Analytical Methods

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IN THIS ISSUE

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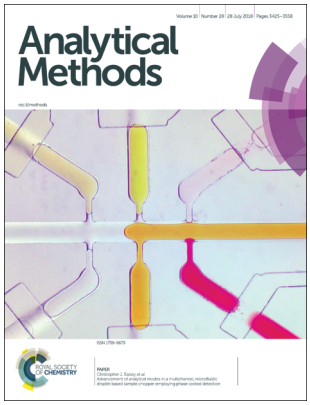

Cover
See Christopher J. Easley *et al.*, pp. 3436–3443.
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EDITORIAL

3433

In celebration of the 60th birthday of 2 microfluidics pioneers: Professor Susan Lunte and Professor James Landers

Christopher J. Easley, Fiona Regan, Michael G. Roper and R. Scott Martin*

Christopher Easley, Fiona Regan, Michael Roper and R. Scott Martin look at the achievements of Susan Lunte and James Landers.

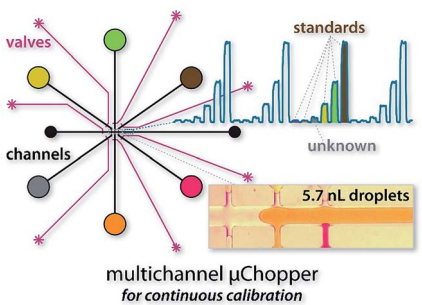
PAPERS

3436

Advancement of analytical modes in a multichannel, microfluidic droplet-based sample chopper employing phase-locked detection

Jean T. Negou, Juan Hu, Xiangpeng Li and Christopher J. Easley*

Multichannel droplet-based microfluidic sample chopper (μChopper) allows continuous calibration, nanoliter sampling, and protein quantification in human serum.



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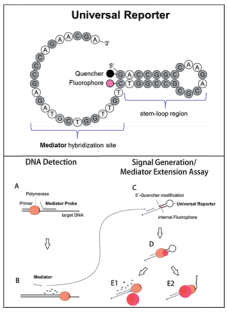
PAPERS

3444

Fluorescence signal-to-noise optimisation for real-time PCR using universal reporter oligonucleotides

Michael Lehnert, Elena Kipf, Franziska Schlenker, Nadine Borst, Roland Zengerle and Felix von Stetten*

In this study we optimised the fluorescence signal generation of contact quenched universal reporter oligonucleotides.

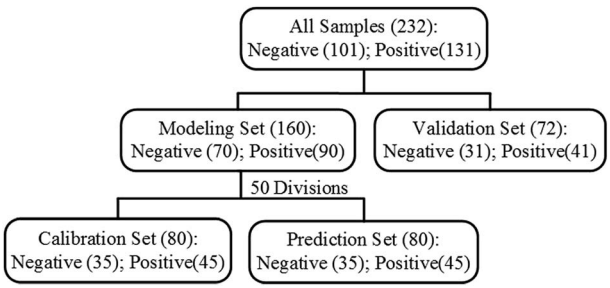


3455

ATR-FTIR spectroscopy with equidistant combination PLS method applied for rapid determination of glycated hemoglobin

Yun Han, Tao Pan, Huihui Zhou and Rui Yuan*

A rapid quantification method of glycated hemoglobin (HbA1c) is proposed based on ATR-FTIR spectroscopy in human hemolysate samples.

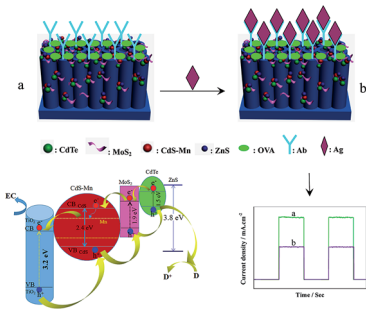


3462

Highly efficient visible-light-induced photoactivity of the CdS–Mn/MoS_2/CdTe/TiO_2 quaternary photocatalyst for label-free immunoassay of tris-(2,3-dibromopropyl) isocyanurate and enhanced solar hydrogen generation

Hui Feng,* Songbai Zhang,* Xiangyang Zhang, Bo Liu and Niu Tang

A novel visible-light-induced quaternary photocatalyst for TBC detection and solar hydrogen generation was successfully prepared.

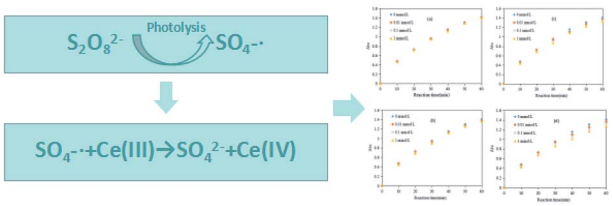


3470

Simple spectrophotometric determination of sulfate free radicals

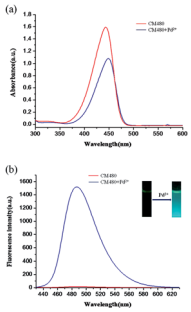
Chen Wang, Rui Chen, Ruyu Zhang and Naidong Zhang*

A rapid and simple method for sulfate radical determination was described and the generation rates of sulfate radicals generated by photolysis of persulfate under different light sources were studied.



PAPERS

3475

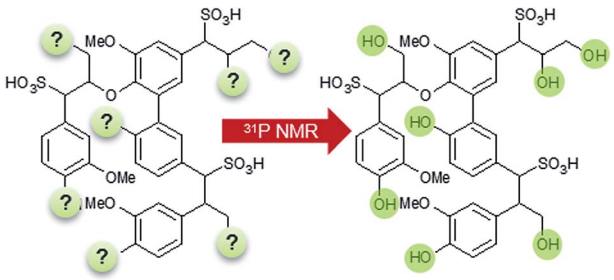


A novel intramolecular cyclization-induced fluorescent "turn-on" probe for detection of Pd^{2+} based on the Tsuji–Trost reaction

Baolong Huo, Man Du, Aijun Gong,* Mengwen Li, Leqiu Fang, Ao Shen, Yaru Lai, Xue Bai and Yunxu Yang*

Palladium, as a toxic heavy metal, poses a great threat to the environment and human health. Therefore, it is essential to achieve the purpose of detecting trace amounts of palladium.

3481

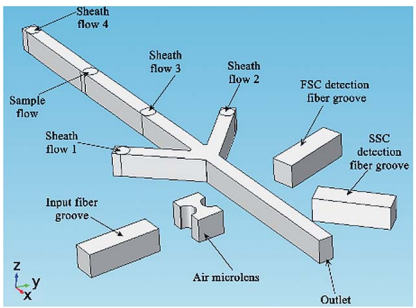


A novel quantitative ^{31}P NMR spectroscopic analysis of hydroxyl groups in lignosulfonic acids

Alexander Stücker, Jacob Podschun, Bodo Saake and Ralph Lehnen*

A quick and accurate procedure for quantitative evaluation of the different hydroxyl groups in lignosulfonic acids by ^{31}P NMR spectroscopy is presented.

3489

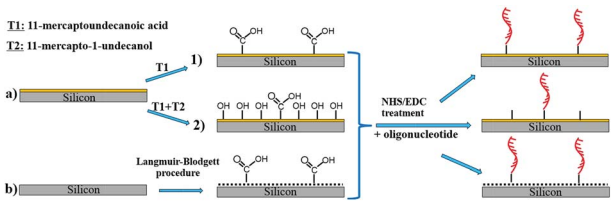


Universally applicable three-dimensional hydrodynamic focusing in a single-layer channel for single cell analysis

Yingying Zhao, Qin Li* and Xiaoming Hu

A microfluidic cytometer which integrated 3D hydrodynamic focusing and integrated optical systems on a single-layer microfluidic structure was demonstrated.

3498



Effect of the relief on the measurement of bond rupture force with the help of AFM: the dynamics of interaction and optimization of the procedure

N. N. Kurus, F. N. Dultsev,* G. Yu. Shevelev, A. A. Lomzov and D. V. Pyshnyi

Measurement of the forces of unwinding of DNA double helix was conducted.

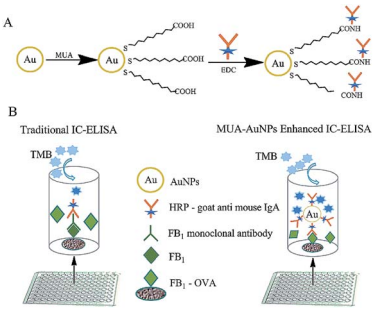
PAPERS

3506

Development of a gold nanoparticle enhanced enzyme linked immunosorbent assay based on monoclonal antibodies for the detection of fumonisin B_1, B_2, and B_3 in maize

Zhi Li, Wei Sheng, Qi Liu, Shijie Li, Yingjie Shi, Yan Zhang and Shuo Wang*

In this paper, three hybridoma cell lines that secrete monoclonal antibodies against fumonisin B_1 (FB_1), specifically antibody subtypes IgA (heavy-chain) and kappa (light-chain), were obtained by immunization and cell cloning procedures.

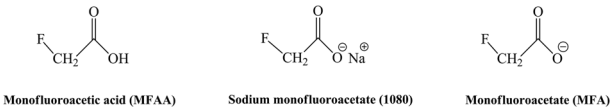


3514

Ultra-trace determination of sodium fluoroacetate (1080) as monofluoroacetate in milk and milk powder by GC-MS/MS and LC-MS/MS

Yiu-Tung Wong,* Wing-Ki Law, Shirley Sau-Ling Lai, Siu-Pan Wong, Kong-Chi Lau and Clare Ho

A sensitive analytical method based on derivatization with 3-nitroaniline is established for the trace determination of sodium fluoroacetate (1080) in milk and milk powder.

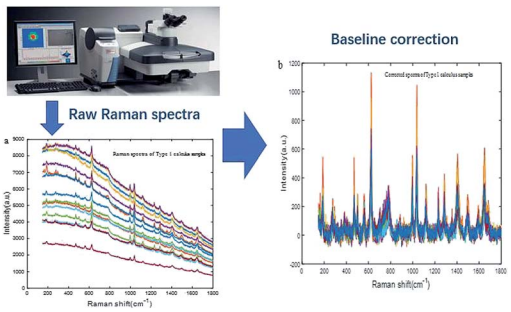


3525

Baseline correction for Raman spectra using penalized spline smoothing based on vector transformation

Yaoyi Cai, Chunhua Yang, Degang Xu* and Weihua Gui

A penalized spline smoothing method based on vector transformation (VTPspline) method has been proposed for baseline correction of Raman spectra.

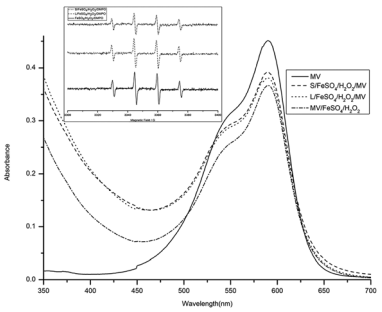


3534

Direct evidence of the ˙OH scavenging activity of selenium nanoparticles

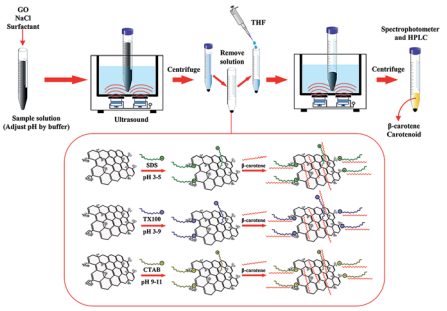
Wanwen Chen, Lin Yue and Wenshui Xia*

Selenium nanoparticle (SeNPs) have been considered as antioxidant agents. The direct evidence for the ˙OH scavenging activity of SeNPs was clearly demonstrated by the chromogenic reaction of MV determined by UV-vis and ESR experiment, which were consistent with the theoretical results.



PAPERS

3540

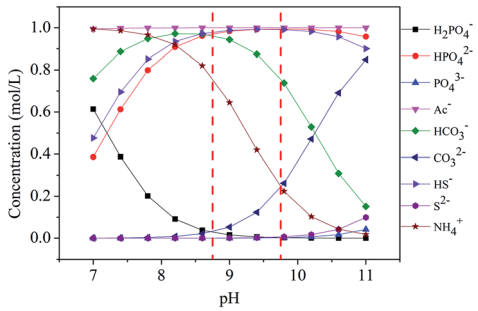


Determination of β-carotene and total carotenoids in fruit juices using surfactant surface decorated graphene oxide based ultrasound-assisted dispersive solid-phase microextraction

Chinawooth Sakaew, Phitchan Sricharoen, Nunticha Limchoowong and Saksit Chanthai*

In this study, the influence of surfactants (SDS, TX100 and CTAB) to modify surface polarity of graphene oxide adsorbent is proposed for the extraction of β-carotene and total carotenoids from fruit juice samples.

3552



A fixed-point titration method for the determination of ammonium in anaerobic systems

Zhe-Xuan Mu, Chuan-Shu He, Jian-Kai Jiang* and Yang Mu

High ammonia nitrogen concentrations inhibit methanogenic activity and induce digester upset or failure.