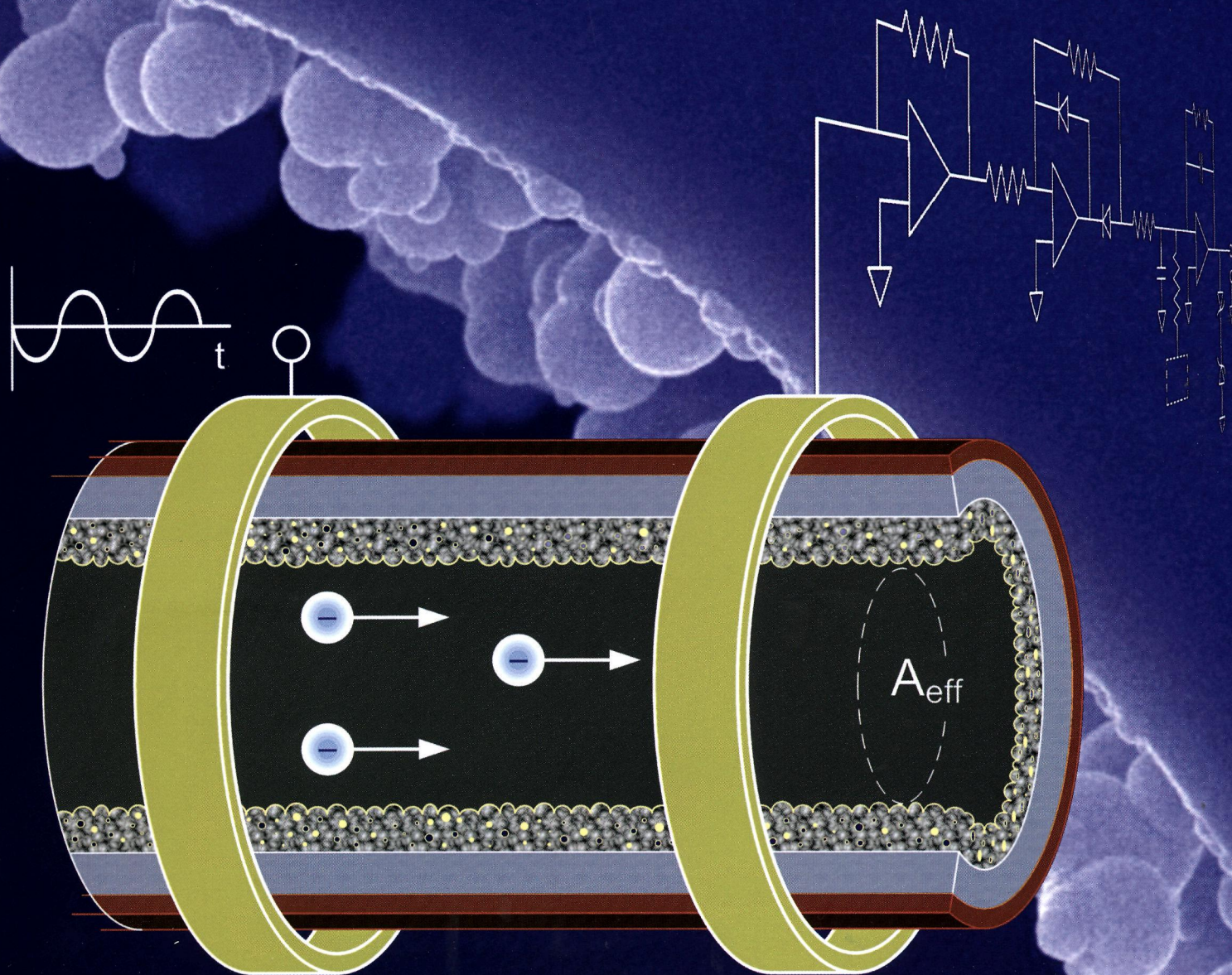


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# Analyst

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Volume 138 | Number 9 | 7 May 2013 | Pages 2493–2778



ISSN 0003-2654

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**HOT ARTICLE**

David A. Collins *et al.*

In-process phase growth measurement technique in the fabrication of monolithic porous layer open tubular (monoPLOT) columns using capacitively coupled contactless conductivity



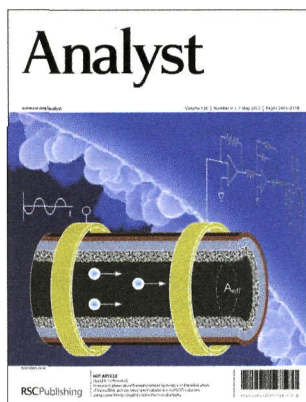
0003-2654 (2013) 138:9;1-A

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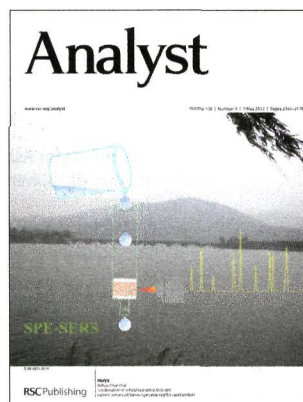
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## IN THIS ISSUE

ISSN 0003-2654 CODEN ANALAO 138(9) 2493–2778 (2013)



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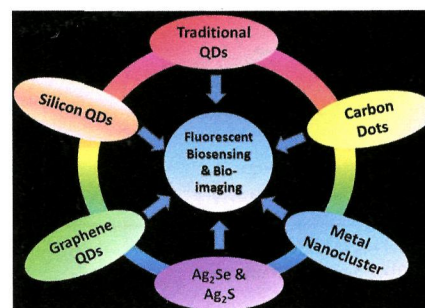
## CRITICAL REVIEW

2506

### Quantum dots for fluorescent biosensing and bio-imaging applications

Jingjing Li and Jun-Jie Zhu\*

This review focuses on quantum dot-based fluorescent biosensing for proteins and nucleic acids detection, as well as the use of QDs in cellular and *in vivo* targeting and imaging.



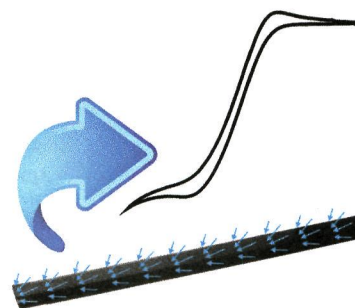
## COMMUNICATIONS

2516

### Fabrication of co-planar screen printed microband electrodes

Jonathan P. Metters, Rashid O. Kadara and Craig E. Banks\*

The first example of co-planar 50  $\mu\text{m}$  (width) screen printed graphite and gold microbands fabricated entirely *via* screen printing are presented and give rise to analytically useful responses.

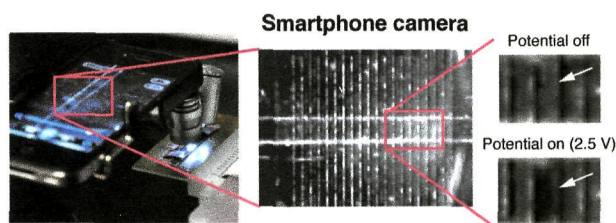


2522

### Smartphone-based detection of unlabeled DNA via electrochemical dissolution

Yu-Wen Huang and Victor M. Ugaz\*

A simple label-free nucleic acid detection platform suitable for deployment in resource limited settings.

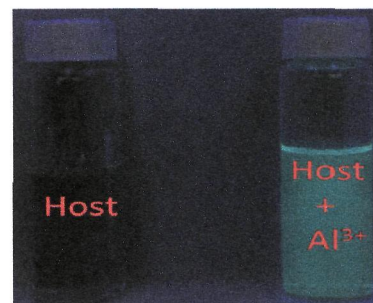


2527

### A turn-on and reversible Schiff base fluorescence sensor for Al<sup>3+</sup> ion

Chang-Hung Chen, De-Jhong Liao, Chin-Feng Wan\* and An-Tai Wu\*

A simple Schiff-base receptor **2** was prepared. It exhibits an "off-on-type" mode with high sensitivity in the presence of Al<sup>3+</sup>.

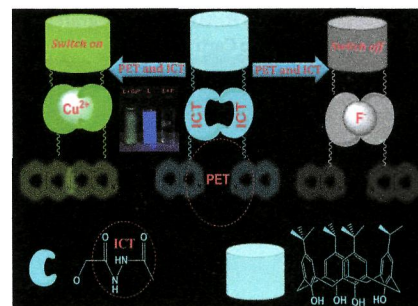


2531

### Fluorescence switch on–off–on receptor constructed of quinoline allied calix[4]arene for selective recognition of Cu<sup>2+</sup> from blood serum and F<sup>-</sup> from industrial waste water

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

A novel PET with ICT based substituted calix[4]arene fluoroionophore was synthesized and used for Cu<sup>2+</sup> and F<sup>-</sup> by emission spectra. The LOD was found to be 4.16 nM for Cu<sup>2+</sup> and 2.15 nM for F<sup>-</sup>.

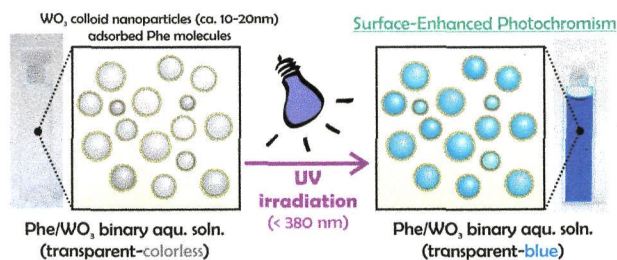


2536

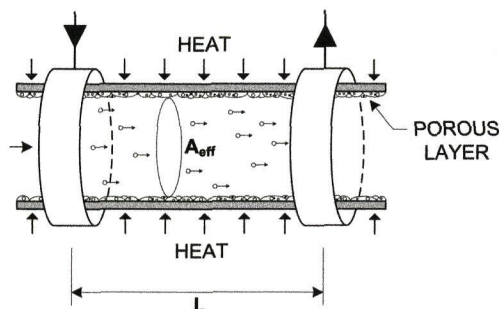
### Surface-enhanced photochromic phenomena of phenylalanine adsorbed on tungsten oxide nanoparticles: a novel approach for "label-free" colorimetric sensing

Shohei Tanaka, Kenta Adachi\* and Suzuko Yamazaki

The surface-enhanced photochromic behaviors of the L-phenylalanine (Phe)–tungsten(vi) oxide (WO<sub>3</sub>) colloid binary aqueous solution have been investigated.



2540

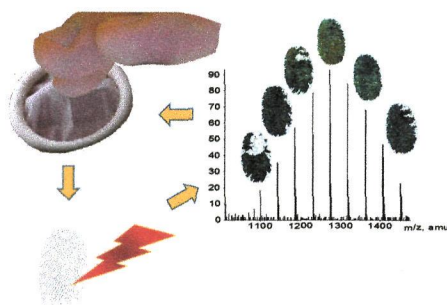


### In-process phase growth measurement technique in the fabrication of monolithic porous layer open tubular (monoPLOT) columns using capacitively coupled contactless conductivity

David A. Collins,\* Ekaterina P. Nesterenko, Dermot Brabazon and Brett Paull

A technique for the in-process measurement of polymer stationary phase growth inside fused silica capillaries during the fabrication of monolithic porous layer open tubular (monoPLOT) columns is presented.

2546

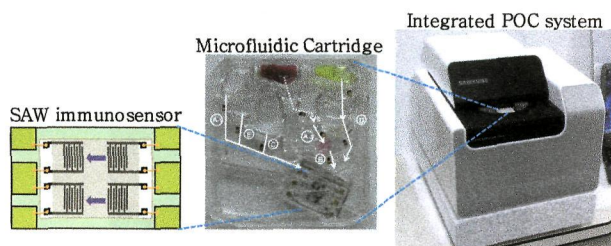


### Spectroscopic imaging based approach for condom identification in condom contaminated fingerprints

Robert Bradshaw, Rosalind Wolstenholme, Leesa Susanne Ferguson, Chris Sammon, Kerstin Mader, Emmanuelle Claude, Robert D. Blackledge, Malcolm R. Clench and Simona Francese\*

MALDI MSI based multidisciplinary approach for condom brand identification from condom contaminated fingerprints.

2558

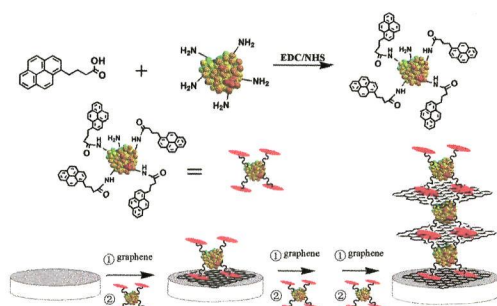


### A centrifugally actuated point-of-care testing system for the surface acoustic wave immunosensing of cardiac troponin I

Woochang Lee, Jaeyeon Jung, Young Ki Hahn, Sang Kyu Kim, Yeolho Lee, Joonhyung Lee, Tae-Han Lee, Jin-Young Park, Hyejung Seo, Jung Nam Lee, Jin Ho Oh, Youn-Suk Choi\* and Soo Suk Lee\*

Analysis of cardiac troponin I was performed using a newly designed centrifugal microfluidic system integrated with a surface acoustic wave immunosensor.

2567



### Graphene bridged enzyme electrodes for glucose biosensing application

Jingquan Liu,\* Na Kong, Aihua Li, Xiong Luo, Liang Cui, Rui Wang and Shengyu Feng

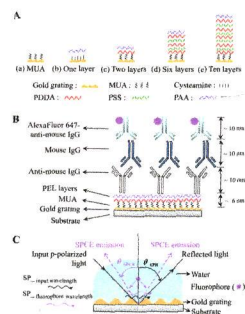
Glucose oxidase electrodes fabricated with alternate enzyme and graphene layers *via* self-assembly exhibited significantly enhanced glucose measurement capacity.

2576

### Highly sensitive grating coupler-based surface plasmon-coupled emission (SPCE) biosensor for immunoassay

Jong Seol Yuk, Ernest F. Guignon and Michael A. Lynes\*

We have evaluated the performance of a novel high-content gold grating coupler-based surface plasmon-coupled emission (SPCE) biosensor system.

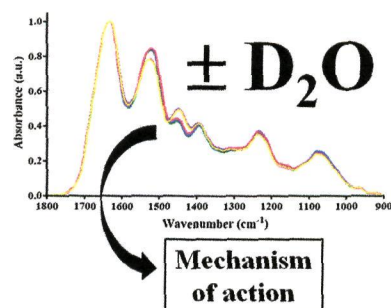


2583

### Incorporation of deuterium oxide in MCF-7 cells to shed further mechanistic insights into benzo[a]pyrene-induced low-dose effects discriminated by ATR-FTIR spectroscopy

Lara D. Heppenstall, Rebecca J. Strong, Júlio Trevisan and Francis L. Martin\*

Deuteration of biomolecules in order to isolate and discriminate precise functionality or chemical-induced alterations in complex infrared spectra.

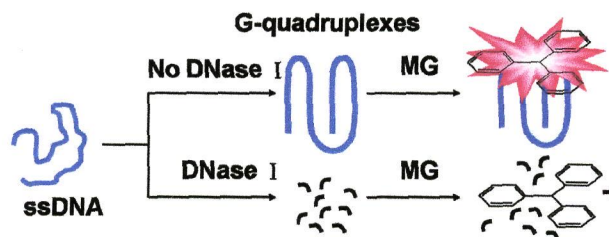


2592

### A label-free near-infrared fluorescent assay for the determination of deoxyribonuclease I activity based on malachite green/G-quadruplexes

Shao-Kai Sun, Bei-Bei Wang and Xiu-Ping Yan\*

A simple label-free NIR fluorescent assay was developed for selective determination of the DNase I activity based on MG/G-quadruplexes.

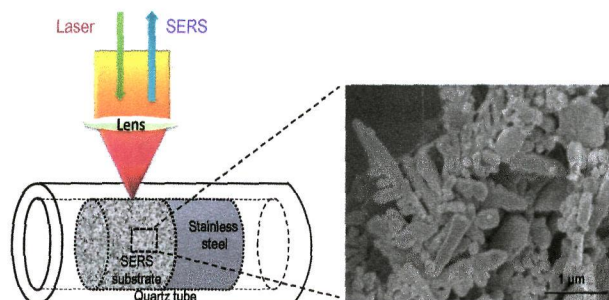


2598

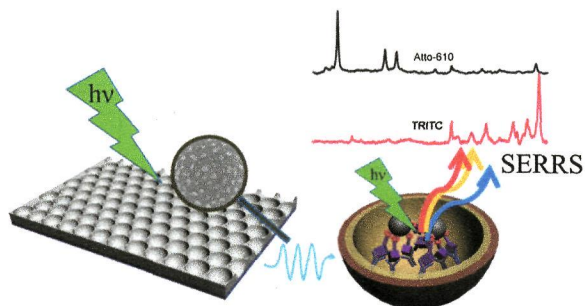
### Combination of solid phase extraction and surface-enhanced Raman spectroscopy for rapid analysis

Yongchao Lai, Jingcheng Cui, Xiaohong Jiang, Sha Zhu and Jinhua Zhan\*

A SERS-active extraction column which combines the advantages of solid phase extraction and surface-enhanced Raman spectroscopy techniques was designed for rapid analysis.



2604

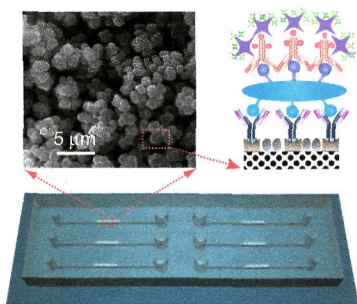


### Fabrication of a bowl-shaped silver cavity substrate for SERS-based immunoassay

Shu Tian, Qun Zhou,\* Zhuomin Gu, Xuefang Gu and Junwei Zheng\*

A bowl-shaped silver cavity array was used as an enhanced substrate for SERS-based immunoassay.

2613

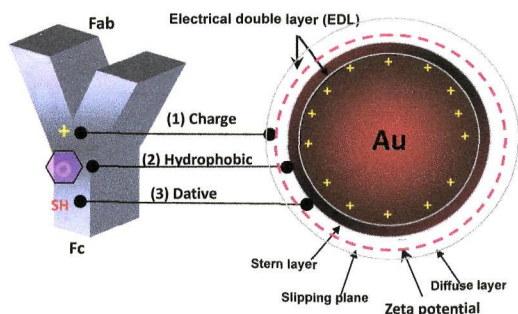


### A 3D porous polymer monolith-based platform integrated in poly(dimethylsiloxane) microchips for immunoassay

Qin-Shu Kang, Xiao-Fan Shen, Na-Na Hu, Meng-Jia Hu, Hui Liao, Han-Zhong Wang, Zhi-Ke He and Wei-Hua Huang\*

We synthesized porous polymer monoliths inside PDMS microfluidic channels to provide a 3D substrate for sensitive and fast immunoassays.

2620

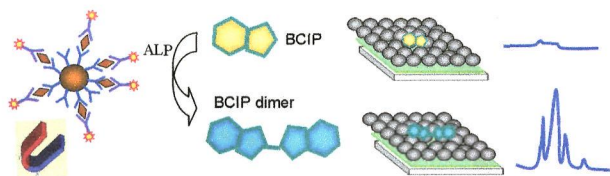


### Development of a manual self-assembled colloidal gold nanoparticle-immunochromatographic strip for rapid determination of human interferon- $\gamma$

Shu-Fen Chou\*

The objective of this study is to develop a manual self-assembled colloidal gold nanoparticle-immunochromatographic strip for human IFN $\gamma$  using anti-human IFN $\gamma$  polyclonal and monoclonal antibodies.

2624



### A paper-based surface-enhanced resonance Raman spectroscopic (SERRS) immunoassay using magnetic separation and enzyme-catalyzed reaction

Yuanyuan Chen, Hanwen Cheng, Kha Tram, Shengfeng Zhang, Yanhua Zhao, Liyang Han, Zengping Chen and Shuangyan Huan\*

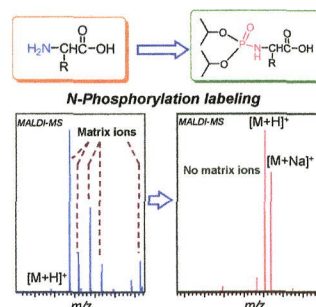
A novel paper-based SERRS immunoassay based on magnetic separation and alkaline phosphatase (ALP) enzyme catalyzed hydrolysis reaction was developed.

2632

### N-phosphorylation labeling for analysis of twenty natural amino acids and small peptides by using matrix-assisted laser desorption/ionization time-of-flight mass spectrometry

Xiang Gao, Xin Bi, Juntong Wei, Zhimin Peng, Hongxia Liu, Yuyang Jiang, Wei Wei and Zongwei Cai\*

N-phosphorylation labeling was successfully utilized to analyze the low molecular weight compounds using matrix-assisted laser desorption/ionization time-of-flight mass spectrometry (MALDI-TOF MS).

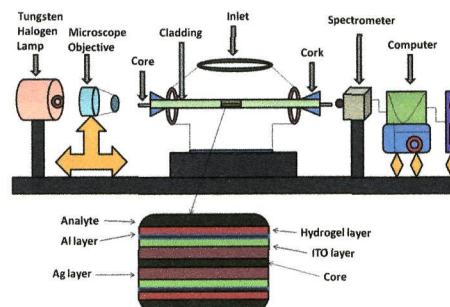


2640

### Surface plasmon resonance based fiber optic pH sensor utilizing Ag/ITO/Al/hydrogel layers

Satyendra K. Mishra and Banshi D. Gupta\*

The fabrication and characterization of a surface plasmon resonance based pH sensor using coatings of silver, ITO ( $\text{In}_2\text{O}_3\cdot\text{SnO}_2$ ), aluminium and smart hydrogel layers over an unclad core of an optical fiber have been reported.

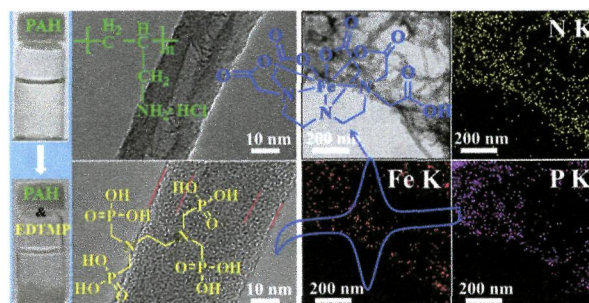


2647

### Iron(III) diethylenetriaminepentaacetic acid complex on polyallylamine functionalized multiwalled carbon nanotubes: immobilization, direct electrochemistry and electrocatalysis

Hailing Liu, Yanyun Cui, Pan Li, Yiming Zhou, Xiaoshu Zhu,\* Yawen Tang, Yu Chen\* and Tianhong Lu

A nonenzymatic iron(III) complex based amperometric hydrogen peroxide sensor was constructed by combining the electrostatic interaction and ionotropic crosslinking interaction.

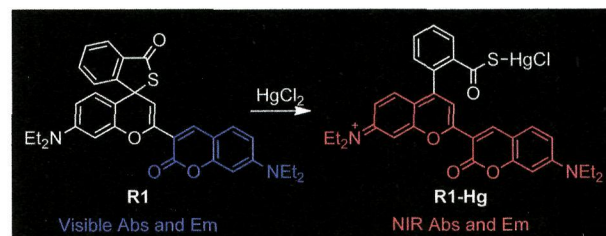


2654

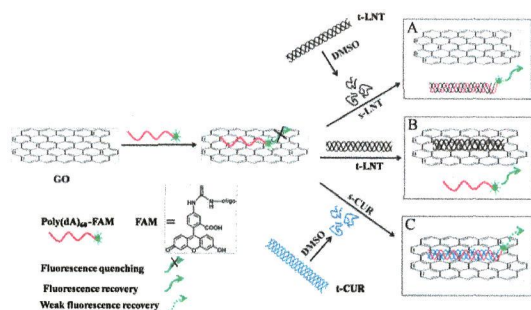
### Construction of NIR and ratiometric fluorescent probe for $\text{Hg}^{2+}$ based on a rhodamine-inspired dye platform

Jing Liu, Yuan-Qiang Sun, Pi Wang, Jingyu Zhang and Wei Guo\*

A new spirocyclic thiolactone dye **R1** was developed as an NIR and ratiometric fluorescence probe for  $\text{Hg}^{2+}$ .



2661

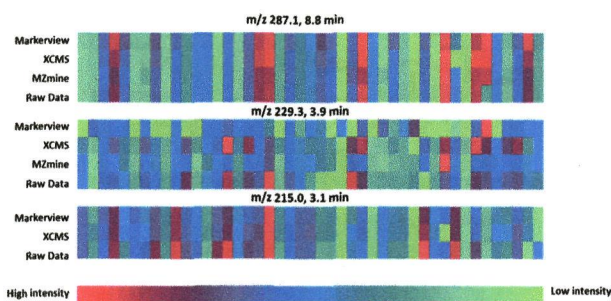


### Assembly of single-stranded polydeoxyadenylic acid and $\beta$ -glucan probed by the sensing platform of graphene oxide based on the fluorescence resonance energy transfer and fluorescence anisotropy

Qingye Liu, Xiaojuan Xu,\* Lina Zhang, Xudong Luo and Yi Liang

The self-assembly behavior between polydeoxyadenylic acid and  $\beta$ -glucan on the graphene oxide surface was investigated based on the FRET and FA.

2669

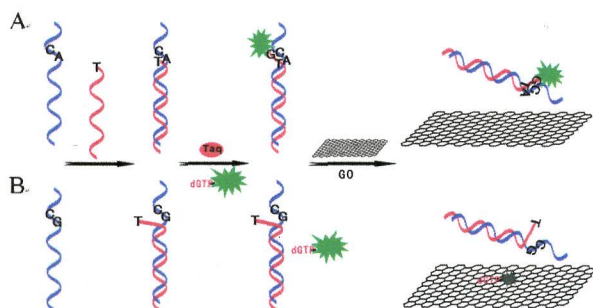


### Assessment of data pre-processing methods for LC-MS/MS-based metabolomics of uterine cervix cancer

Yanhua Chen, Jing Xu, Ruiping Zhang, Guoqing Shen, Yongmei Song, Jianghao Sun, Jiuming He, Qimin Zhan and Zeper Abliz\*

The inaccuracies of data pre-processing methods revealed that more pre-processing tools would reveal more comprehensive potential biomarkers in non-targeted metabolomics.

2678

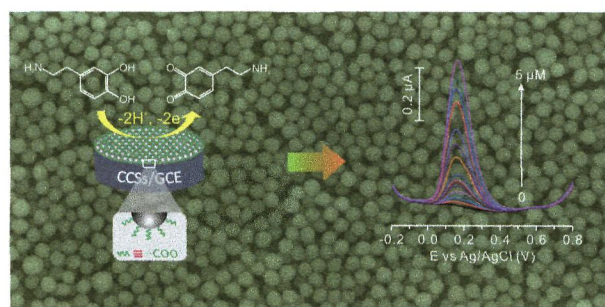


### A graphene-based platform for fluorescent detection of SNPs

Hui Xu,\* Qing Yang, Fan Li, Linsheng Tang,\* Shanmin Gao, Bawei Jiang, Xingchun Zhao, Lihua Wang and Chunhai Fan

Schematic description of the GO-SNP sensing mechanism.

2683



### Sensitive and selective electrochemical detection of dopamine using an electrode modified with carboxylated carbonaceous spheres

Zheng Guo, Myeong-Lok Seol, Moon-Seok Kim, Jae-Hyuk Ahn, Yang-Kyu Choi,\* Jin-Huai Liu and Xing-Jiu Huang\*

Carboxylated carbonaceous spheres (CCS) reproducibly supported as advanced electrode coating for the determination of dopamine with high sensitivity, good selectivity and response stability.

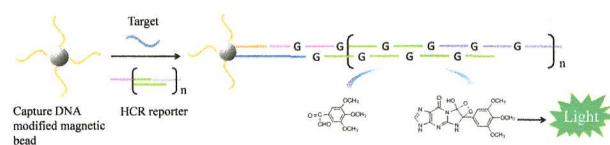


2691

### Hybridization chain reaction-based instantaneous derivatization technology for chemiluminescence detection of specific DNA sequences

Xin Wang, Chaiwan Lau, Masaaki Kai and Jianzhong Lu\*

A novel hybridization chain reaction-based amplified system for label-free DNA detection was developed *via* an instantaneous derivatization reaction between 3,4,5-trimethoxyl-phenylglyoxal and the guanine nucleotides for the generation of light.

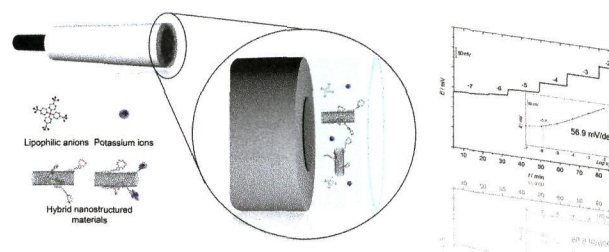


2698

### A potassium sensor based on non-covalent functionalization of multi-walled carbon nanotubes

Enrique J. Parra, F. Xavier Rius and Pascal Blondeau\*

Non-covalent functionalization of multi-walled carbon nanotubes (MWCNTs) by a pyrene based benzo-18-crown-6 ether **1** leads to nanostructure assemblies that play both the role of an ion-to-electron transducer and a selective recognition element in solid-contact ion-selective-electrodes (SC-ISEs).

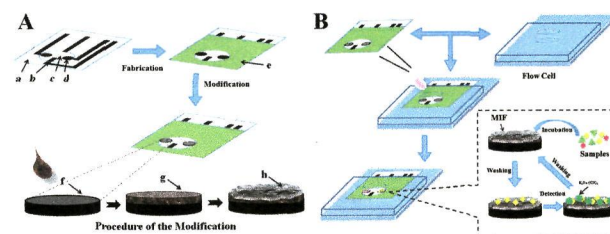


2704

### A disposable simultaneous electrochemical sensor array based on a molecularly imprinted film at a $\text{NH}_2$ -graphene modified screen-printed electrode for determination of psychotropic drugs

Dejin Zang, Mei Yan,\* Shenguang Ge, Lei Ge and Jinghua Yu

A disposable simultaneous electrochemical sensor array based on a molecularly imprinted film with a screen-printed electrode (SPE) has been developed for the detection of psychotropic drugs.

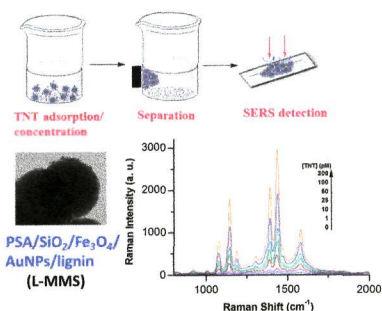


2712

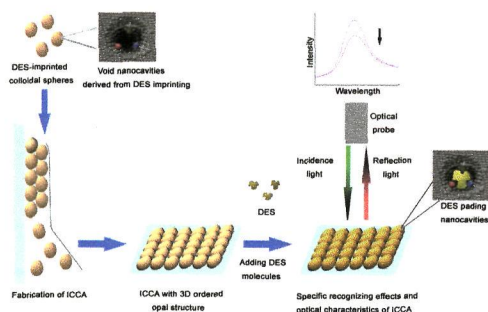
### $\text{Fe}_3\text{O}_4/\text{Au}$ nanoparticles/lignin modified microspheres as effectual surface enhanced Raman scattering (SERS) substrates for highly selective and sensitive detection of 2,4,6-trinitrotoluene (TNT)

Khaled A. Mahmoud\* and Mohammed Zourob

A new lignin modified hybrid microsphere allowed for the selective and highly sensitive detection and removal of 2,4,6-trinitrotoluene (TNT) explosives based on surface enhanced Raman scattering (SERS) and electrochemical detection methods.



2720

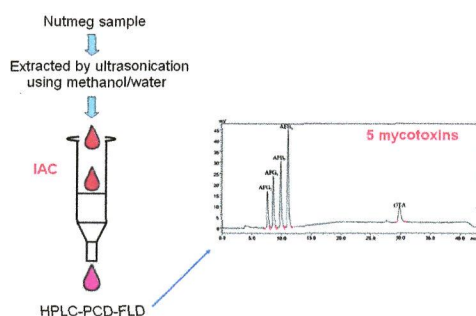


### An imprinted crystalline colloidal array chemical-sensing material for detection of trace diethylstilbestrol

Na Sai, Baoan Ning, Guowei Huang, Yuntang Wu, Zhijiang Zhou, Yuan Peng, Jialei Bai, Guanggui Yu and Zhixian Gao\*

ICCA chemical-sensing material based on molecular imprinting technique and polymerized crystalline colloidal array for detection of diethylstilbestrol.

2729

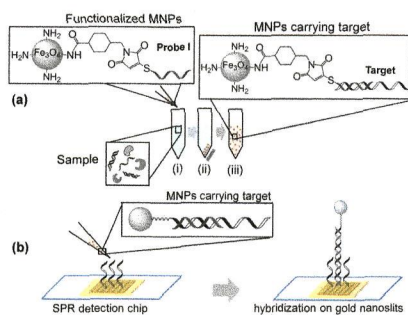


### Simultaneous multi-mycotoxin determination in nutmeg by ultrasound-assisted solid-liquid extraction and immunoaffinity column clean-up coupled with liquid chromatography and on-line post-column photochemical derivatization-fluorescence detection

Wei-Jun Kong, Shu-Yu Liu, Feng Qiu, Xiao-He Xiao and Mei-Hua Yang\*

A simple and sensitive method has been developed for simultaneous determination of 5 mycotoxins in nutmeg.

2740

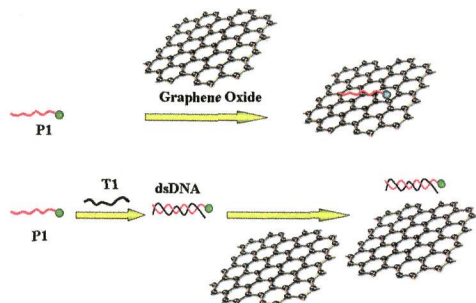


### Magnetic nanoparticle-enhanced SPR on gold nanoslits for ultra-sensitive, label-free detection of nucleic acid biomarkers

Mansoureh Z. Mousavi, Huai-Yi Chen, Shu-Han Wu, Shih-Wei Peng, Kuang-Li Lee, Pei-Kuen Wei and Ji-Yen Cheng\*

Two-step hybridization for capturing and detection of low concentration nucleic acid down to 30 fM. Label-free detection is done by monitoring SPR response to the hybridization on gold nanoslits.

2749



### A novel sensing strategy for the detection of *Staphylococcus aureus* DNA by using a graphene oxide-based fluorescent probe

Shu Pang, Yuan Gao, Yan Li, Siyu Liu and Xingguang Su\*

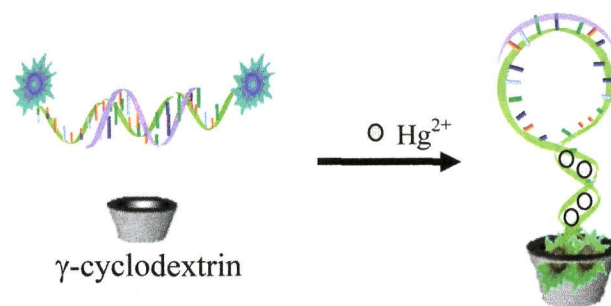
A rapid, sensitive and specific fluorescent sensing method for detecting *Staphylococcus aureus* DNA sequences by using graphene oxide (GO) as an efficient fluorescence quencher was developed.

2755

### New probe design strategy by cooperation of metal/DNA-ligation and supermolecule inclusion interaction: application to detection of mercury ions(II)

Xiaoxia Gao, Ting Deng,\* Jishan Li, Ronghua Yang, Guoli Shen and Ruqin Yu

Based on thymine–Hg<sup>2+</sup>–thymine coordination chemistry and supermolecular inclusion interaction, a pyrene excimer signaling-based sensor was developed for measurement of mercury ions.

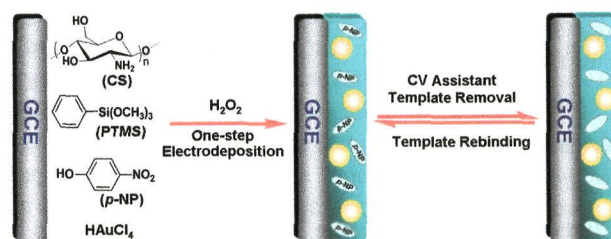


2761

### One-step electrodeposition of a molecularly imprinting chitosan/phenyltrimethoxysilane/AuNPs hybrid film and its application in the selective determination of *p*-nitrophenol

Shanshan Li, Dan Du,\* Jing Huang, Haiyang Tu, Yuqi Yang and Aidong Zhang\*

One-step electrodeposition followed by electrochemically assisted template removal enables the fabrication of molecularly imprinted sol-gel/AuNP hybrid films for *p*-nitrophenol determination.



2769

### Molecularly imprinted electrochemical sensor based on a reduced graphene modified carbon electrode for tetrabromobisphenol A detection

Hong-Jun Chen, Zhao-Hui Zhang,\* Rong Cai, Xiang-Quan Kong, Xing Chen, Yu-Nan Liu and Shou-Zhuo Yao

A novel imprinted sensor based on a graphene modified carbon electrode was developed for the detection of TBBPA.

