

The Analyst

Interdisciplinary detection science

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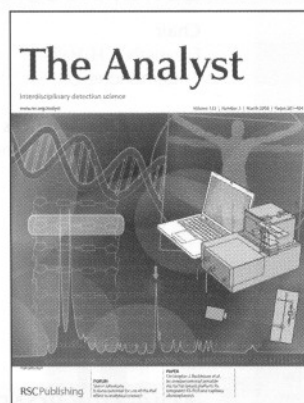
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Cover

See Y. F. Dufrène, pp. 297–301. For the first time, atomic force microscopy enables researchers to visualize the ultrastructure of live microbial cells with nanoscale resolution. The cover shows single live cells of four different microbes (diatoms, bacteria and yeast).

Image reproduced by permission of Yves F. Dufrène from *Analyst*, 2008, **133**, 297.



Inside cover

See G. V. Kaigala, V. N. Hoang, A. Stickel, J. Lauzon, D. Manage, L. M. Pilarski and C. J. Backhouse, pp. 331–338.

This electropherogram is a representative result from an inexpensive and portable point-of-care platform – key to affordable diagnostics.

Image reproduced by permission of Christopher J. Backhouse from *Analyst*, 2008, **133**, 331.

CHEMICAL TECHNOLOGY

T17

Drawing together research highlights and news from all RSC publications, *Chemical Technology* provides a 'snapshot' of the latest applications and technological aspects of research across the chemical sciences, showcasing newsworthy articles and significant scientific advances.

Chemical Technology

March 2008/Volume 5/Issue 3

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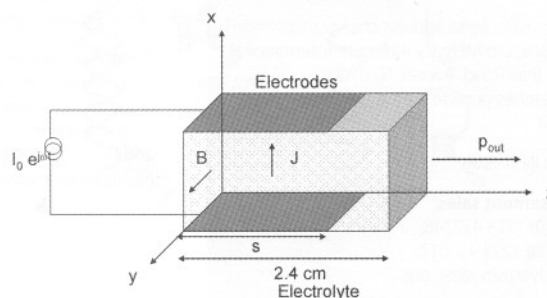
i-SECTION: FORUM

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Is there potential for use of the Hall effect in analytical science?

Sherri Johnstone*

This article discusses the technological barriers together with potential solutions in applying measurement techniques based on the Hall effect to electrolytes.

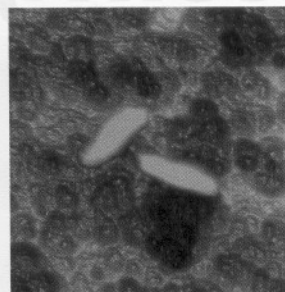


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AFM for nanoscale microbe analysis

Yves F. Dufrêne*

The nanoscale surface analysis of microbial cells using atomic force microscopy represents a significant challenge of current microbiology and is critical for developing new biomedical applications.



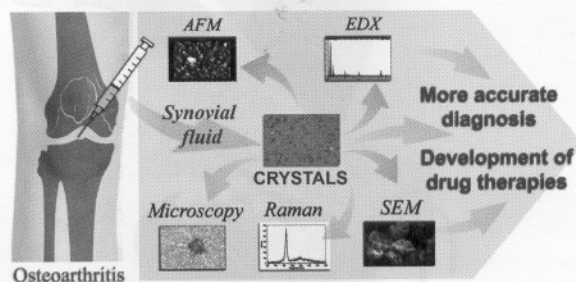
I-SECTION: CRITICAL REVIEW

302

Detection of calcium phosphate crystals in the joint fluid of patients with osteoarthritis – analytical approaches and challenges

Alexander Yavorsky, Aaron Hernandez-Santana, Geraldine McCarthy and Gillian McMahon*

The detection of basic calcium phosphate (BCP) crystals in the synovial fluid of patients with osteoarthritis is important as they represent a therapeutic target as well as a potential biomarker for the disease. This review collates the work that has been done on developing analytical assays for BCP crystals.



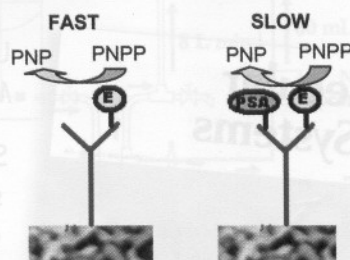
COMMUNICATIONS

319

Detection of free prostate specific antigen (fPSA) on a nanoporous gold platform

Olga V. Shulga, Dan Zhou, Alexei V. Demchenko and Keith J. Stine*

A new spectrophotometric method using covalently attached capture antibody labeled with alkaline phosphatase is developed for the detection of fPSA.

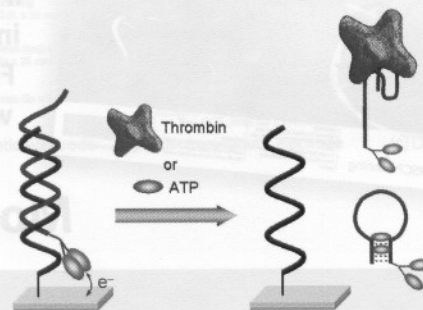


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Target-induced strand release (TISR) from aptamer–DNA duplex: A general strategy for electronic detection of biomolecules ranging from a small molecule to a large protein

Jyun Yoshizumi, Satoshi Kumamoto, Mitsunobu Nakamura and Kazushige Yamana*

Target-induced aptamer release from the aptamer–DNA duplex provides a simple and convenient approach to electronic detection of thrombin as well as ATP.

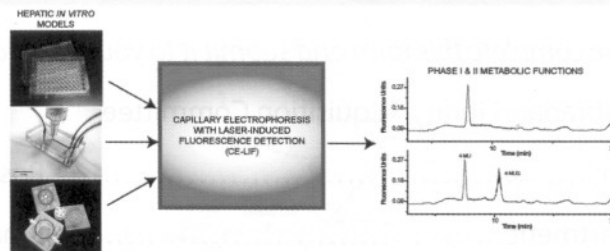


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Integrating sensitive quantification of hepatic metabolic functions by capillary electrophoresis with laser-induced fluorescence detection

Yi-Chin Toh, Jing Zhang, Yuet Mei Khong, Yanan Du, Wanxin Sun and Hanry Yu*

We report the establishment of capillary electrophoresis with laser-induced fluorescence (CE-LIF) detection as a common analytical platform for sensitive quantification of both phase I and II metabolism in various hepatic *in vitro* models.



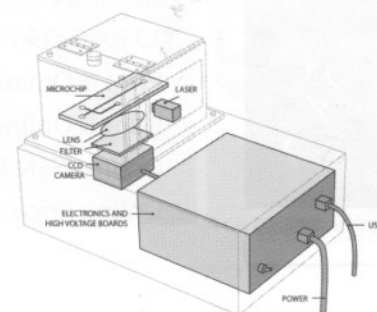
PAPERS

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An inexpensive and portable microchip-based platform for integrated RT-PCR and capillary electrophoresis

Govind V. Kaigala, Viet N. Hoang, Alex Stickel, Jana Lauzon, Dammika Manage, Linda M. Pilarski and Christopher J. Backhouse*

An integrated, inexpensive and portable platform for performing genetic analysis is presented. This is a cost-effective integration of microfluidics, optics, and electronics, and is directed towards use within a clinical setting.

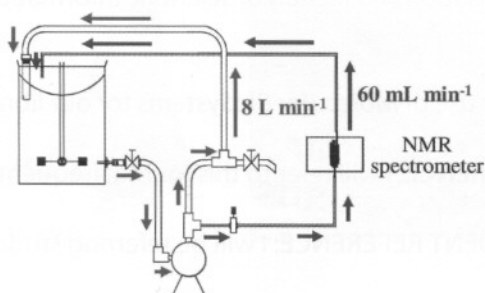


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Consideration of some sampling problems in the on-line analysis of batch processes by low-field NMR spectrometry

Alison Nordon,* Alvaro Diez-Lazaro, Chris W. L. Wong, Colin A. McGill, David Littlejohn, Manori Weerasinghe, Danladi A. Mamman, Michael L. Hitchman and Jacqueline Wilkie

The challenges of obtaining a representative sample from a process for on-line analysis by low-field medium-resolution NMR spectrometry (at 29 MHz) are discussed.

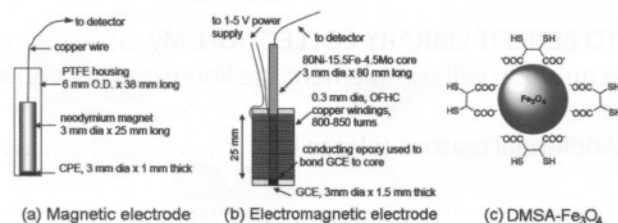


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Direct detection of Pb in urine and Cd, Pb, Cu, and Ag in natural waters using electrochemical sensors immobilized with DMSA functionalized magnetic nanoparticles

W. Yantasee,* K. Hongsirikarn, C. L. Warner, D. Choi, T. Sangvanich, M. B. Toloczko, M. G. Warner, G. E. Fryxell, R. S. Addleman and C. Timchalk

For direct and simple detection of Pb in urine and Cd, Pb, Cu, and Ag in natural waters, electrochemical sensors employing magnetic electrodes and DMSA functionalized iron oxide (Fe_3O_4) nanoparticles have been developed.

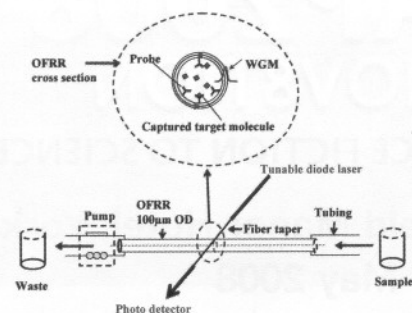


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Opto-fluidic micro-ring resonator for sensitive label-free viral detection

Hongying Zhu, Ian M. White, Jonathan D. Suter, Mohammed Zourob and Xudong Fan*

Sensitive, label-free virus detection using the opto-fluidic ring resonator (OFRR) sensor has been demonstrated, enabling the future development of novel OFRR-based, sensitive, rapid, and low-cost micro total analysis devices for virus detection.

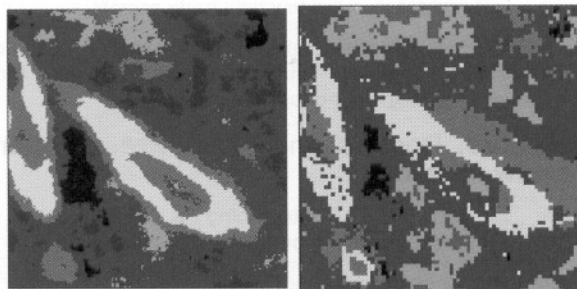


361

Raman mapping and FTIR imaging of lung tissue: congenital cystic adenomatoid malformation

Christoph Krafft,* Daniela Codrich, Gloria Pelizzo and Valter Sergio

Raman and FTIR images are collected from lung tissue sections. Segmentation by cluster analysis and mean spectra give detailed information about biochemical changes in malformations.

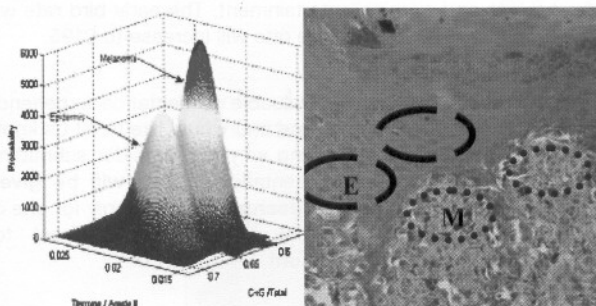


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Distinction of malignant melanoma and epidermis using IR micro-spectroscopy and statistical methods

Z. Hamdody, S. Argov, R. K. Sahu, E. Cagnano, R. Moreh and S. Mordechai*

Haematoxylin and eosin stained formalin fixed skin tissue containing malignant melanoma (M) and epidermis (E) (right) and Gaussian distribution of IR Micro-Spectroscopy data of nucleic acid bases in the two regions (left).

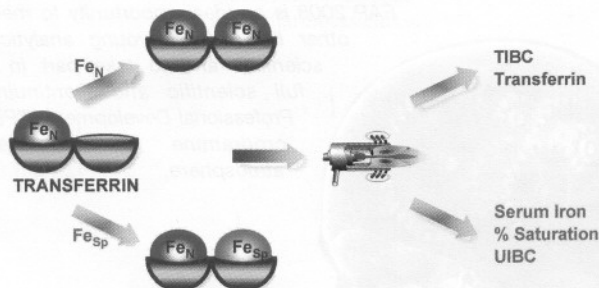


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Stable isotope labelling and FPLC-ICP-SFMS for the accurate determination of clinical iron status parameters in human serum

M. Estela del Castillo Busto, Maria Montes-Bayón, Jörg Bettmer and Alfredo Sanz-Medel*

This work describes the development of two complementary methodologies to evaluate the total iron-binding capacity (TIBC), total transferrin, serum iron, transferrin saturation and unsaturated iron-binding capacity (UIBC) based on the use of iron-specific monitoring by inductively coupled plasma isotope dilution mass spectrometry (ICP-IDMS).

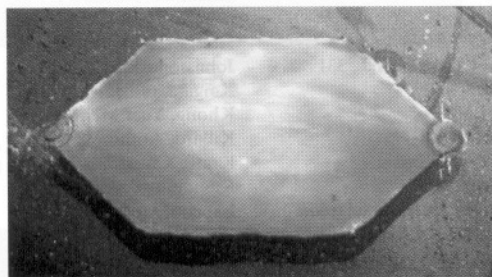


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Progress in developing polymerized crystalline colloidal array sensors for point-of-care detection of myocardial ischemia

Justin T. Baca, David N. Finegold and Sanford A. Asher*

An inexpensive photonic crystal sensor for the point-of-care detection of myocardial ischemia is demonstrated; a shift in diffracted wavelength reports on recent cardiac ischemia.

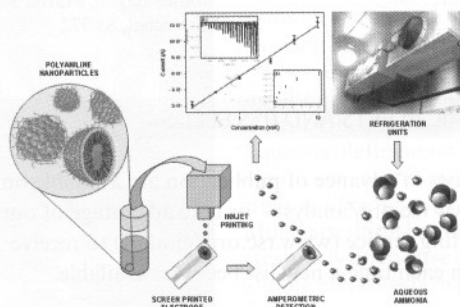


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An aqueous ammonia sensor based on an inkjet-printed polyaniline nanoparticle-modified electrode

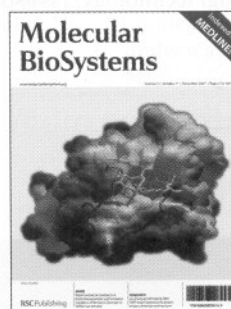
Karl Crowley, Eimer O'Malley, Aoife Morrin, Malcolm R. Smyth and Anthony J. Killard*

The fabrication of an ammonia sensor using conducting dodecylbenzene sulfonic acid (DBSA)-doped polyaniline nanoparticles (nanoPANI) deposited via inkjet printing to create a solid state ammonia sensor amenable to rapid, low-cost mass production is described.



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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