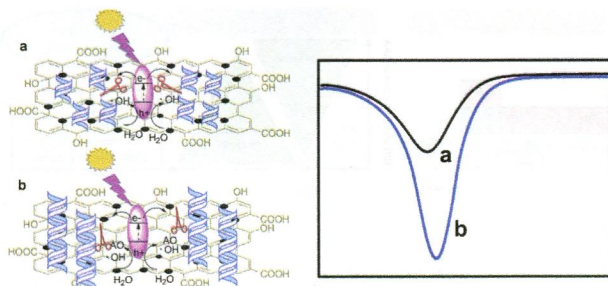


Dianthracene–cyclen conjugate: the first equal-equivalent responding fluorescent chemosensor for Pb²⁺ in aqueous solution

Hao-Ran Xu, Kun Li,^{*} Qiang Liu, Tian-Ming Wu, Ming-Qi Wang, Ji-Ting Hou, Zeng Huang, Yong-Mei Xie^{*} and Xiao-Qi Yu^{*}

A dianthracene–cyclen conjugate is presented as the first example of an equal-equivalent responding chemosensor for Pb²⁺ in aqueous solution via 'turn-on' mode.

2335

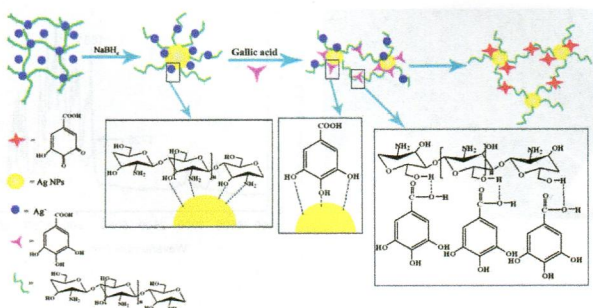


Bionic radical generation and antioxidant capacity sensing with photocatalytic graphene oxide–titanium dioxide composites under visible light

Weiguang Ma, Dongxue Han,^{*} Nan Zhang, Fenghua Li, Tongsun Wu, Xiandui Dong and Li Niu

A novel electrochemical antioxidant capacity sensor was designed with GO–TiO₂ composites as source of OH radicals and DNA as a molecular probe.

2343



Chitosan-capped silver nanoparticles as a highly selective colorimetric probe for visual detection of aromatic *ortho*-trihydroxy phenols

Zhaohui Chen, Xiaodan Zhang, Haiyan Cao and Yuming Huang^{*}

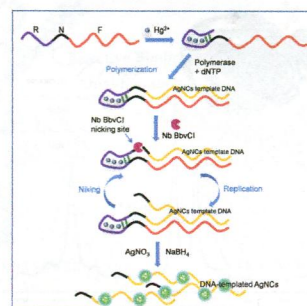
A new application of silver nanoparticles for the visual sensing of aromatic *ortho*-trihydroxy phenols, such as gallic acid, pyrogallol and tannic acid, with high selectivity is demonstrated, showing the new tricks of silver nanoparticles.

2350

Highly sensitive label-free fluorescent detection of Hg^{2+} ions by DNA molecular machine-based Ag nanoclusters

Jinjin Yin, Xiaoxiao He, Xuekun Jia, Kemin Wang* and Fengzhou Xu

A highly selective and sensitive label-free method using DNA molecular machine-based fluorescent Ag nanoclusters to detect Hg^{2+} ions in aqueous solution.

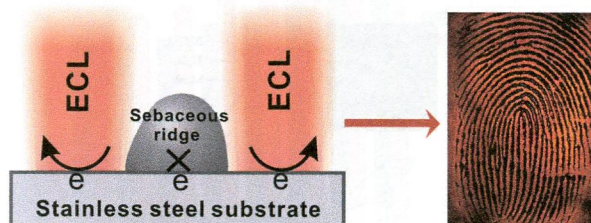


2357

Non-destructive enhancement of latent fingerprints on stainless steel surfaces by electrochemiluminescence

Linru Xu, Yan Li, Yayun He and Bin Su*

Visualization of latent fingerprints on metal surfaces by spatially selective control of electrochemiluminescence generation from the surface uncoated by the prints, producing negative impressions in the reverse manner.

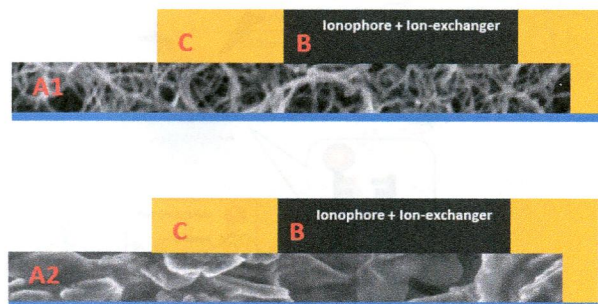


2363

Simple and disposable potentiometric sensors based on graphene or multi-walled carbon nanotubes – carbon-plastic potentiometric sensors

Ewa Jaworska, Wiktor Lewandowski, Józef Mieczkowski, Krzysztof Maksymiuk and Agata Michalska*

A simple procedure leading to disposable potentiometric sensors using as a supporting electrode a layer of carbon nanostructured material, either graphene or multi-walled nanotubes, is proposed.

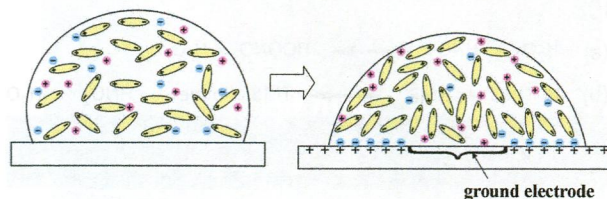


2372

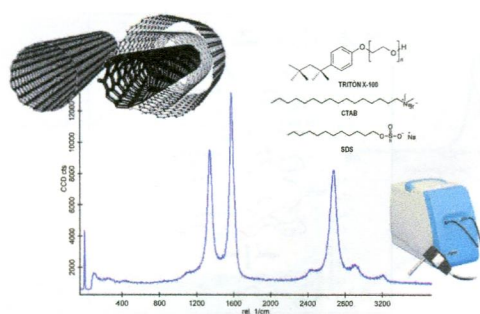
Influence of electrolytes on contact angles of droplets under electric field

Chiun-Peng Lee, Bo-Yuan Fang and Zung-Hang Wei*

Obvious influences of free charges on contact angles are presented and discussed in this study.



2378

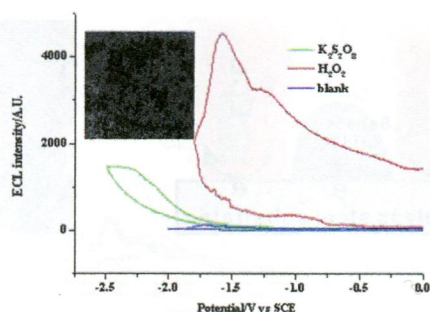


Qualitative detection and quantitative determination of single-walled carbon nanotubes in mixtures of carbon nanotubes with a portable Raman spectrometer

A. I. López-Lorente, B. M. Simonet and M. Valcárcel*

A simple and rapid procedure for the detection/determination of single walled carbon nanotubes in mixtures of carbon nanotubes by using a portable Raman spectrometer is described.

2386

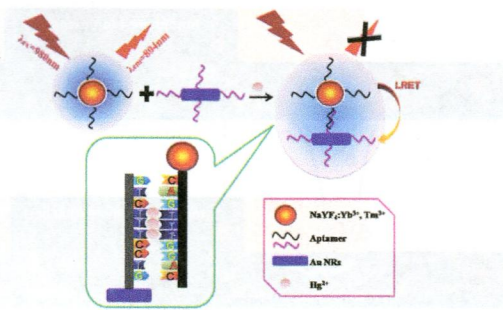


Electrogenerated chemiluminescence of bismuth sulfide nanorods modified electrode in alkaline aqueous solution

YongPing Dong,* LiZhai Pei, XiangFeng Chu, WangBing Zhang and QianFeng Zhang

Electrogenerated chemiluminescence of Bi₂S₃ nanorods modified glassy carbon electrode is reported in aqueous alkaline solution, and can be enhanced greatly in the presence of K₂S₂O₈ or H₂O₂. The modified electrode could be used as a sensitive biosensor for H₂O₂.

2392

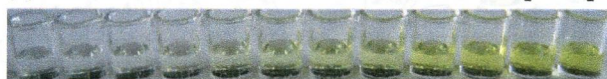
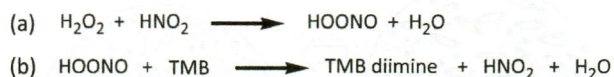


Near-infrared to near-infrared upconverting NaYF₄:Yb³⁺, Tm³⁺ nanoparticles-aptamer-Au nanorods light resonance energy transfer system for the detection of mercuric(II) ions in solution

Hong-Qi Chen, Fei Yuan, Shao-Zhen Wang, Juan Xu, Yi-Yan Zhang and Lun Wang*

A new sandwich-type luminescence resonant energy transfer system has been designed for Hg²⁺ detection that utilizes near-infrared (NIR)-to-NIR upconversion lanthanide nanophosphors as the donor, and Au nanorods as the acceptor.

2398



Determination of nitrite and glucose in water and human urine with light-up chromogenic response based on the expeditious oxidation of 3,3',5,5'-tetramethylbenzidine by peroxynitrous acid

Jia Zhang, Cheng Yang, Chuanxia Chen and Xiurong Yang*

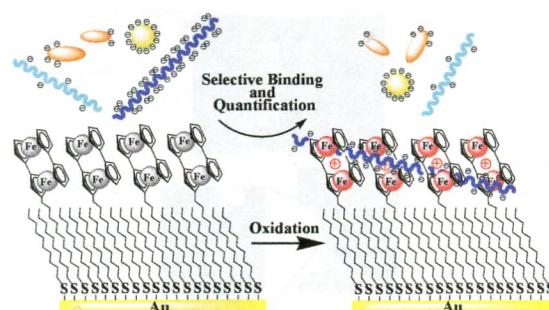
A light-up colorimetric platform has been developed to design bifunctional sensing systems for nitrite and glucose.

2405

Reversible binding and quantification of heparin and chondroitin sulfate in water using redox-stable biferrocenylene SAMs

Kun Chen and Michael Schmittl*

Heparin and chondroitin in buffered aqueous solution or dilute blood plasma were reversibly bound and quantified at a biferrocenylene SAM using electrochemical techniques.

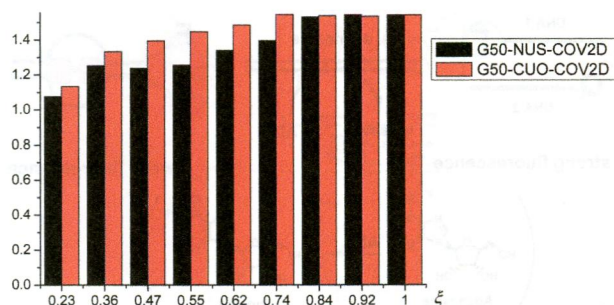


2411

Comparison of various sampling schemes and accumulation profiles in covariance spectroscopy with exponentially decaying 2D signals

Yixuan Li, Bingwen Hu,* Qun Chen, Qiang Wang,* Zhengfeng Zhang, Jun Yang, Isao Noda, Julien Trébosc, Oliver Lafon, Jean-Paul Amoureux and Feng Deng*

Covariance-2D (COV2D) with t_1 cut-off-sampling (CUO) applied to different accumulation profiles presents a better sensitivity than that with non-uniform-sampling (NUS).

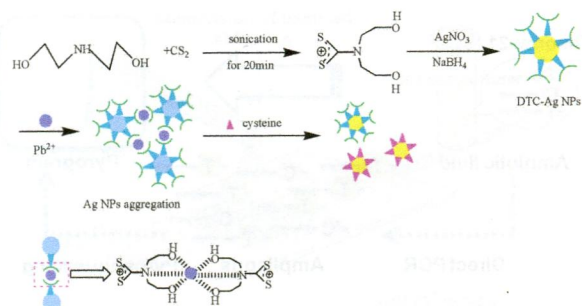


2420

Dithiocarbamate-capped silver nanoparticles as a resonance light scattering probe for simultaneous detection of lead(II) ions and cysteine

Haiyan Cao, Minghong Wei, Zhaohui Chen* and Yuming Huang*

Dithiocarbamate capped Ag NPs can be used as resonance light scattering probes for the simultaneous sensing of Pb^{2+} and cysteine with high sensitivity and selectivity.

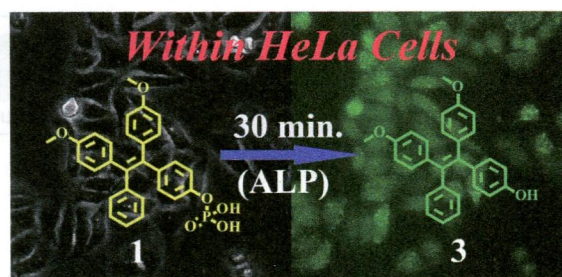


2427

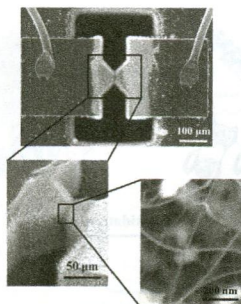
A new fluorometric turn-on assay for alkaline phosphatase and inhibitor screening based on aggregation and deaggregation of tetraphenylethylene molecules

Xingui Gu, Guanxin Zhang,* Zhuo Wang, Wenwen Liu, Le Xiao and Deqing Zhang*

A fluorometric turn-on assay for alkaline phosphatase (ALP) in solutions and living cells was established based on the aggregation-induced emission of tetraphenylethylenes.



2432

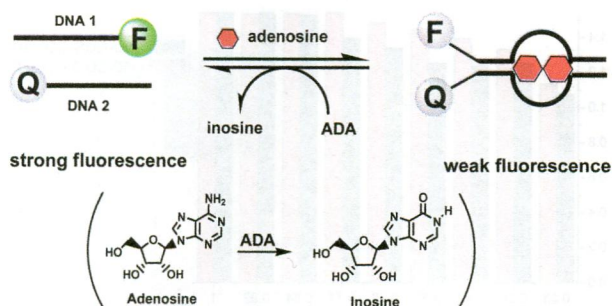


Suspended GaN nanowires as NO₂ sensor for high temperature applications

Jaesam Sim, Kwanoh Kim, Soonho Song and Jongbaeg Kim*

We propose a gas sensor operable over a wide temperature range and using suspended GaN nanowires functionalized with Pt–Pd.

2438

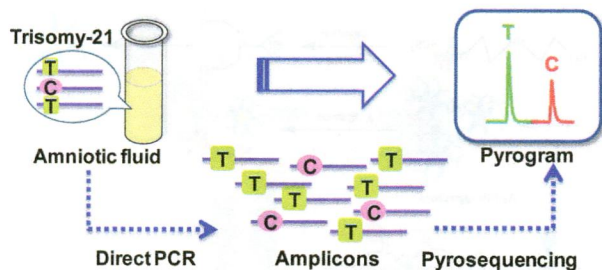


Fluorescence sensing of adenosine deaminase based on adenosine induced self-assembly of aptamer structures

Tingting Feng and Huimin Ma*

A fluorescence off–on approach is developed for simple detection of adenosine deaminase based on adenosine induced self-assembly of aptamer structures.

2443

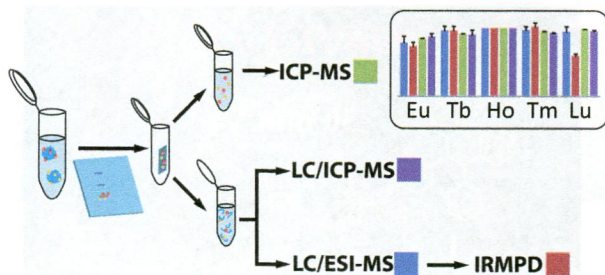


Prenatal diagnosis of trisomy 21 by quantitatively pyrosequencing heterozygotes using amniotic fluid as starting material of PCR

Hui Ye, Haiping Wu, Huan Huang, Yunlong Liu, Bingjie Zou, Lizhou Sun and Guohua Zhou*

A trisomy 21 carrier could be diagnosed by quantifying allelic ratios of a panel of SNPs on chromosome 21 by pyrosequencing.

2449



MeCAT – comparing relative quantification of alpha lactalbumin using both molecular and elemental mass spectrometry

Gunnar Schwarz, Sebastian Beck, David Benda and Michael W. Linscheid*

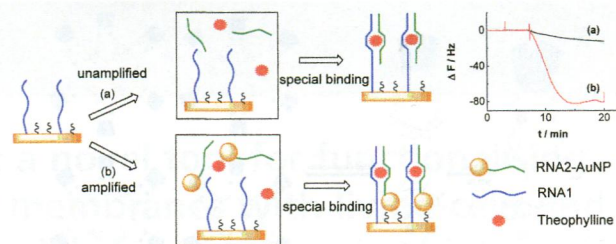
Employing four different strategies it is demonstrated that both molecular and elemental mass spectrometry can be used for relative quantification of proteins.

2456

A theophylline quartz crystal microbalance biosensor based on recognition of RNA aptamer and amplification of signal

Zong-Mu Dong and Guang-Chao Zhao*

A highly sensitive theophylline QCM biosensor was constructed based on RNA recognition and signal amplification.

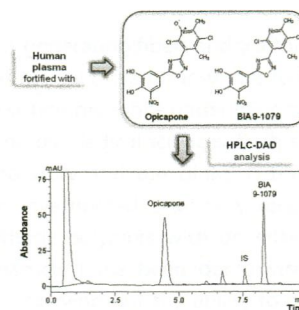


2463

An HPLC-DAD method for the simultaneous quantification of opicapone (BIA 9-1067) and its active metabolite in human plasma

Daniela Gonçalves, Gilberto Alves, Ana Fortuna, Patrício Soares-da-Silva and Amílcar Falcão*

Opicapone (BIA 9-1067) is a novel catechol-*O*-methyltransferase inhibitor presently under clinical development as an adjuvant in the pharmacotherapy of Parkinson's disease.

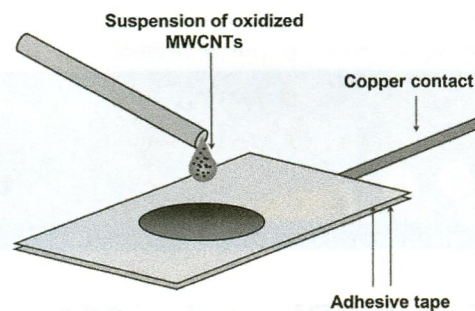


2470

Electrochemically assisted sorption on oxidized multiwalled carbon nanotubes for preconcentration of Cr, Mn, Co, Ni, Cu and Zn from water samples

Beata Zawisza* and Rafal Sitko

The rapid development in nanomaterials and nanotechnologies has provided many new opportunities in the area related to analytical chemistry.

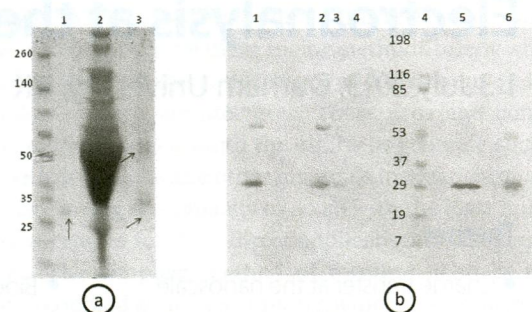


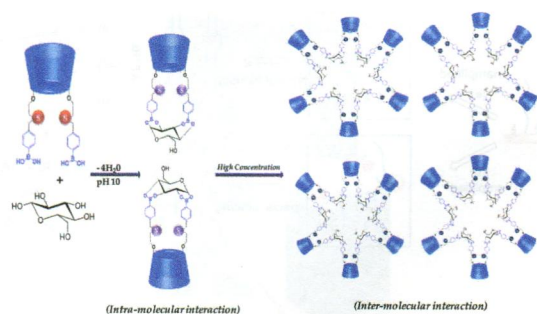
2477

Characterization of the recognition of *Candida* species by mannose-binding lectin using surface plasmon resonance

Sébastien Damiens, Pierre Marie Danze, Anne-Sophie Drucbert, Laura Choteau, Thierry Jouault, Daniel Poulain and Boualem Sendid*

The interaction of mannose-binding lectins (MBLs) with *Candida albicans* has been analyzed previously by microscopy and flow cytometry.





A non enzymatic glucose biosensor based on an ultrasensitive calix[4]arene functionalized boronic acid gold nanoprobe for sensing in human blood serum

Alok Pandya, Pinkesh G. Sutariya and Shobhana K. Menon*

We developed a new, advanced, simple and non enzymatic approach for the colorimetric detection of glucose based on calix[4]arene/phenyl boronic acid (CX-PBA) functionalized gold nanoparticles (AuNPs).

Cell

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