

The Analyst

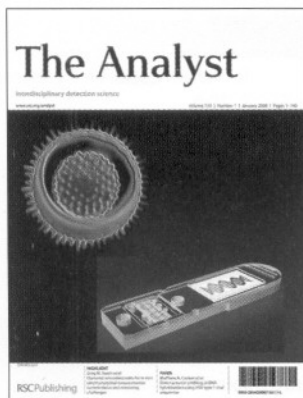
Interdisciplinary detection science

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IN THIS ISSUE

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Cover

See Y. Uludağ, X. Li, H. Coleman, S. Efstathiou and M. A. Cooper, pp. 52-57. The cover image illustrates a coloured transmission electron micrograph (TEM) showing a cross-section of a herpes simplex virus (HSV) and an AKT-iv Covalent sensor chip that enables the detection of HSV type 1 viral DNA.

Virus image by Alfred Pasieka/ Science Photo Library and reproduced with permission of Matthew Cooper from *Analyst*, 2008, **133**, 52.

CHEMICAL TECHNOLOGY

T1

Chemical Technology highlights the latest applications and technological aspects of research across the chemical sciences.

Chemical Technology

January 2008/Volume 5/Issue 1

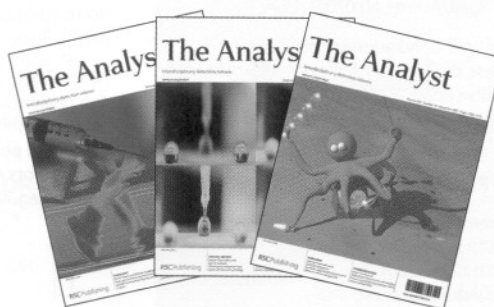
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EDITORIAL

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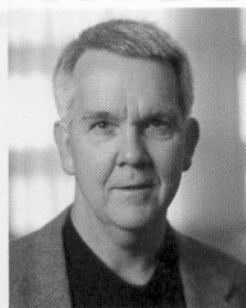
Happy New Year from *The Analyst* and RSC Publishing

Happy New Year from *The Analyst* and RSC Publishing. We take this opportunity to highlight the latest developments in the journal and RSC Publishing.



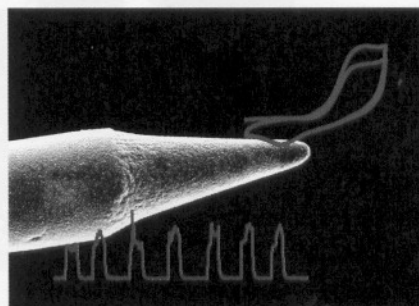
Paul Bohn, University of Notre Dame, USA

The Analyst profiles the new Editor for the Americas, Paul Bohn from the University of Notre Dame.

**Diamond microelectrodes for *in vitro* electroanalytical measurements: current status and remaining challenges**

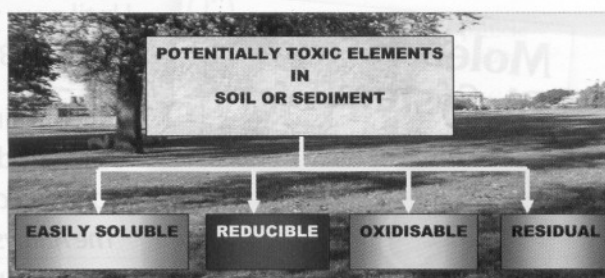
Jinwoo Park, Veronika Quaiserová-Mocko, Bhavik Anil Patel, Martin Novotný, Aihua Liu, Xiaochun Bian, James J. Galligan and Greg M. Swain*

The diamond microelectrode provides excellent response sensitivity, reproducibility, and stability for *in vitro* electroanalysis. Electrochemical measurements with this electrode material represent a new paradigm for studying the disposition of electroactive neurosignalling molecules.

**Is there a future for sequential chemical extraction?**

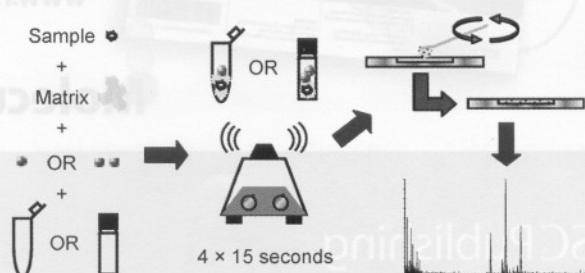
Jeffrey R. Bacon and Christine M. Davidson*

A comprehensive review of the history, scope and limitations of sequential chemical extraction, with guidelines and recommendations for its best use in studying the environmental behaviour of potentially toxic elements

**Characterisation of organometallic and coordination compounds by solvent-free matrix-assisted laser desorption/ionisation time-of-flight mass spectrometry**

Mark F. Wyatt,* Bridget K. Stein and A. Gareth Brenton

Successful sample preparation strategies for the analysis of insoluble or sparingly soluble metal compounds by MALDI-TOFMS are demonstrated. The data presented were acquired in both positive and negative ion modes.

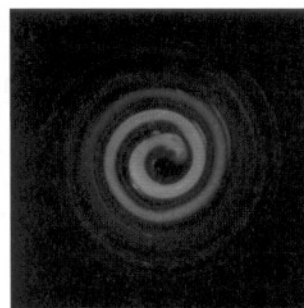


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The characteristic red chemiluminescence from reactions with acidic potassium permanganate: further spectroscopic evidence for a manganese(II) emitter

Jacqui L. Adcock,* Paul S. Francis, Trevor A. Smith and Neil W. Barnett

A direct comparison with the laser-induced photoluminescence of manganese(II) has confirmed that the characteristic red chemiluminescence from reactions with acidic potassium permanganate emanates from an electronically excited manganese(II) species.



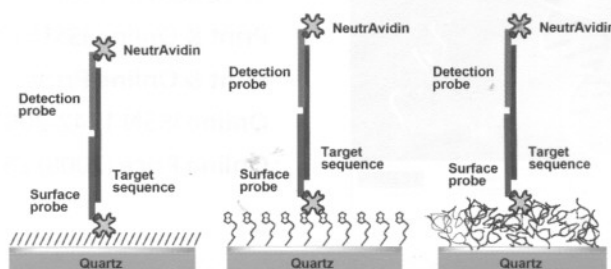
PAPERS

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Direct acoustic profiling of DNA hybridisation using HSV type 1 viral sequences

Yıldız Uludağ, Xin Li, Heather Coleman, Stacey Efsthathiou and Matthew A. Cooper*

We describe the detection of specific, conserved DNA sequences of Herpes simplex virus (HSV) type 1 by means of a novel, high sensitivity acoustic biosensor with comparison of different surface chemistries according to their hybridisation performances.

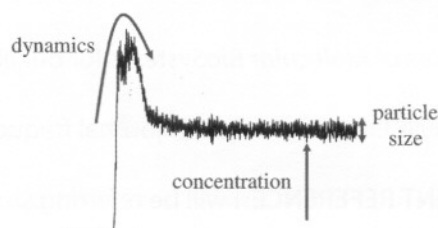


58

Real-time monitoring of powder mixing in a convective blender using non-invasive reflectance NIR spectrometry

Luke J. Bellamy, Alison Nordon and David Littlejohn*

Non-invasive NIR spectrometry can be used to monitor in real time the dynamics of powder mixing, determine compositional information and monitor possible changes in particle size during blending.

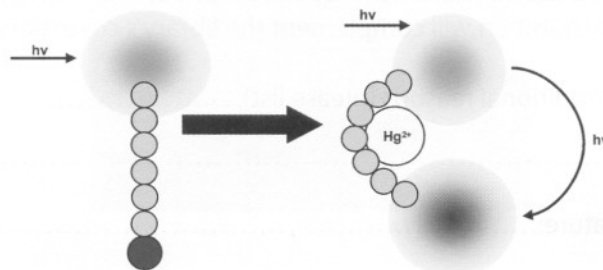


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A 'turn-on' FRET peptide sensor based on the mercury binding protein MerP

Brianna R. White, Howard M. Liljestrand and James A. Holcombe*

A new fluorescent peptidyl chemosensor based on the mercury binding MerP protein with fluorescence resonance energy transfer (FRET) capabilities has been synthesized *via* Fmoc solid-phase peptide synthesis.

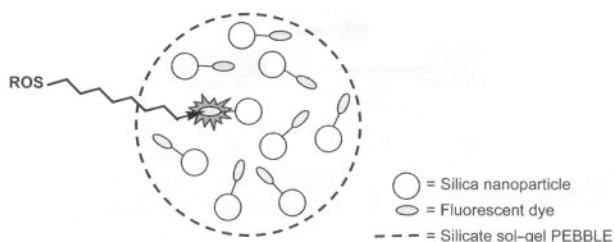


71

An optical sensor for reactive oxygen species: encapsulation of functionalised silica nanoparticles into silicate nanopores to reduce fluorophore leaching

Victoria J. Hammond, Jonathan W. Aylott, Gillian M. Greenway,* Paul Watts, Abigail Webster and Charlotte Wiles

Sol-gel nanopores capable of performing *in-vitro* intracellular monitoring of reactive oxygen species (ROS) have been developed.

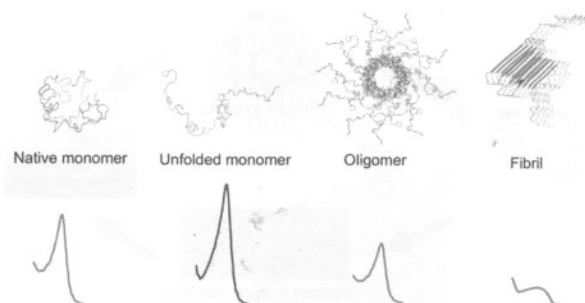


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Changes in interfacial properties of α -synuclein preceding its aggregation

Emil Paleček,* Veronika Ostatná, Michal Masařík, Carlos W. Bertoncini and Thomas M. Jovin

Changes in interfacial behavior of α -synuclein protein were studied in the course of its aggregation *in vitro*. Incipient stages of the Parkinson's disease amyloid formation were found.

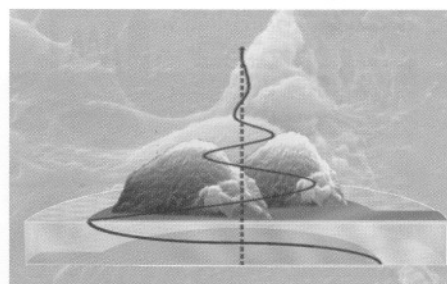


85

Surface immobilisation and properties of smooth muscle cells monitored by on-line acoustic wave detector

Xiaomeng Wang, Jonathan S. Ellis, Chung-Dann Kan, Ren-Ke Li and Michael Thompson*

On-line detection of aortic smooth muscle cell attachment to various surfaces is achieved using the Thickness Shear Mode acoustic wave device. A semi-quantitative analysis demonstrates the promise of this technique for studying cell adhesion and morphology.

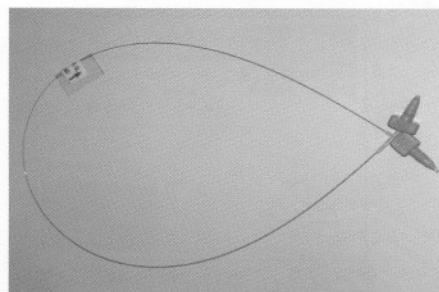


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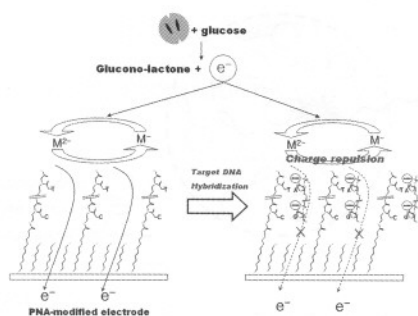
The development of an immobilized enzyme reactor containing glyceraldehyde-3-phosphate dehydrogenase from *Trypanosoma cruzi*: the effect of species' specific differences on the immobilization

C. L. Cardoso, M. C. de Moraes, R. V. Carvalho Guido, G. Oliva, A. D. Andricopulo, I. W. Wainer and Q. B. Cass*

The present work reports an immobilization process for the GAPDH of *Trypanosoma cruzi*, which resulted in a capillary IMER. The factors affecting stability and activity are fully discussed.



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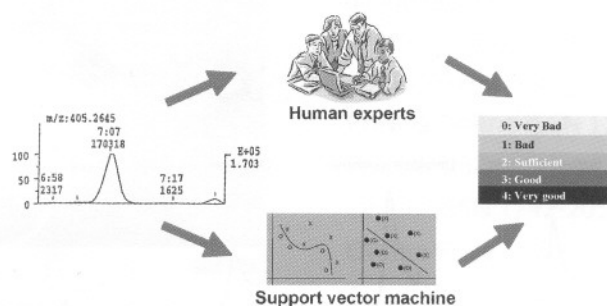


Enzyme-catalyzed signal amplification for electrochemical DNA detection with a PNA-modified electrode

Byoung Yeon Won, Hyun C. Yoon and Hyun Gyu Park*

The signal amplification technique of peptide nucleic acid (PNA)-based electrochemical DNA sensor is developed in a label-free, one-step method utilizing enzymatic catalysis.

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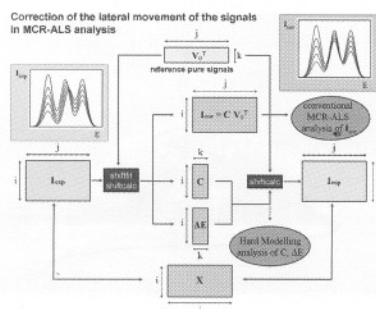


Qualitative evaluation of chromatographic data from quality control schemes using a support vector machine

M. Ventura,* A. Sanchez-Niubo, F. Ruiz, N. Agell, R. Ventura, C. Angulo, A. Domingo-Salvany, J. Segura and R. de la Torre

Two major issues concerning the qualitative evaluation of analytical data from EQAS are dealt with: (i) how experts evaluate chromatographic analytical data, and (ii) the development of a support vector machine as an alternative to human experts for a more homogenous and automatic evaluation.

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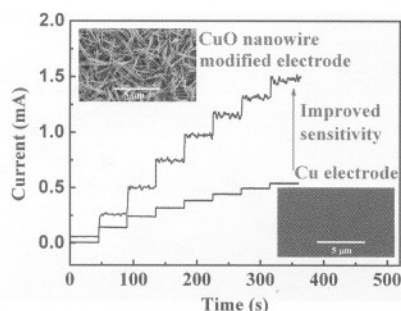


Potential shift correction in multivariate curve resolution of voltammetric data. General formulation and application to some experimental systems

Aristides Alberich, José Manuel Díaz-Cruz,* Cristina Ariño and Miquel Esteban

A new mathematical algorithm is proposed to correct the progressive potential shift of some voltammetric signals that decrease the linearity of the data.

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An improved sensitivity non-enzymatic glucose sensor based on a CuO nanowire modified Cu electrode

Zhenjing Zhuang, Xiaodong Su, Hongyan Yuan, Qun Sun, Dan Xiao* and Martin M. F. Choi*

CuO nanowires were prepared and applied for the fabrication of non-enzymatic glucose sensors with highly enhanced sensitivity.

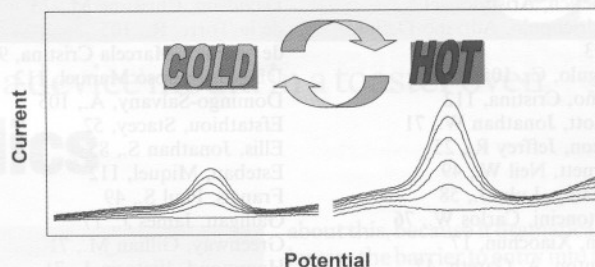
PAPERS

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Enhanced stability and sensitivity of ionic liquid–carbon paste electrodes at elevated temperatures

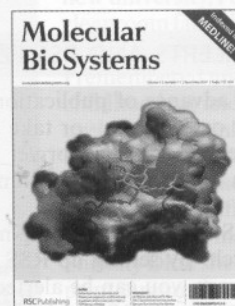
Mustafa M. Musameh,* Roohollah Torabi Kachoosangi and Richard G. Compton*

The operation of ionic liquid–carbon paste electrodes at elevated temperatures and the effect of heating on the electrode performance and response are evaluated using cyclic and square wave voltammetry and amperometry.



MOLECULAR BIOSYSTEMS

It's official, *Molecular BioSystems* has separated from host journal, *Chemical Communications*, and is now a fully fledged solo publication. Its availability since launch to readers of *Chemical Communications* and the online hosts, *Organic & Biomolecular Chemistry*, *Lab on a Chip*, *The Analyst* and *Analytical Abstracts*, has ensured that *Molecular BioSystems* received a large and interdisciplinary audience from the outset. *Analyst* readers wishing to continue to read *Molecular BioSystems* now need to recommend the journal to their librarian. Fill in the online recommendation form at www.rsc.org/libraryrecommendation


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Top tips for better chips

Lab on a Chip launches **Chips & Tips** an online resource discussing common problems encountered in the miniaturisation and microfabrication field, with expert advice from David Beebe and Glenn Walker.

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