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IN THIS ISSUE

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Cover

See Hai Luo *et al.*, pp. 1764–1767.
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Inside cover

See Hong Chen *et al.*, pp. 1779–1784.
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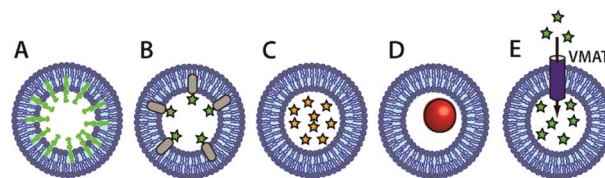
MINIREVIEW

1755

Analytical tools to monitor exocytosis: a focus on new fluorescent probes and methods

Jacqueline D. Keighron, Andrew G. Ewing and Ann-Sofie Cans*

A number of exciting developments, from new fluorescent molecules to advancements in optical microscopy, have recently been used to broaden our understanding of the processes governing exocytosis.



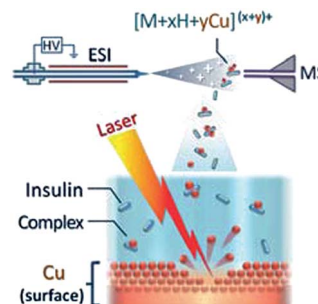
COMMUNICATIONS

1764

Unexpected complexation reaction during analysis of proteins using laser desorption spray post-ionization mass spectrometry

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

Proteins complex with the metal ions generated from the substrate surfaces by laser irradiation in the laser desorption spray post-ionization (LDSPI) process.



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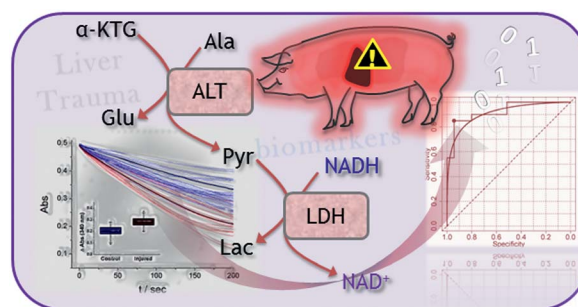
COMMUNICATIONS

1768

Analysis of biomarkers characteristic of porcine liver injury—from biomolecular logic gates to an animal model

Lenka Halámková, Jan Halánek, Vera Bocharova, Steven Wolf, Kristine E. Mulier, Greg Beilman, Joseph Wang and Evgeny Katz*

Binary (YES/NO) diagnostics of liver injury was developed using a biomolecular computing approach for the analysis of biomarkers in porcine samples.

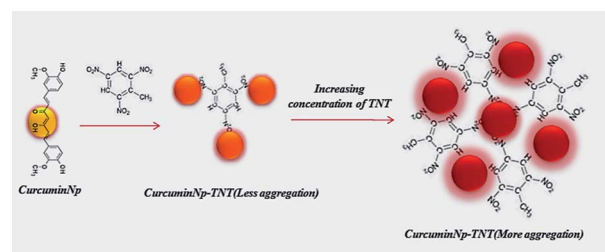


1771

A novel nanoaggregation detection technique of TNT using selective and ultrasensitive nanocurcumin as a probe

Alok Pandya, Heena Goswami, Anand Lodha and Shobhana K. Menon*

We designed an ultrasensitive nanocurcumin based NSET probe for detection of trace amounts of TNT with excellent sensitivity (1 nM) and selectivity, and achieved the largest fluorescent enhancement to date for sensing TNT (upto 800 fold).

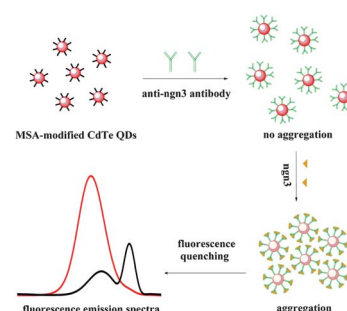


1775

Rapid fluorescent detection of neurogenin3 by CdTe quantum dot aggregation

Yue Yuan, Jia Zhang, Gaolin Liang* and Xiurong Yang*

A fluorescent sensor for the quantitative determination of neurogenin3 has been developed, taking advantage of the aggregation-dependent fluorescent property of CdTe quantum dots.



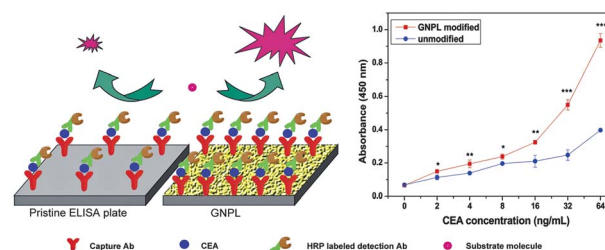
PAPERS

1779

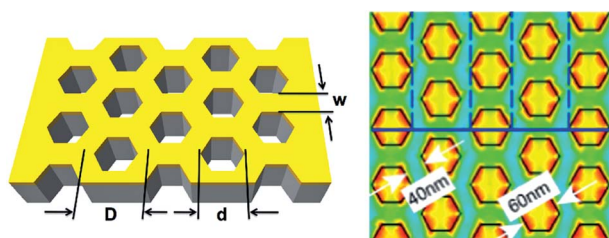
Sensitive sandwich ELISA based on a gold nanoparticle layer for cancer detection

Feng Zhou, Mengmeng Wang, Lin Yuan,* Zhenping Cheng, Zhaoqiang Wu and Hong Chen*

This simple and cost-effective gold nanoparticle layer (GNPL)-based sandwich ELISA holds promise in clinical applications.



1785

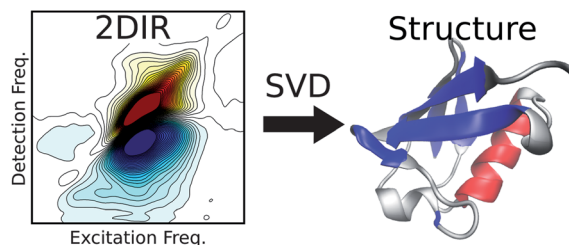


Fabrication of large-area ordered and reproducible nanostructures for SERS biosensor application

Gobind Das,* Niranjan Patra, Anisha Gopalakrishnan, Remo Proietti Zaccaria, Andrea Toma, Sanjay Thorat, Enzo Di Fabrizio, Alberto Diaspro and Marco Salerno

We propose a large-area SERS device with efficient fluorescence quenching capability. The enhancement factor is found to be 10^3 – 10^4 , with respect to the flat gold surface substrate when the molecules are supposed to be closely packed, with considerable fluorescence suppression, showing a promising disposable biosensor.

1793

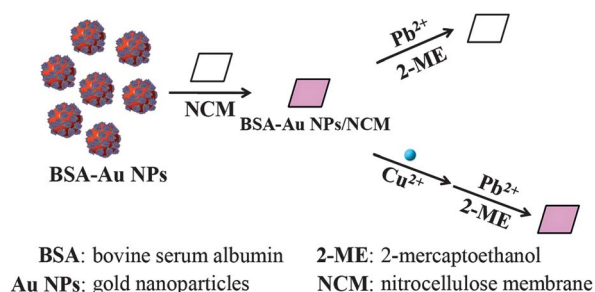


Coherent two-dimensional infrared spectroscopy: Quantitative analysis of protein secondary structure in solution

Carlos R. Baiz, Chunte Sam Peng, Mike E. Reppert, Kevin C. Jones and Andrei Tokmakoff

We present a new spectroscopic technique to measure the fraction of protein residues in alpha-helix, beta-sheet, and unstructured conformations.

1800

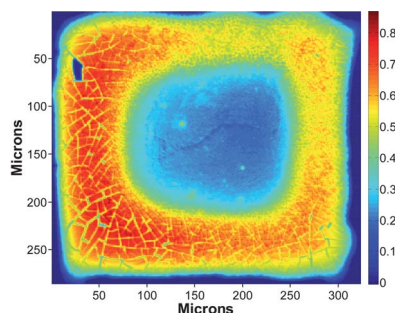


Visual detection of copper(II) ions in blood samples by controlling the leaching of protein-capped gold nanoparticles

Yen-Fei Lee, Ting-Wei Deng, Wei-Jane Chiu, Tsao-Yen Wei, Prathik Roy and Chih-Ching Huang*

The BSA-Au NPs-modified nitrocellulose membrane (BSA-Au NPs/NCM) probe can selectively detect copper ions (Cu^{2+}) by determining the reduction in the leaching of Au NPs resulting from the deposition of Cu^{2+} on the surface of the NPs in the presence of leaching agents Pb^{2+} and 2-ME.

1807



Quantitative reagent-free detection of fibrinogen levels in human blood plasma using Raman spectroscopy

Kelvin W. C. Poon,* Fiona M. Lyng, Peter Knief, Orla Howe, Aidan D. Meade, James F. Curtin, Hugh J. Byrne and Joe Vaughan

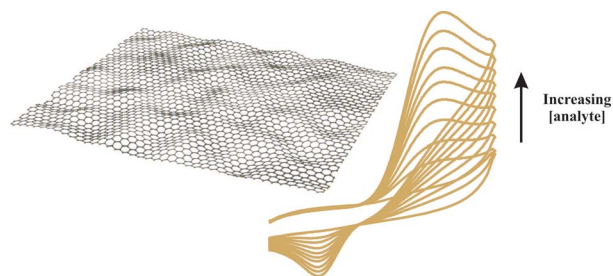
In this study, Raman spectroscopy was investigated for its ability to accurately quantify fibrinogen concentration in blood plasma.

1815

The electrochemical performance of graphene modified electrodes: An analytical perspective

Dale A. C. Brownson, Christopher W. Foster and Craig E. Banks*

The electroanalytical performance of graphene modified edge- and basal- plane pyrolytic graphite electrodes are critically explored, leading to an interesting outcome which raises questions regarding the beneficial utilisation of graphene in this electroanalytical context.

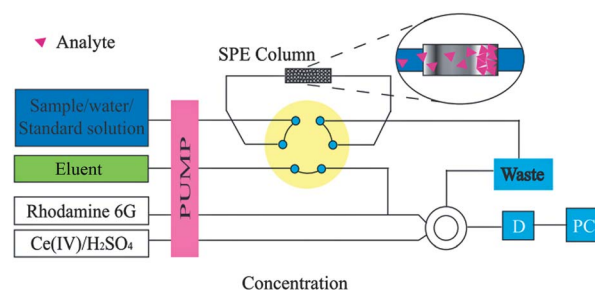


1824

On-line solid phase extraction of humic acid from environmental water and monitoring with flow-through chemiluminescence

Jingya Qu, Hui Chen, Chao Lu,* Zhihua Wang and Jin-Ming Lin*

Based on the enhancement effect of humic acid on the Ce(IV)/H₂SO₄–rhodamine 6G chemiluminescence system, an on-line solid phase extraction device combined with flow-through chemiluminescence monitoring was developed for the enrichment and determination of humic acid in water samples.

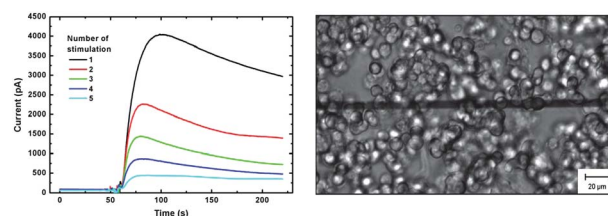


1831

Characterization of poly(3,4-ethylenedioxythiophene):tosylate conductive polymer microelectrodes for transmitter detection

Simon T. Larsen, Richard F. Vreeland, Michael L. Heien and Rafael Taboryski*

Amperometric responses resulting from neurotransmitter release from a group of PC 12 cells at a PEDOT:tosylate electrode. The cells were alternately exposed to a K⁺-rich buffer for 3 minutes and a low K⁺ buffer for 4 minutes. The highest response resulted from the first stimulation by a K⁺-rich buffer. Subsequent stimulations resulted in decreasing current responses.

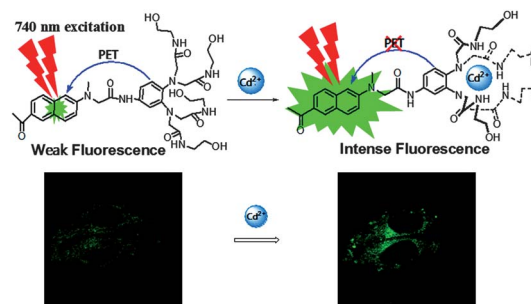


1837

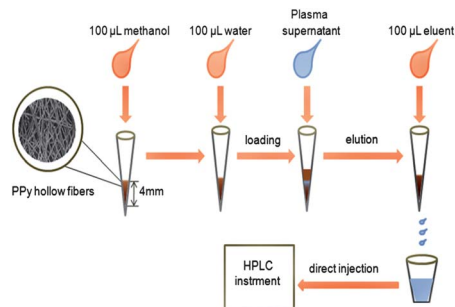
Two-photon fluorescent probe for cadmium imaging in cells

Yongyou Liu, Xiaohu Dong, Jian Sun, Cheng Zhong, Boheng Li, Ximeng You, Bifeng Liu and Zhihong Liu*

A two-photon excited fluorescent probe for Cd²⁺ was prepared and used in intracellular imaging with two-photon microscopy.



1846

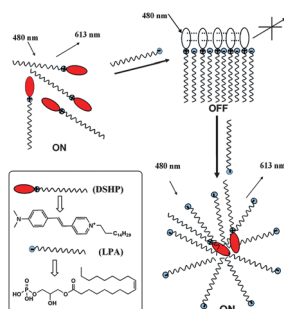


Polypyrrole hollow fiber for solid phase extraction

Tian Tian, Jianjun Deng, Zhuoying Xie, Yuanjin Zhao, Zhangqi Feng, Xuejun Kang* and Zhongze Gu*

A novel solid-phase extraction method based on polypyrrole hollow fibers was applied in the analysis of polar compounds in complex matrix samples.

1853

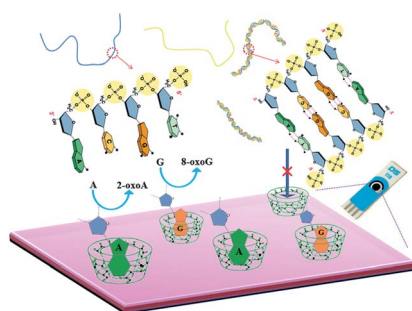


A chromo- and fluorogenic sensor for probing the cancer biomarker lysophosphatidic acid

Wenwen Zhao, Weimin Liu,* Wenjun Zhang, Lintao Zeng, Zhiyuan Fan, Jiasheng Wu and Pengfei Wang*

An optical sensor based on photoinduced electron transfer and aggregation regulated by supramolecular interactions exhibits high selectivity and sensitivity for lysophosphatidic acid.

1860

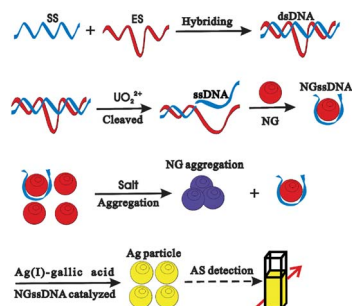


A cyclodextrin host-guest recognition approach to a label-free electrochemical DNA hybridization biosensor

Abdolkarim Abbaspour* and Abolhassan Noori

A novel label-free electrochemical DNA hybridization biosensor using a β -cyclodextrin/poly(*N*-acetylaniline)/carbon nanotube composite modified screen printed electrode has been developed.

1866



Colorimetric sensing of trace UO_2^{2+} by using nanogold-seeded nucleation amplification and label-free DNase cleavage reaction

Yanghe Luo, Yi Zhang, Lili Xu, Lisheng Wang, Guiqing Wen, Aihui Liang and Zhiliang Jiang*

A new nanogold enhanced spectrophotometric method is proposed for the detection trace UO_2^{2+} , with simplicity, rapidity, low-cost, high sensitivity and selectivity.

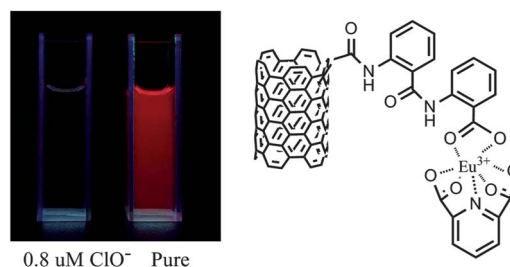
PAPERS

1872

A targetable fluorescent sensor for hypochlorite based on a luminescent europium complex loaded carbon nanotube

Qianming Wang,* Chaoliang Tan and Weisheng Cai

A new europium complex covalently modified single-walled carbon nanotube (SWNT) was reported here as an emissive nanosensor for the determination of hypochlorite; the quenching process can be detected within 1 s and the detection limit could reach 9×10^{-8} M.

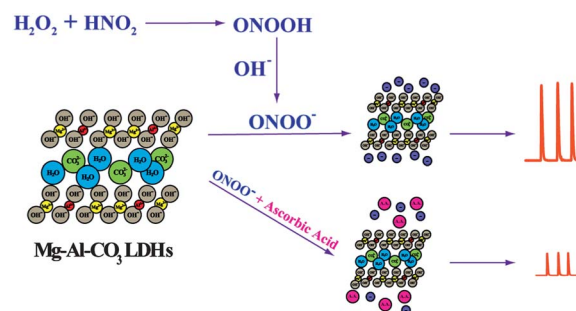


1876

Carbonate interlayered hydrotalcites-enhanced peroxynitrous acid chemiluminescence for high selectivity sensing of ascorbic acid

Zhihua Wang, Xu Teng and Chao Lu*

A sensitive and rapid chemiluminescence method has been successfully developed for the determination of ascorbic acid in commercial liquid fruit juices based on its inhibition of Mg-Al-carbonate layered double hydroxides-catalyzed peroxynitrous acid chemiluminescence.

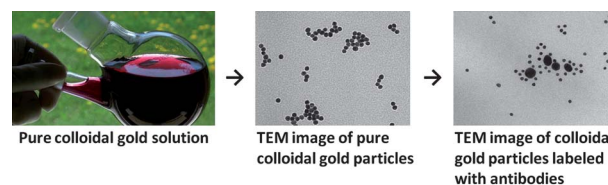


1882

Synthesis and characterization of colloidal gold particles as labels for antibodies as used in lateral flow devices

Barbara Cvak,* Dietmar Pum, Alexandra Molinelli and Rudolf Krska

Characterization of colloidal gold particles for reproducible strip test development.

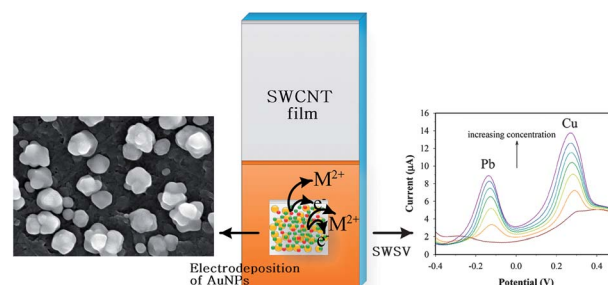


1888

Simultaneous detection of ultratrace lead and copper with gold nanoparticles patterned on carbon nanotube thin film

Minh-Phuong Ngoc Bui, Cheng Ai Li, Kwi Nam Han, Xuan-Hung Pham and Gi Hun Seong*

Gold nanoparticles (AuNPs) were patterned on single-walled carbon nanotube (SWCNT) films using an electrochemical deposition method, and then the AuNPs-SWCNT electrodes were used for the simultaneous detection of Pb^{2+} and Cu^{2+} ions by a square wave stripping voltammetric technique.



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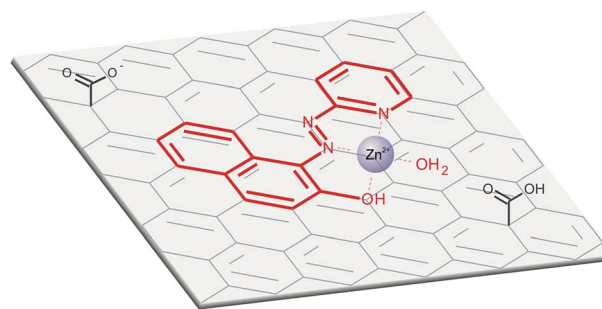
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1895

Non-covalently functionalized graphene for the potentiometric sensing of zinc ions

Ewa Jaworska, Wiktor Lewandowski, Józef Mieczkowski, Krzysztof Maksymiuk and Agata Michalska*

Preliminary results on a novel approach allowing the utilization of a highly selective zinc ion ligand in the presence of alkali metals ions to yield potentiometric Zn^{2+} sensors are reported.

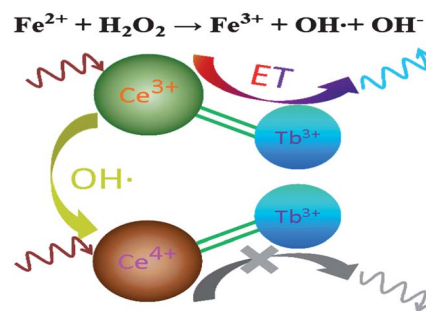


1899

Selective detection of Fe^{2+} by combination of $\text{CePO}_4\text{:Tb}^{3+}$ nanocrystal– H_2O_2 hybrid system with synchronous fluorescence scan technique

Hongqi Chen and Jicun Ren*

A new method for determination of Fe^{2+} was developed by combination of $\text{CePO}_4\text{:Tb}^{3+}$ nanocrystals– H_2O_2 system with synchronous fluorescence scan technique.

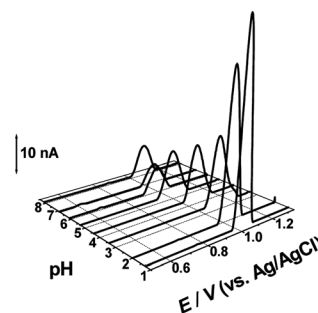


1904

Microcystin-LR and chemically degraded microcystin-LR electrochemical oxidation

Ilanna C. Lopes, Paulina V. F. Santos, Victor C. Diculescu, Francisco M. P. Peixoto, Mário C. U. Araújo, Auro A. Tanaka and Ana Maria Oliveira-Brett*

The electrochemical oxidation of MC-LR at a GCE is an irreversible and pH-independent process. This hepatotoxin undergoes homogenous degradation in buffer solution in a time-dependent manner.



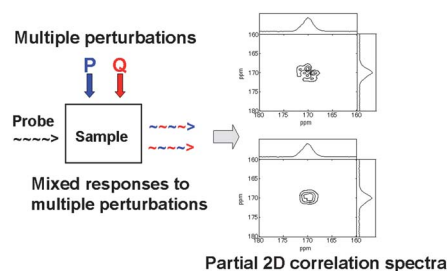
1913

Parallel factor (PARAFAC) kernel analysis of temperature- and composition-dependent NMR spectra of poly(lactic acid) nanocomposites

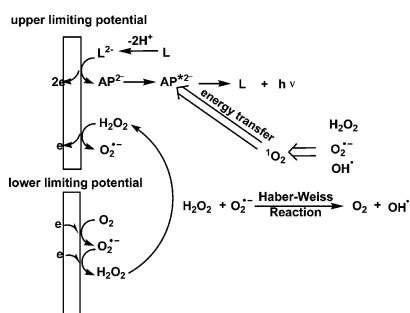
Hideyuki Shinzawa,* Masakazu Nishida, Wataru Kanematsu, Toshiyuki Tanaka, Kenzi Suzuki and Isao Noda

This study describes a general scheme for PARAFAC kernel. An illustrative example is provided to demonstrate its effect.

Multiple-perturbation 2D Correction Spectroscopy



1922

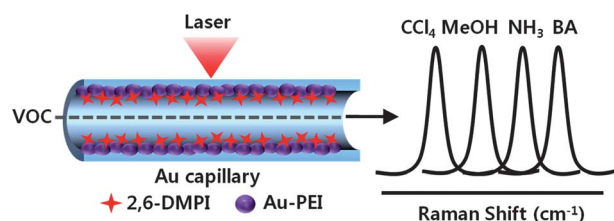


Intensification of electrochemiluminescence of luminol on TiO₂ supported Au atomic cluster nano-hybrid modified electrode

Zhimin Yu, Xiuhua Wei, Jilin Yan and Yifeng Tu*

A TiO₂ supported Au atomic cluster nano-hybrid was synthesized and modified onto ITO for the excitation of luminol electrochemiluminescence. It enhances the intensity as well as enlarging the practicable pH range and reducing the required potential.

1930

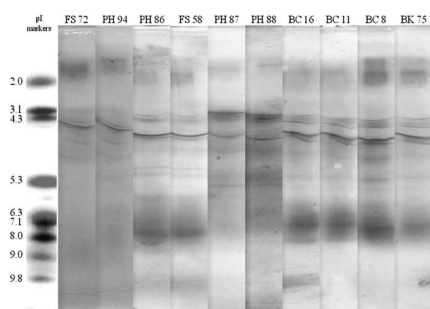


Organic isocyanide-adsorbed gold nanostructure: a SERS sensory device for indirect peak-shift detection of volatile organic compounds

Kwan Kim,* Ji Won Lee, Dongha Shin, Jeong-Yong Choi and Kuan Soo Shin*

Schematic representation of the 2,6-dimethylphenylisocyanide (2,6-DMPI) adsorbed poly(ethylenimine) (PEI)-stabilized gold nanostructure which can be used as a platform for a volatile organic chemical sensor operating *via* Raman scattering spectroscopy.

1937

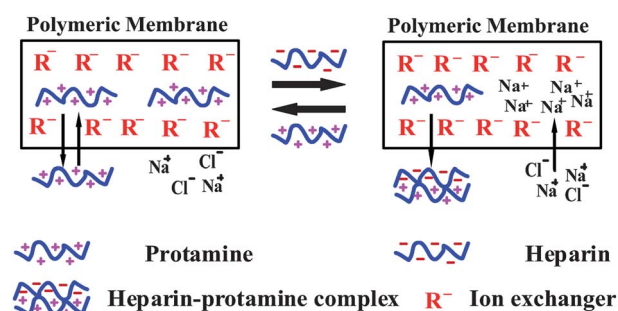


Candida "Psilosis" – electromigration techniques and MALDI-TOF mass spectrometry for phenotypical discrimination

Anna Kubesová,* Jiří Šalplachta, Marie Horká, Filip Růžicka and Karel Šlais

In this study, gel isoelectric focusing, sodium dodecyl sulfate polyacrylamide gel electrophoresis, two-dimensional gel electrophoresis and matrix-assisted laser desorption/ionization time-of-flight mass spectrometry were applied in order to discriminate *C. "psilosis"* species.

1944



Polycation-sensitive membrane electrode for determination of heparin based on controlled release of protamine

Yan Chen, Jiawang Ding and Wei Qin*

A potentiometric sensor for heparin is presented based on the controlled release of protamine from the polymeric membrane incorporated with a lipophilic salt.

PAPERS

1950

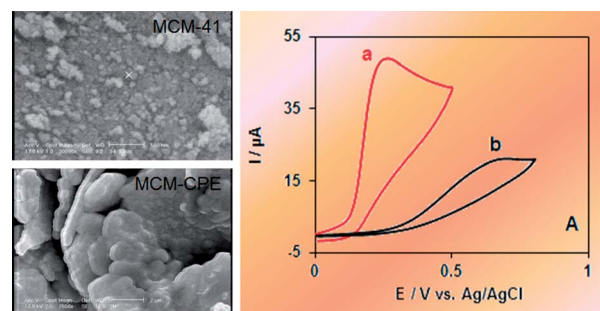
Application of nanosized MCM-41 to fabrication of a nanostructured electrochemical sensor for the simultaneous determination of levodopa and carbidopa

Mohammad Mazloun-Ardakani,*

Mohammad Ali Sheikh-Mohseni,

Mohammad Abdollahi-Alibeik and Ali Benvidi

A nanostructured electrochemical sensor was fabricated by modifying a carbon paste electrode with mesoporous MCM-41 and was used for the simultaneous determination of levodopa and carbidopa.

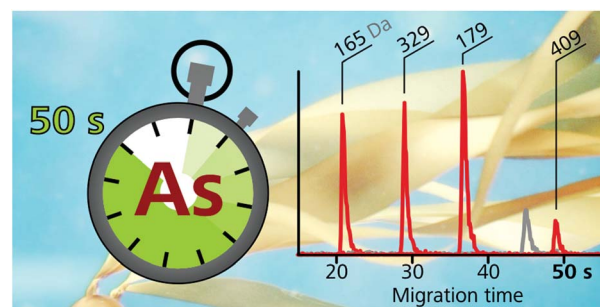


1956

Fast separations by capillary electrophoresis hyphenated to electrospray ionization time-of-flight mass spectrometry as a tool for arsenic speciation analysis

Claudia Niegel, Simon A. Pfeiffer, Marco Grundmann, Uriel Arroyo-Abad, Jürgen Mattusch and Frank-Michael Matysik*

Very fast arsenic speciation is performed by short length capillary electrophoresis (CE) hyphenated to mass spectrometry (MS). Arsenosugars were determined by CE-MS for the first time.

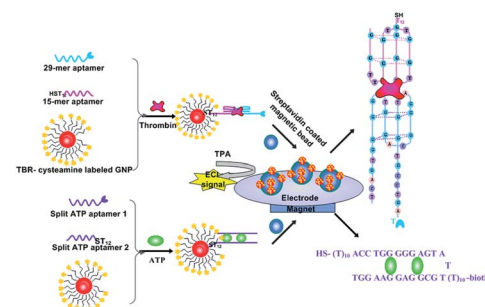


1963

Highly sensitive detection of protein and small molecules based on aptamer-modified electrochemiluminescence nanoprobe

Xiaoming Zhou, Ruixue Duan and Da Xing*

An aptameric electrochemiluminescence assay for protein and small molecules using aptamer as recognition probe and Ru(bpy)₃²⁺-cysteamine loaded gold nanoparticle as signal enhancer was developed.



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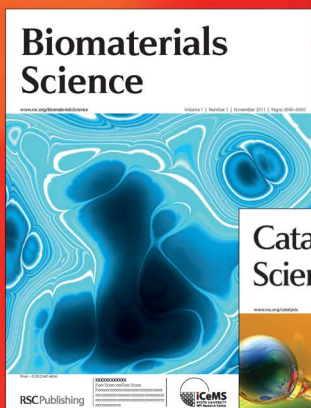
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