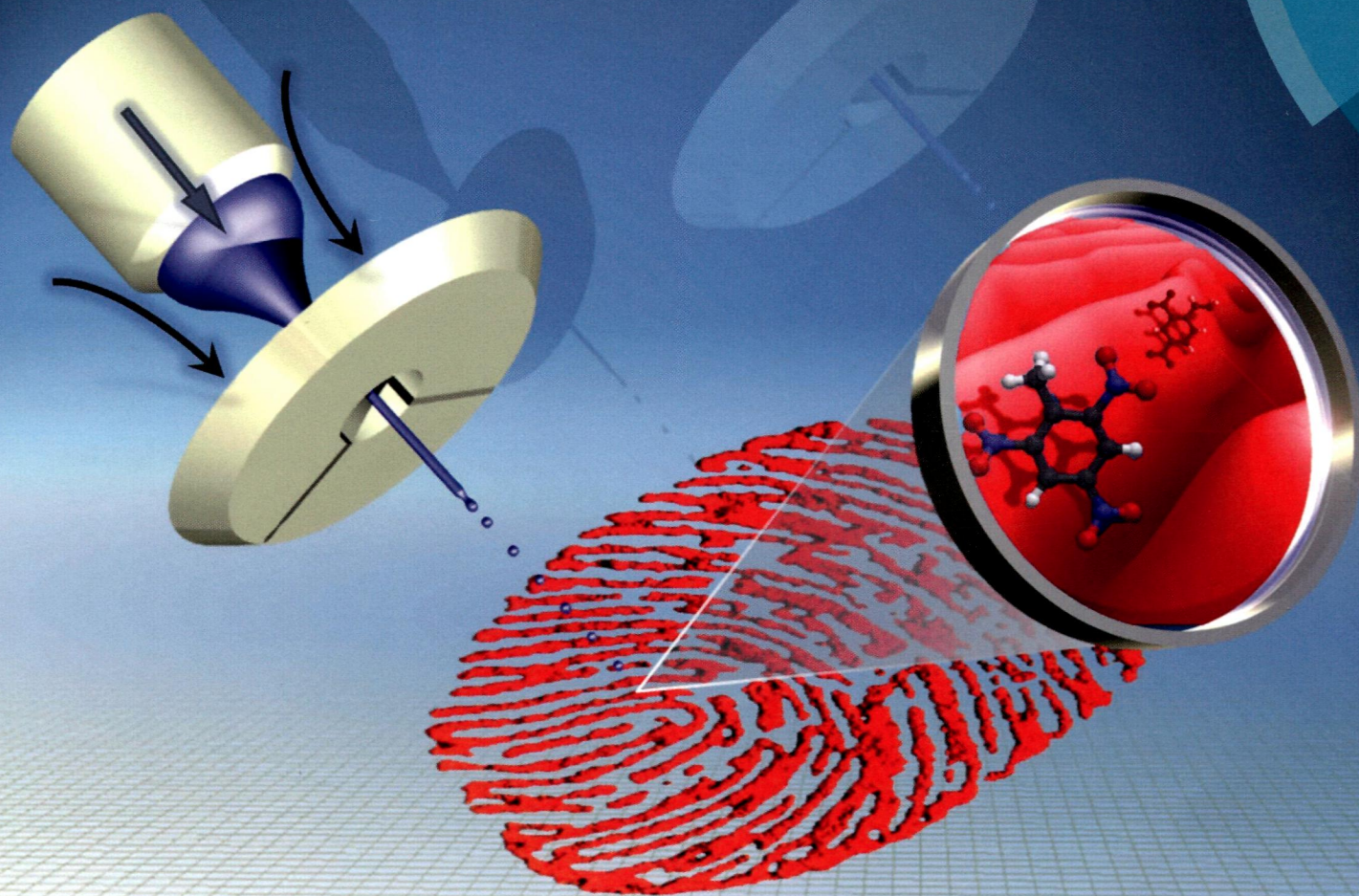
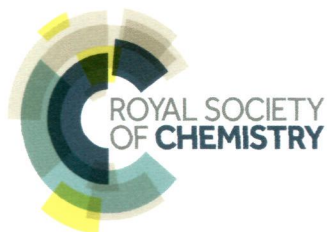


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COMMUNICATION

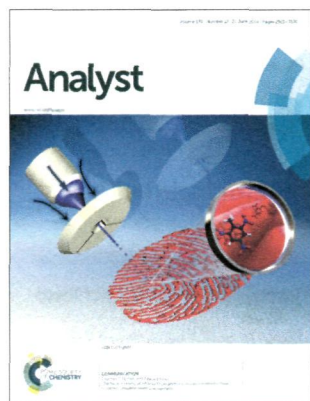
Thomas P. Forbes and Edward Sisco
Chemical imaging of artificial fingerprints by desorption electro-flow
focusing ionization mass spectrometry

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Cover

See Thomas P. Forbes and Edward Sisco, pp. 2982–2985. Image reproduced by permission of Thomas P. Forbes from *Analyst*, 2014, **139**, 2982.



Inside cover

See Sam R. Nugen *et al.*, pp. 3002–3008. Image reproduced by permission of Sam R. Nugen from *Analyst*, 2014, **139**, 3002.

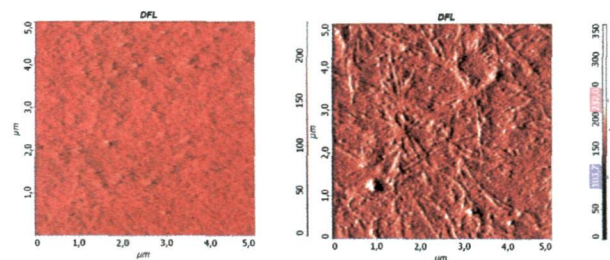
MINIREVIEW

2933

Recent advances in surface functionalization techniques on polymethacrylate materials for optical biosensor applications

Samira Hosseini, Fatimah Ibrahim, Ivan Djordjevic* and Leo H. Koole

Protein chips for immune-based assay systems have been intensively investigated for their application in early diagnostics.



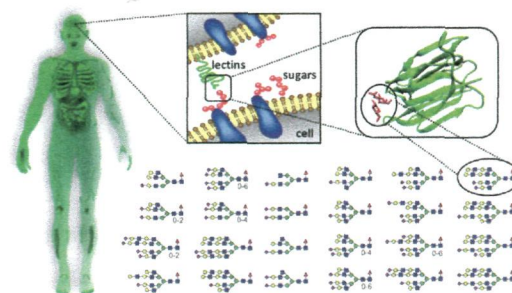
CRITICAL REVIEW

2944

Mammalian protein glycosylation – structure versus function

S. Defaus, P. Gupta, D. Andreu and R. Gutiérrez-Gallego*

This review highlights relevant aspects of structural analysis of carbohydrates, attributed functions at different levels, and current discoveries on the relevance of mammalian protein glycosylation through structural assessment in a biological environment.



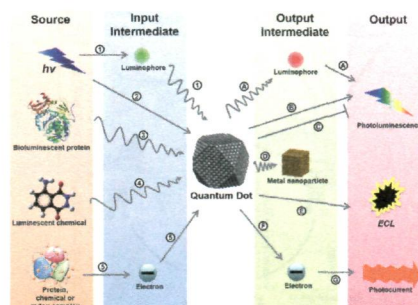
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Центральная научная библиотека
Уральского отделения
Российской академии наук (ЦНБ УрО РАН)

2968

Quantum dots in diagnostics and detection: principles and paradigms

T. R. Pisanic II, Y. Zhang and T. H. Wang*

A review of the exceptional phenomena associated with quantum dots that have been and continue to be readily exploited for numerous uses in nanobiotechnology.



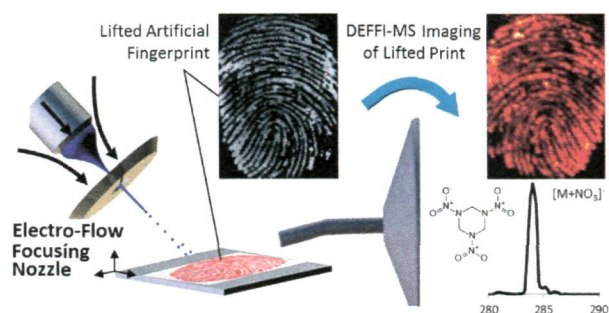
COMMUNICATIONS

2962

Chemical imaging of artificial fingerprints by desorption electro-flow focusing ionization mass spectrometry

Thomas P. Forbes* and Edward Sisco

Artificial fingerprints, comprised of endogenous material and trace exogenous compounds, were imaged using desorption electro-flow focusing ionization mass spectrometry.

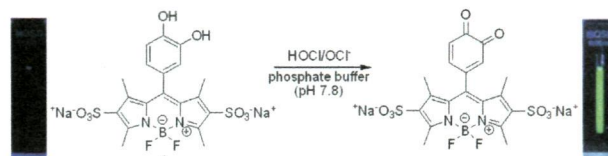


2986

A water-soluble sulfonate-BODIPY based fluorescent probe for selective detection of HOCl/OCl⁻ in aqueous media

Jiyoung Kim and Youngmi Kim*

A water-soluble sulfonate-BODIPY dye **1** was developed for the selective detection of HOCl/OCl⁻ in aqueous buffer solution. The probe, which displays extremely weak fluorescence owing to efficient photoinduced electron transfer (PeT) from the pendant catechol donor, responds to HOCl/OCl⁻ through a dramatic enhancement of its fluorescence intensity.

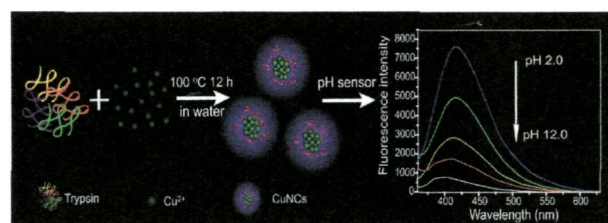


2990

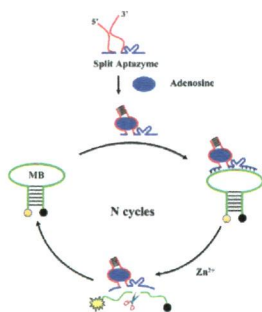
One-step prepared fluorescent copper nanoclusters for reversible pH-sensing

Wei Wang, Fei Leng, Lei Zhan, Yong Chang, Xiao Xi Yang, Jing Lan and Cheng Zhi Huang*

A one-step synthesis of water soluble and pH-responsive trypsin-stabilized fluorescent CuNCs was reported without using additional protective or reducing agents.



2994

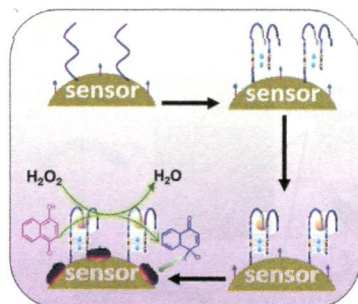


Split aptazyme-based catalytic molecular beacons for amplified detection of adenosine

Jin Huang, Yong He, Xiaohai Yang, Kemin Wang,* Ke Quan and Xiaoping Lin

Combining the elements of split aptazyme and molecular beacons (MBs contain an adenine ribonucleotide (rA) as the cleavage site), we developed a versatile sensing strategy for amplified detection of the biotarget adenosine.

2998



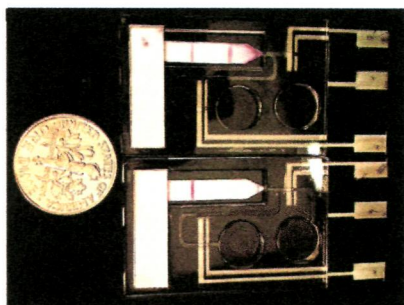
Target-initiated impedimetric proximity ligation assay with DNAzyme design for *in situ* amplified biocatalytic precipitation

Juan Tang, Minghua Lu* and Dianping Tang*

A target-initiated proximity ligation assay protocol with DNAzyme formation was for the first time designed for ultrasensitive impedimetric monitoring of heavy metal ions (silver ions were used in this case) by coupling with an enzymatic biocatalytic precipitation technique.

PAPERS

3002

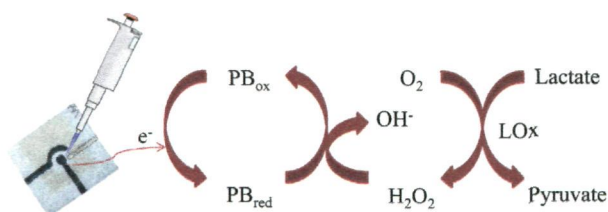


A hybrid paper and microfluidic chip with electrowetting valves and colorimetric detection

Fei He, Jeff Grimes, Samuel D. Alcaine and Sam R. Nugen*

Sequential fluid delivery with minimized external equipment is vital towards a point-of-care diagnostic device.

3009



Cotton fabric-based electrochemical device for lactate measurement in saliva

Radha S. P. Malon, K. Y. Chua, Dedy H. B. Wicaksono and Emma P. Córcoles*

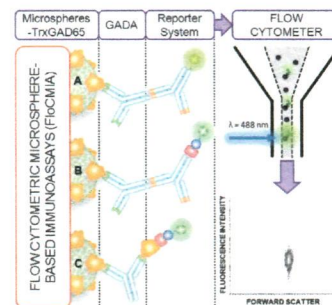
We describe a method for the determination of lactate concentration in saliva samples by using a simple and low-cost cotton fabric-based electrochemical device.

3017

Flow cytometric microsphere-based immunoassay as a novel non-radiometric method for the detection of glutamic acid decarboxylase autoantibodies in type 1 diabetes mellitus

Luciano L. Guerra, Aldana Trabucchi, Natalia I. Faccinetti, Ruben F. Iacono, Daniela B. Ureta, Edgardo Poskus and Silvina N. Valdez*

Microspheres adsorbed with glutamic acid decarboxylase (GAD65) are used to assess GAD65 autoantibodies by Flow Cytometry (FloCMIA) in human sera.

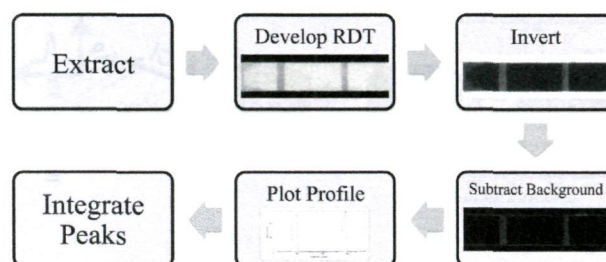


3026

Simple sample processing enhances malaria rapid diagnostic test performance

K. M. Davis, L. E. Gibson, F. R. Haselton and D. W. Wright*

Several brands of malaria RDTs were analyzed and their signals quantitated. It was found that a simple sample processing step enhanced the limits of detection by at least 4-fold.

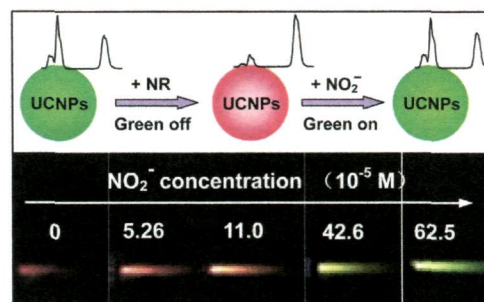


3032

Upconversion nanoparticles for ratiometric fluorescence detection of nitrite

Junfen Han, Cheng Zhang, Fei Liu, Bianhua Liu,* Mingyong Han, Wensheng Zou, Liang Yang and Zhongping Zhang*

Individual upconversion nanoparticles with green and red emissions were synthesized and used as ratiometric fluorescence probes for the detection of nitrite by selectively turning on the green fluorescence.

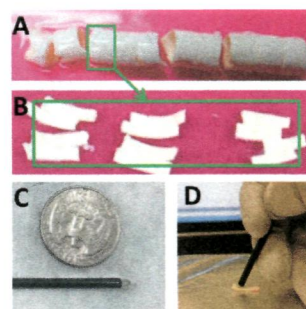


3039

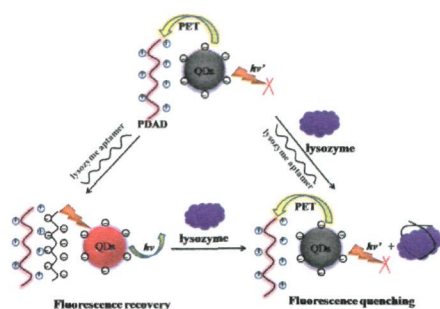
Fourier transform infrared spectroscopy to quantify collagen and elastin in an *in vitro* model of extracellular matrix degradation in aorta

Rabee Cheheltani, Cushla M. McGovern, Jayashree Rao, David A. Vorp, Mohammad F. Kiani and Nancy Pleshko*

FTIR-based analyses can quantify elastin and collagen in vascular tissues.



3045



A label-free fluorescence detection strategy for lysozyme assay using CuInS_2 quantum dots

Siyu Liu, Weidan Na, Shu Pang, Fanping Shi and Xingguang Su*

We have developed a simple, efficient and label-free fluorescence detection system for lysozyme utilizing CuInS_2 quantum dots (QDs) as the probe.

3055

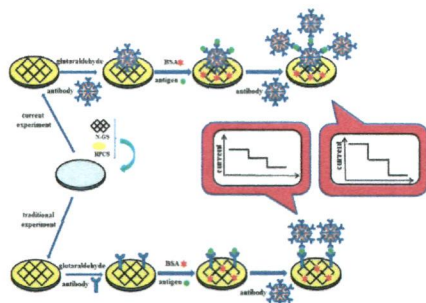


Acetylcholinesterase biosensor based on a gold nanoparticle–polypyrrole–reduced graphene oxide nanocomposite modified electrode for the amperometric detection of organophosphorus pesticides

Yuqi Yang, Abdullah Mohamed Asiri, Dan Du* and Yuehe Lin*

A nanohybrid of gold nanoparticles, polypyrrole, and graphene sheets was achieved by electrochemical deposition to develop a novel acetylcholinesterase biosensor.

3061

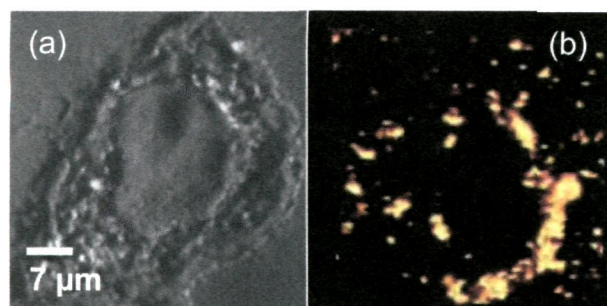


Ultrasensitive dual amplification sandwich immunosensor for breast cancer susceptibility gene based on sheet materials

Xiang Ren, Tao Yan, Sen Zhang, Xiaoyue Zhang, Picheng Gao, Dan Wu, Bin Du and Qin Wei*

A new electrochemical dual amplification sandwich immunosensor (DASI) was designed for ultrasensitive and accurate detection of the breast cancer susceptibility gene based on the combination of N-doped graphene, hydroxypropyl chitosan and Co_3O_4 mesoporous nanosheets.

3069



A carbon nanotube-based Raman-imaging immunoassay for evaluating tumor targeting ligands

Pooja Bajaj, Carole Mikoryak, Ruhung Wang, David K. Bushdiecker II, Pauras Memon, Rockford K. Draper, Gregg R. Dieckmann, Paul Pantano and Inga H. Musselman*

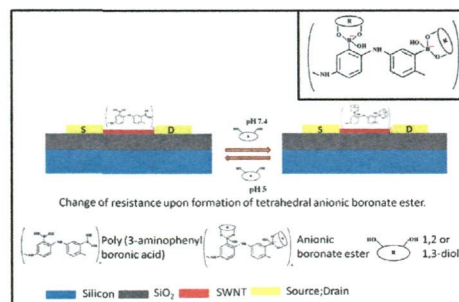
Distribution of membrane receptors using targeting antibody immunoassay: (a) optical image; (b) G-band signal of carbon nanotubes as Raman label.

3077

Poly(3-aminophenylboronic acid)-functionalized carbon nanotubes-based chemiresistive sensors for detection of sugars

Sushmee Badhulika, Chaker Tlili and Ashok Mulchandani*

A poly(aniline boronic acid) (PABA)-functionalized single-walled carbon nanotube (SWNT) non-enzymatic sensor was developed for the detection of saccharides.

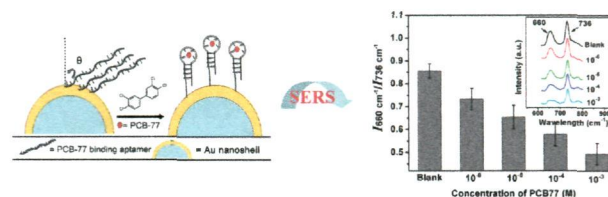


3083

Label-free selective SERS detection of PCB-77 based on DNA aptamer modified SiO₂@Au core/shell nanoparticles

Yilin Lu, Qing Huang,* Guowen Meng, Lijun Wu and Zhang Jingjing

Aptamer-modified SiO₂@Au core/shell nanoparticles can be utilized as effective SERS substrates for selective and quantitative examination of polychlorinated biphenyls.

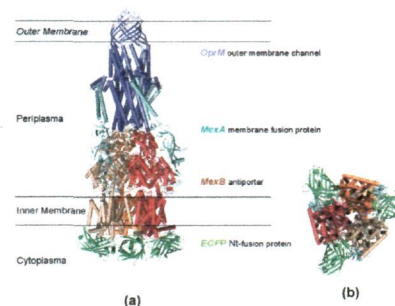


3088

Design and study of the efflux function of the EGFP fused MexAB-OprM membrane transporter in *Pseudomonas aeruginosa* using fluorescence spectroscopy

Feng Ding, Kerry J. Lee, Ardeschir Vahedi-Faridi, Hiroshi Yoneyama, Christopher J. Osgood and Xiao-Hong Nancy Xu*

Construction and characterization of the EGFP fused MexAB-OprM transporter.

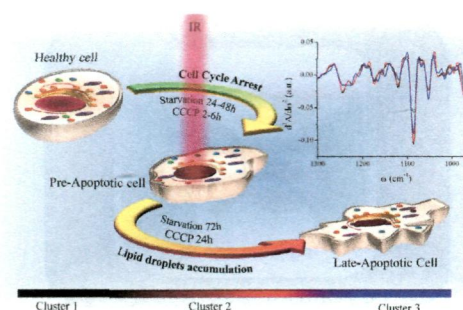


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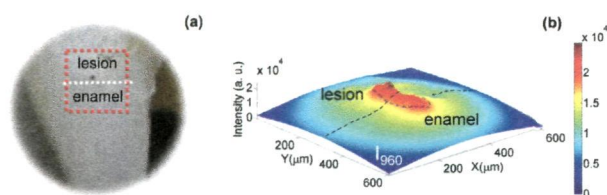
Apoptotic pathways of U937 leukemic monocytes investigated by infrared microspectroscopy and flow cytometry

Giovanni Birarda, Diana E. Bedolla, Elisa Mitri, Sabrina Pacor, Gianluca Grenzi and Lisa Vaccari*

Infrared microspectroscopy and flow cytometry were used to study apoptosis in starved and CCCP-treated U937 monocyte cells.



3107

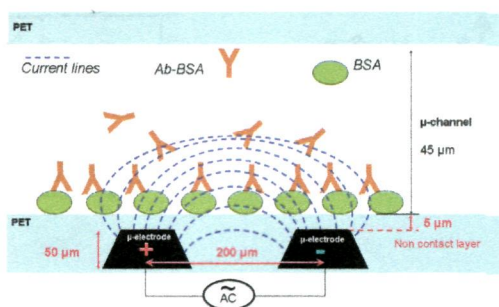


Wide-field Raman imaging of dental lesions

Shan Yang, Bolan Li, Anna Akkus, Ozan Akkus* and Lisa Lang

Wide-field Raman imaging is a potential tool for detection of dental caries at the onset.

3115

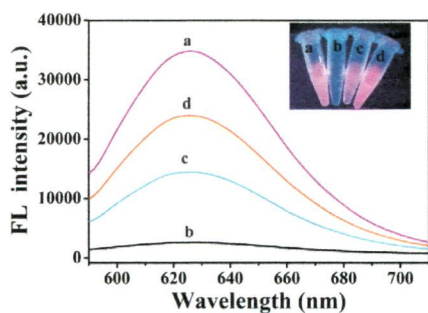


A real time affinity biosensor on an insulated polymer using electric impedance spectroscopy in dielectric microchips

Mohammed Kechadi, Bruno Sotta, Lila Chaal, Bernard Tribollet and Jean Gamby*

This paper demonstrates how a contactless microelectrode allows monitoring of the electric impedance changes provoked by the association of two protein ligands.

3122

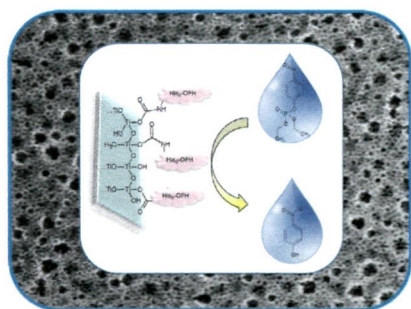


A DNA-scaffolded silver nanocluster/ Cu^{2+} ensemble as a turn-on fluorescent probe for histidine

Ying Zhou, Tianshu Zhou, Min Zhang* and Guoyue Shi*

A new type of rapid, sensitive, and selective fluorescence turn-on assay was developed for detection of histidine using a DNA-scaffolded silver nanocluster/ Cu^{2+} ensemble (DNA-AgNC/ Cu^{2+}).

3127



Mesoporous titania thin films as efficient enzyme carriers for paraoxon determination/detoxification: effects of enzyme binding and pore hierarchy on the biocatalyst activity and reusability

N. Frančič, M. G. Bellino, G. J. A. A. Soler-Illia and A. Lobnik*

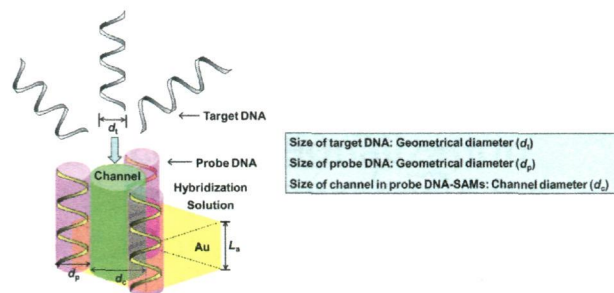
In this work we demonstrate the efficient immobilization of histidine 6-tagged organophosphate hydrolase ($\text{His}_6\text{-OPH}$), an organophosphate-degrading enzyme, on mesoporous titania thin films.

3137

Size-fitting effect for hybridization of DNA/mercaptohexanol mixed monolayers on gold

Zhiguo Li,* Lingling Zhang, Hailing Mo, Yanping Peng, Hongjin Zhang, Zhuangzhi Xu, Chunxia Zheng and Zhifeng Lu

The size-fitting effect for hybridization of DNA/mercaptohexanol mixed monolayers on gold with target DNA in solution was investigated based on the proposed simple DNA hybridization model and electrochemical measurement.

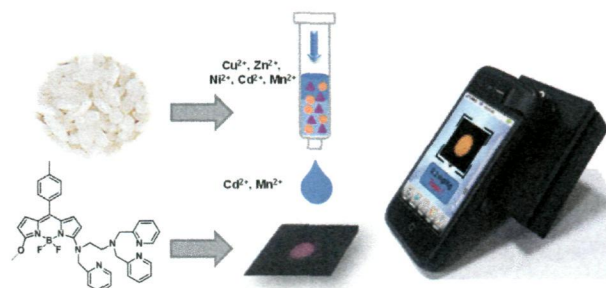


3146

An SPE-assisted BODIPY fluorometric paper sensor for the highly selective and sensitive determination of Cd²⁺ in complex sample: rice

Yu Zhang, Hui Li, Li-Ya Niu, Qing-Zheng Yang,* Ya-Feng Guan and Liang Feng*

Combining SPE and BODIPY-based fluorometric paper sensor, trace Cd²⁺ in complex samples could be qualitatively and quantitatively detected.

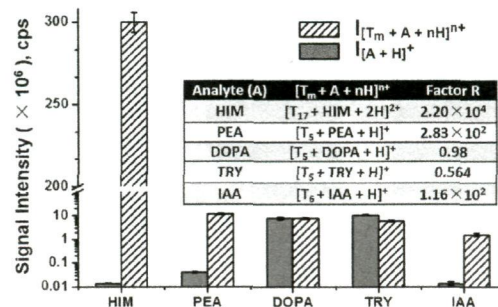


3154

Highly sensitive and specific detection of histamine via the formation of a self-assembled magic number cluster with thymine by mass spectrometry

Jiamu Sun, Zhen Qin, Jia Liu, Chengsen Zhang and Hai Luo*

The self-assembled magic number cluster of thymine (T) significantly enhanced the MS signal of histamine with high specificity.

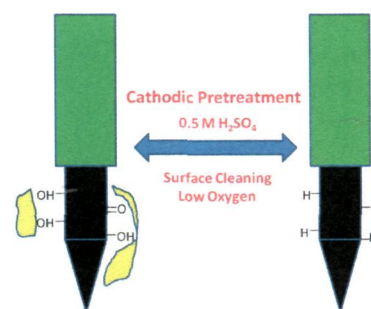


3160

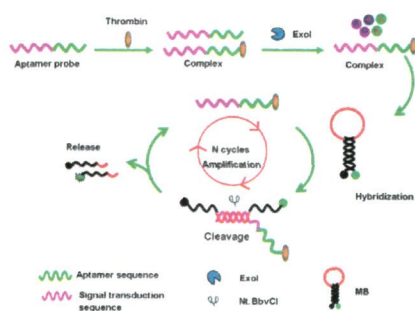
Electrochemical activation of diamond microelectrodes: implications for the *in vitro* measurement of serotonin in the bowel

Boris Duran, Ricardo F. Brocenschi, Marion France, James J. Galligan and Greg M. Swain*

Diamond microelectrodes can be reproducibly activated during the *in vitro* detection of serotonin in the GI tract by cathodic pretreatment.



3173

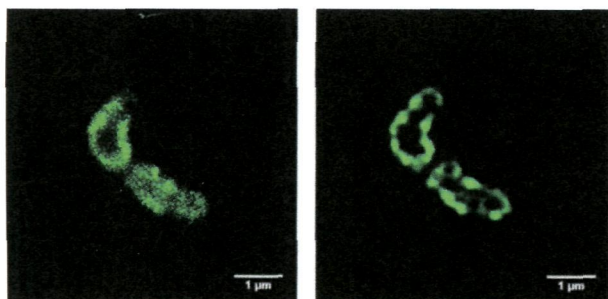


Aptamer-based exonuclease protection and enzymatic recycling cleavage amplification homogeneous assay for the highly sensitive detection of thrombin

Qingwang Xue, Ge Zhang, Lei Wang* and Wei Jiang*

A novel, separation-free and sensitive homogeneous protein detection assay based on combining aptameric exonuclease protection with nicking enzyme assisted fluorescence signal amplification (NEFSA) is reported.

3174

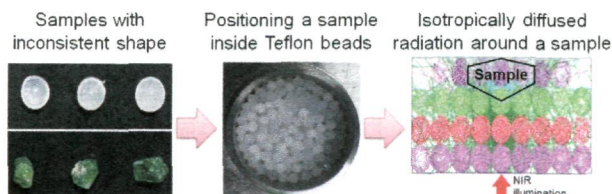


Facile method to stain the bacterial cell surface for super-resolution fluorescence microscopy

Ian L. Gunsolus, Dehong Hu, Cosmin Mihai, Samuel E. Lohse, Chang-soo Lee, Marco D. Torelli, Robert J. Hamers, Catherine J. Murphy, Galya Orr and Christy L. Haynes*

A method to fluorescently stain the surfaces of both Gram-negative and Gram-positive bacterial cells compatible with super-resolution fluorescence microscopy is presented.

3179



Acquisition of reproducible transmission near-infrared (NIR) spectra of solid samples with inconsistent shapes by irradiation with isotropically diffused radiation using polytetrafluoroethylene (PTFE) beads

Jinah Lee, Pham Khac Duy, Jihye Yoon and Hoeil Chung*

A bead-incorporated transmission scheme (BITS) has been demonstrated for collecting reproducible transmission near-infrared (NIR) spectra of samples with inconsistent shapes.