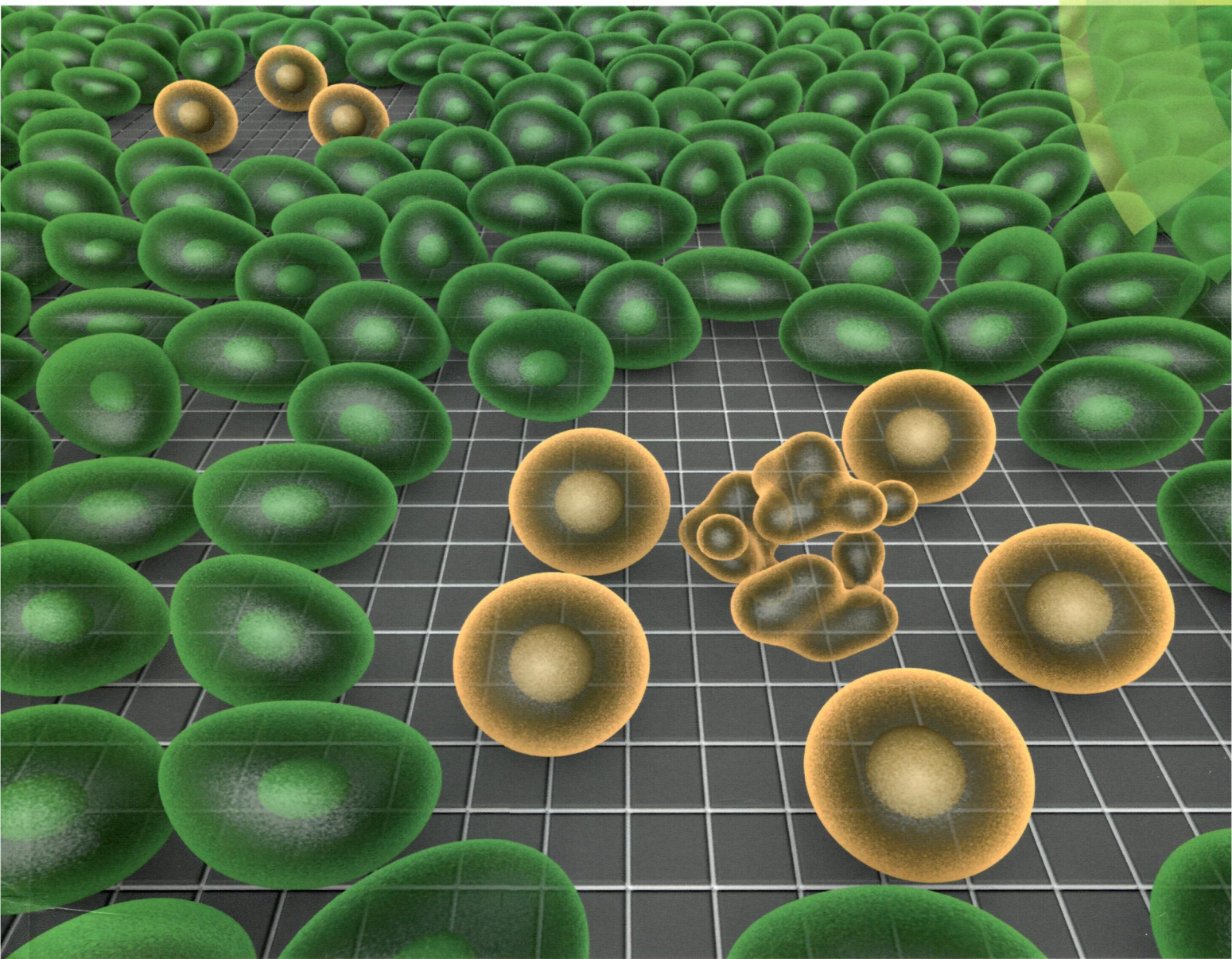
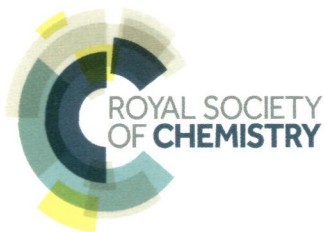


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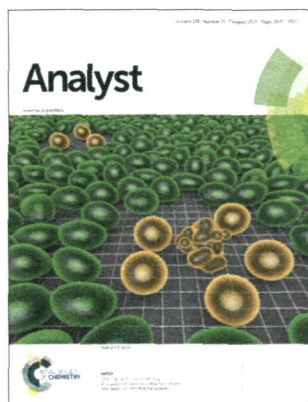
**PAPER**

Chao Han and Changhui Yang  
Viral plaque analysis on a wide field-of-view,  
time-lapse, on-chip imaging platform

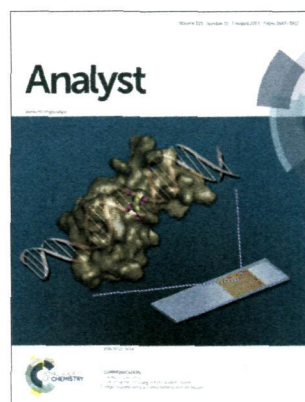


## IN THIS ISSUE

ISSN 0003-2654 CODEN ANALAO 139(15) 3647–3812 (2014)



**Cover**  
See Chao Han and Changhui Yang, pp. 3727–3734.  
Image created by Yan Liang (L2Molecule.com).  
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**Inside cover**  
See Hadley D. Sikes *et al.*, pp. 3695–3701.  
Cover photo illustration and design by Felice Frankel.  
Image reproduced by permission of Hadley D. Sikes from *Analyst*, 2014, **139**, 3695.

## CRITICAL REVIEWS

3656

### NMR-based dynamics of free glycosaminoglycans in solution

Vitor H. Pomin\*

Dynamical behaviors of glycosaminoglycans, as here illustrated with a hyaluronan oligosaccharide, are key regulators of biological functions.

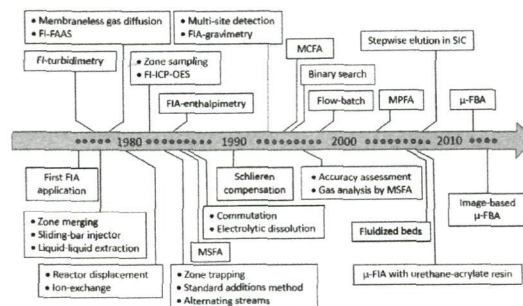


3666

### Flow analysis in Brazil: contributions over the last four decades

Alex D. Batista, Milton K. Sasaki, Fábio R. P. Rocha and Elias A. G. Zagatto\*

Timeline with the main contributions of Brazilian researchers to flow analysis.



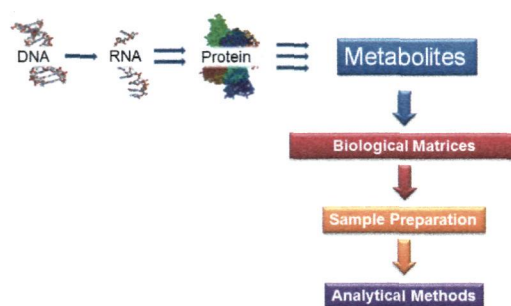
Федеральное государственное  
бюджетное учреждение науки  
Центральная научная библиотека  
Уральского отделения  
Российской академии наук (ЦНБ УрО РАН)

3683

### Sampling and analysis of metabolomes in biological fluids

Maria José Nunes de Paiva, Helvécio Costa Menezes and Zenilda de Lourdes Cardeal\*

Metabolome analysis involves the study of small molecules that are involved in the metabolic responses that occur through patho-physiological changes caused by genetic stimuli or chemical agents.



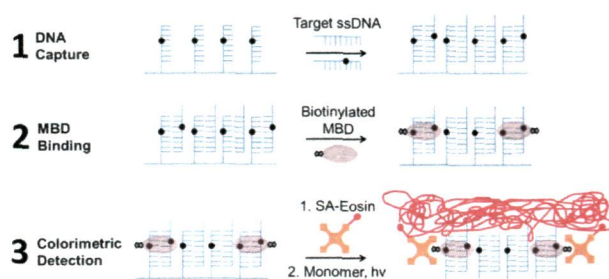
## COMMUNICATIONS

3695

### Evaluating the sensitivity of hybridization-based epigenotyping using a methyl binding domain protein

Brandon W. Heimer, Tatyana A. Shatova, Jungkyu K. Lee, Kaja Kastrup and Hadley D. Sikes\*

We explore and quantify an approach for routine DNA hypermethylation analysis that does not require sodium bisulfite treatment.

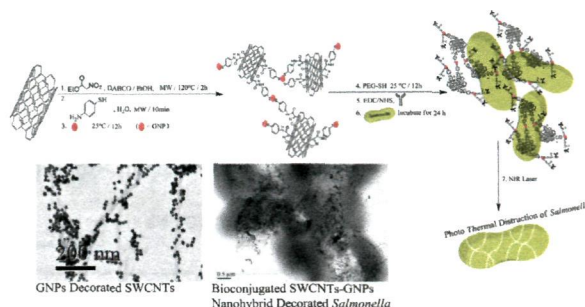


3702

### Targeted highly sensitive detection/eradication of multi-drug resistant *Salmonella* DT104 through gold nanoparticle–SWCNT bioconjugated nanohybrids

Yunfeng Lin and Ashton T. Hamme II\*

Monoclonal antibody-conjugated sphere-shaped gold nanoparticles were combined with single-walled carbon nanotubes (SWCNTs) to create a nanohybrid system to selectively detect and eradicate multiple drug resistant *Salmonella* (MDRS) *typhimurium* DT104 bacteria.

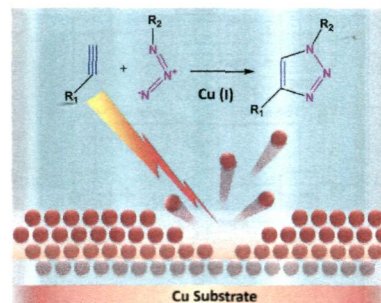


3706

### Reaction and detection click in high-voltage assisted laser desorption/ionization mass spectrometry

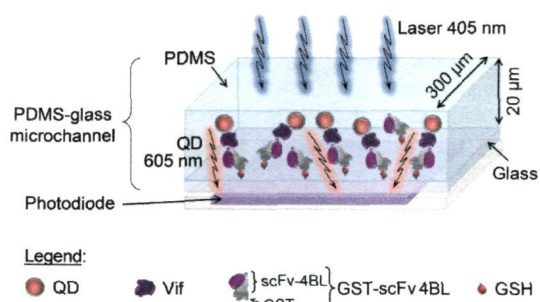
Ran Qiu and Hai Luo\*

Click by Laser@Cu in HALDI-MS: A click reaction (copper-catalyzed azide-alkyne cycloaddition) catalyzed by "naked" copper ions (without ligands) generated *in situ* from a copper substrate by laser ablation in a high-voltage assisted laser desorption/ionization (HALDI) ion source is demonstrated.





3709

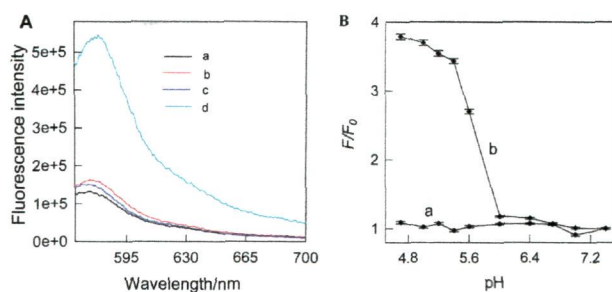


### An amorphous silicon photodiode microfluidic chip to detect nanomolar quantities of HIV-1 virion infectivity factor

Cláudia R. Vistas, Sandra S. Soares, Rogério M. M. Rodrigues, Virginia Chu, João P. Conde and Guilherme N. M. Ferreira\*

A hydrogenated amorphous silicon photosensor is coupled to a microfluidic channel functionalized with recombinant single fragment antibodies to detect nanomolar quantities of HIV-1 virion infective factor.

3714

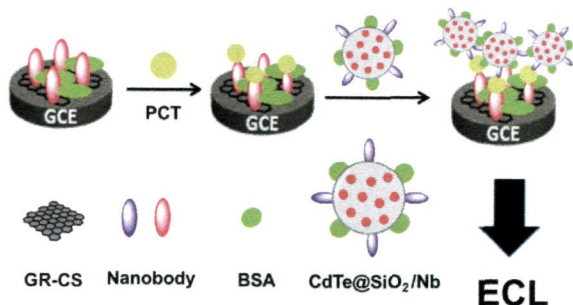


### Dual-stimuli responsive i-motif/nanoflares for sensing ATP in lysosomes

Fen Jin, Jing Zheng, Changhui Liu, Sheng Yang, Yinhui Li, Jishan Li, Yan Lian and Ronghua Yang\*

A dual-stimuli responsive i-motif/nanoflare for molecule detection in lysosomes was designed.

3718

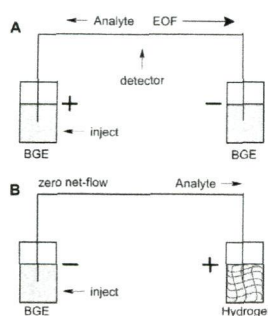


### A nanobody-based electrochemiluminescent immunosensor for sensitive detection of human procalcitonin

Henan Li, Yanyan Sun, Jelle Elseviers, Serge Muyldermans, Songqin Liu\* and Yakun Wan\*

The development of a nanobody-based electrochemiluminescent immunosensor for procalcitonin quantification is described.

3722



### Zero net-flow in capillary electrophoresis using acrylamide based hydrogel

Alain Wuethrich, Paul R. Haddad and Joselito P. Quirino\*

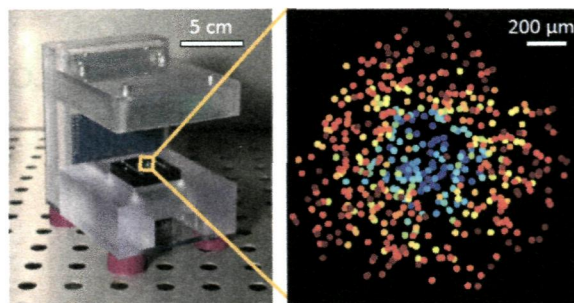
Zero net-flow was observed when acrylamide based hydrogel was used in a vial at one end of a fused-silica capillary during electrophoresis with electroosmotic flow.

3727

### Viral plaque analysis on a wide field-of-view, time-lapse, on-chip imaging platform

Chao Han\* and Changhui Yang

An ePetri platform that can automatically recognize plaques and dynamically track plaque growth at the individual cell death level.

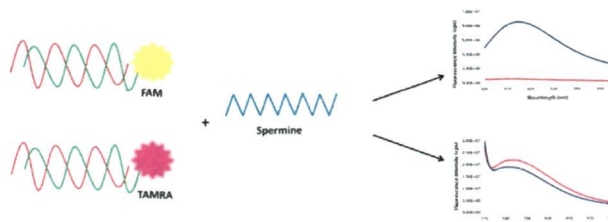


3735

### Interaction of fluorescent dyes with DNA and spermine using fluorescence spectroscopy

K. Gracie, W. E. Smith, P. Yip, J. U. Sutter, D. J. S. Birch, D. Graham and K. Faulds\*

Using fluorescence spectroscopy, spermine is shown to affect the emission of FAM and TAMRA, impacting the design of SERS-based assays.

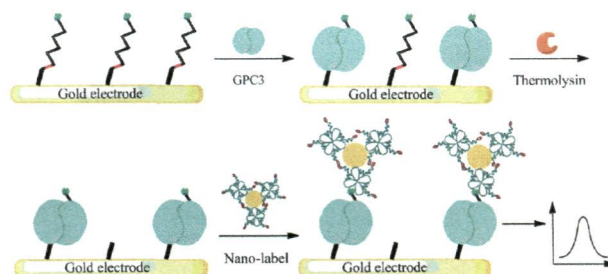


3744

### A sensitive method for protein assays using a peptide-based nano-label: human glypican-3 detection for hepatocellular carcinomas diagnosis

Yue Huang, Hao Li, Tao Gao, Xinjian Liu and Genxi Li\*

A sensitive method for protein assays using a specific capture probe of the target protein and a peptide-based nano-label.

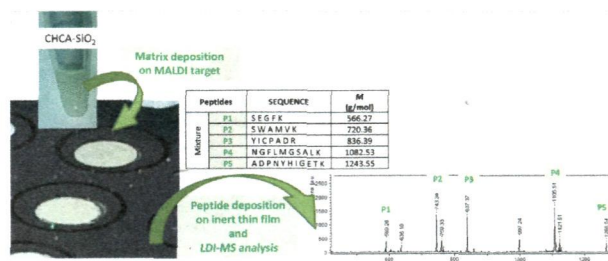


3748

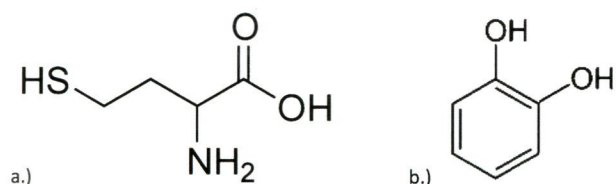
### Laser desorption/ionization mass spectrometry of peptides on a hybrid CHCA organic–inorganic matrix

Clément Fleith, Sonia Cantel, Gilles Subra, Ahmad Mehdi, Jeremie Ciccione, Jean Martinez and Christine Enjalbal\*

We report applications of new hybrid organic–inorganic silica based materials as laser desorption/ionization (LDI)-promoting surfaces for high-throughput identification of peptides.



3755

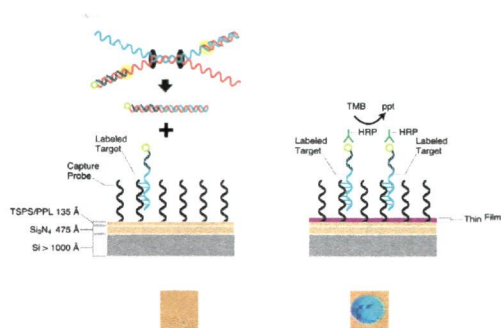


### The selective electrochemical detection of homocysteine in the presence of glutathione, cysteine, and ascorbic acid using carbon electrodes

P. T. Lee, D. Lowinsohn and R. G. Compton\*

The detection of homocysteine, HCys, was achieved with the use of catechol via 1,4-Michael addition reaction using carbon electrodes: a glassy carbon electrode and a carbon nanotube modified glassy carbon electrode.

3763

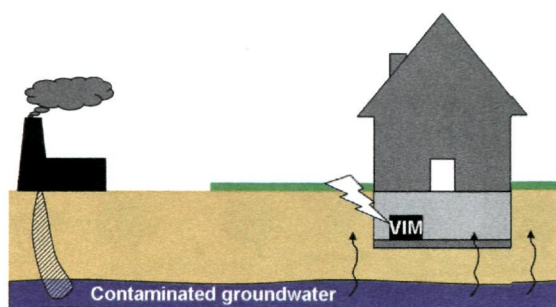


### Rapid amplification/detection of nucleic acid targets utilizing a HDA/thin film biosensor

Robert Jenison,\* Heidi Jaekel, Joshua Klonoski, David Latorra and Jacinta Wiens

A non-instrumented molecular diagnostics approach is described which integrates HDA amplification and thin film biosensor detection to create a platform capable of detecting pathogenic bacteria with high sensitivity and specificity.

3770

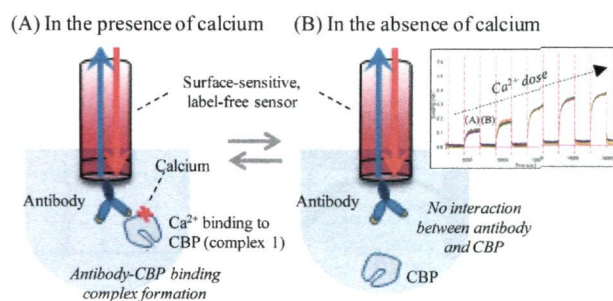


### Developments toward a low-cost approach for long-term, unattended vapor intrusion monitoring

Sanjay V. Patel\* and William K. Tolley

We describe progress towards development of a low-cost gas chromatograph for unattended vapor intrusion monitoring.

3781



### Semi-continuous, label-free immunosensing approach for Ca<sup>2+</sup>-based conformation change of a calcium-binding protein

Sung-Ho Paek, Ji-Na Park, Dong-Hyung Kim, Hee-Soo Kim, Un-Hwan Ha, Sung-Kyu Seo and Se-Hwan Paek\*

Label-free immunosensing based on the conformational change of CBP depending on analyte concentration was explored for semi-continuous analysis of Ca<sup>2+</sup>.

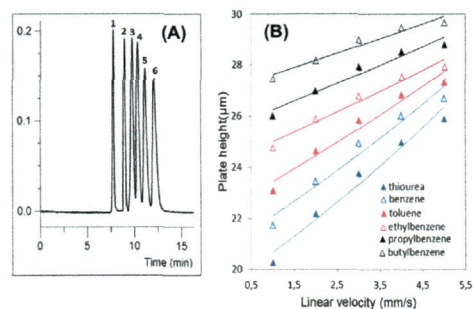


3790

### Novel tentacle-type polymer stationary phase grafted with anion exchange polymer chains for open tubular CEC of nucleosides and proteins

Cemil Aydođan, Kemal etin and Adil Denizli\*

A novel, tentacle-type polymer stationary phase grafted with anion exchange polymer chains for open tubular capillary electrochromatography (OT-CEC) was presented.

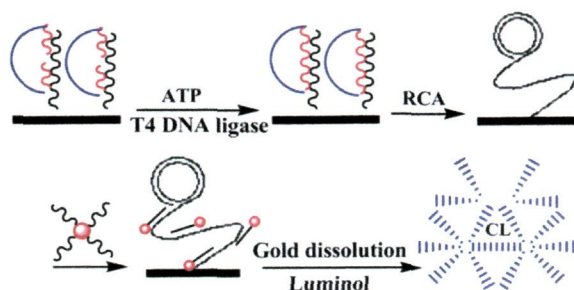


3796

### A cascade amplification strategy based on rolling circle amplification and hydroxylamine amplified gold nanoparticles enables chemiluminescence detection of adenosine triphosphate

Ping Wang, Tonghuan Zhang, Taoyi Yang, Nan Jin, Yanjun Zhao and Aiping Fan\*

A chemiluminescent biosensor for ATP was developed by taking advantage of the ATP-dependent enzymatic reaction, the powerful signal amplification capability of rolling circle amplification, and hydroxylamine-amplified gold nanoparticles.



3804

### Electrochemical detection of *p*-ethylguaiacol, a fungi infected fruit volatile using metal oxide nanoparticles

Yi Fang, Yogeswaran Umasankar and Ramaraja P. Ramasamy\*

The highly sensitive detection of *p*-ethylguaiacol at low concentrations using SnO<sub>2</sub> and TiO<sub>2</sub> metal oxide nanoparticles is described.

