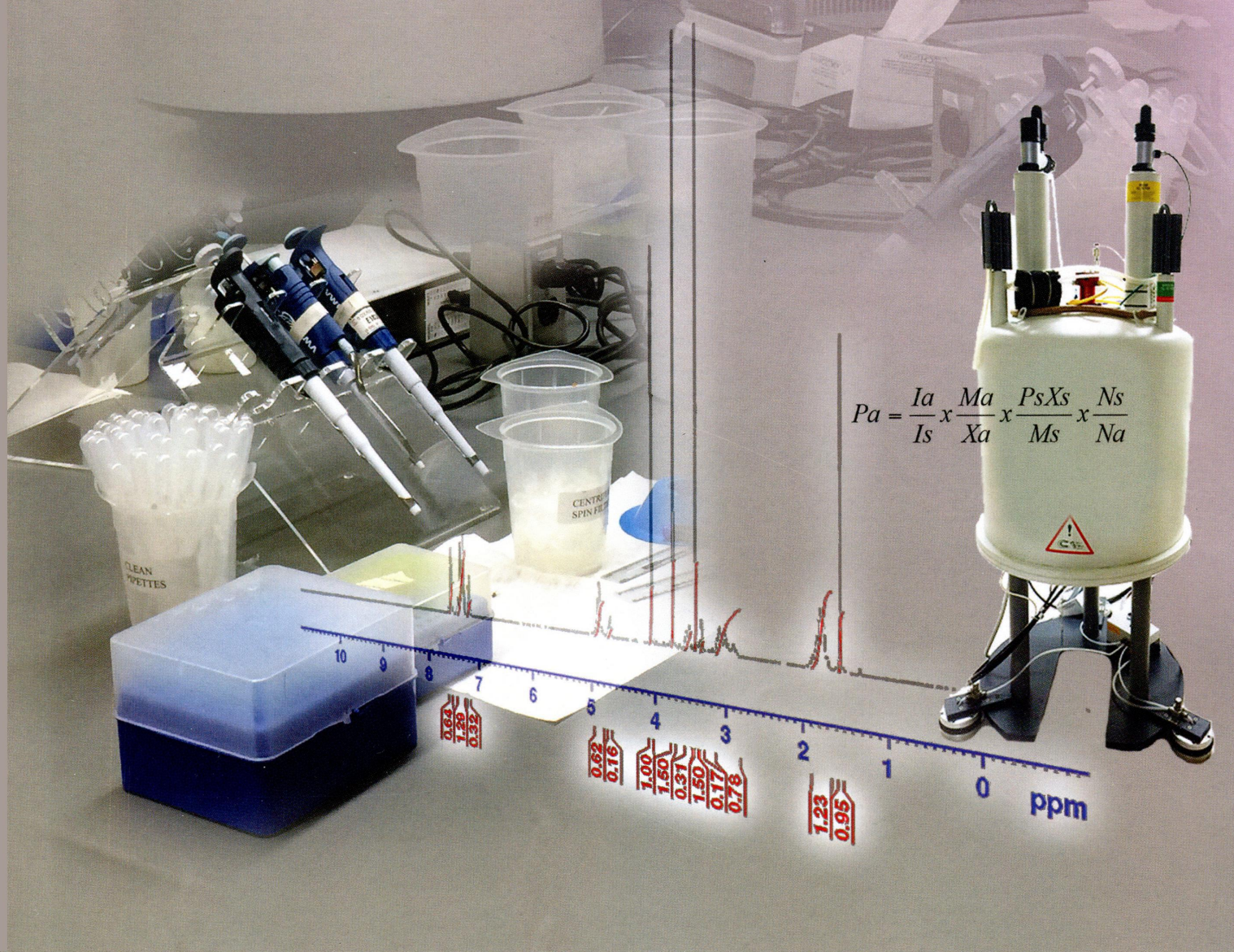


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analytical chemistry

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Expanding the Analytical Toolbox: Pharmaceutical Application of Quantitative NMR (q-NMR)



$$Pa = \frac{Ia}{Is} \times \frac{Ma}{Xa} \times \frac{PsXs}{Ms} \times \frac{Ns}{Na}$$



ON THE COVER: The quantitative NMR (q-NMR) in pharmaceutical industry is a viable alternative to early development testing which typically involves identity testing, chromatographic assay, moisture analysis, residual solvent analysis, and elemental analysis. Image created by Sushane Kumar.

Editorial

11473

DOI: 10.1021/ac503953m

Multidimensional Separations

Daniel W. Armstrong* and Staci L. Massey Simonich

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DOI: 10.1021/ac502871w

Expanding the Analytical Toolbox: Pharmaceutical Application of Quantitative NMR

Gregory K. Webster* and Shailendra Kumar

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DOI: 10.1021/ac5021003

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Ali Sahari, Mahama A. Traore, Ann M. Stevens, Birgit E. Scharf, and Bahareh Behkam*

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DNAzyme-Based Plasmonic Nanomachine for Ultrasensitive Selective Surface-Enhanced Raman Scattering Detection of Lead Ions via a Particle-on-a-Film Hot Spot Construction


Cuicui Fu, Weiqing Xu, Hailong Wang, Han Ding, Lijia Liang, Ming Cong, and Shuping Xu*

11498 

DOI: 10.1021/ac503352h

N-Capping Motifs Promote Interaction of Amphipathic Helical Peptides with Hydrophobic Surfaces and Drastically Alter Hydrophobicity Values of Individual Amino Acids

Vic Spicer, Ying W. Lao, Dmitry Shamshurin, Peyman Ezzati, John A. Wilkins, and Oleg V. Krokhin*

11503 

DOI: 10.1021/ac503539w

Label-Free Surface-Enhanced Raman Scattering Imaging to Monitor the Metabolism of Antitumor Drug 6-Mercaptopurine in Living Cells


Guangmei Han, Renyong Liu, Ming-Yong Han, Changlong Jiang, Jianping Wang, Shuhu Du, Bianhua Liu,* and Zhongping Zhang

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DOI: 10.1021/ac503864m

Detection of Contaminating Enzymatic Activity in Plant-Derived Recombinant Biotechnology Products

Robert G. Brinson,* Gary G. Giuliani, Zvi Kelman, and John P. Marino


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DOI: 10.1021/ac503969e

A General Strategy for Photoelectrochemical Immunoassay Using an Enzyme Label Combined with a CdS Quantum Dot/TiO₂ Nanoparticle Composite Electrode

Wei-Wei Zhao, Ru Chen, Pan-Pan Dai, Xiang-Ling Li, Jing-Juan Xu,* and Hong-Yuan Chen*


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DOI: 10.1021/ac502437d

Enhanced Electrochemical Nanoring Electrode for Analysis of Cytosol in Single Cells


Lihong Zhuang, Huanzhen Zuo, Zengqiang Wu, Yu Wang, Danjun Fang,* and Dechen Jiang*

11523 

DOI: 10.1021/ac502678y

Strategy to Improve the Quantitative LC-MS Analysis of Molecular Ions Resistant to Gas-Phase Collision Induced Dissociation: Application to Disulfide-Rich Cyclic Peptides


Eugene Ciccimaro,* Asoka Ranasinghe, Celia D'Arienzo, Carrie Xu, Joelle Onorato, Dieter M. Drexler, Jonathan L. Josephs, Michael Poss, and Timothy Olah

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Jonathon Duay, Jacob M. Goran, and Keith J. Stevenson*

11533 

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11538  DOI: 10.1021/ac503245a

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Min Zhang, Brian N. Stamos, Natchanon Amornthammarong, and Purnendu K. Dasgupta*

11547  DOI: 10.1021/ac503247g

Admittance Detector for High Impedance Systems: Design and Applications

Min Zhang, Brian N. Stamos, and Purnendu K. Dasgupta*

11554  DOI: 10.1021/ac503249t

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Bingcheng Yang, Min Zhang, Tinakorn Kanyanee, Brian N. Stamos, and Purnendu K. Dasgupta*

11562  DOI: 10.1021/ac4030297

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11570 DOI: 10.1021/ac503517f

Application of the Zr/Hf Ratio in the Determination of Hafnium in Geochemical Samples by High-Resolution Inductively Coupled Plasma Mass Spectrometry

Ya Xuan Liu, Qing Xia Li, Na Ma, Xiao Ling Sun, Jin Feng Bai, and Qin Zhang*

11578  DOI: 10.1021/ac500866r

Sustainable Endospore-Based Microreactor System for Antioxidant Capacity Assay

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11586  DOI: 10.1021/ac503577t

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Chan Ho Chung, Joong Hyun Kim, and Bong Hyun Chung*

11592  DOI: 10.1021/ac503342k

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Yang Liu, Shinji Sakai,* Shogo Kawa, and Masahito Taya*

11599  DOI: 10.1021/ac502253t


Identification of Unfolding and Dissociation Pathways of Superoxide Dismutase in the Gas Phase by Ion-Mobility Separation and Tandem Mass Spectrometry

Xiaoyu Zhuang, Shu Liu, Ruixing Zhang, Fengrui Song,* Zhiqiang Liu,* and Shuying Liu

- 11606 DOI: 10.1021/ac503140j
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- 11614 DOI: 10.1021/ac502541v
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- 11620 DOI: 10.1021/ac5025655
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- 11628 DOI: 10.1021/ac5026368
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- 11634 DOI: 10.1021/ac502643s
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- 11640 DOI: 10.1021/ac502666f
Silica-Based Ionogels: Nanoconfined Ionic Liquid-Rich Fibers for Headspace Solid-Phase Microextraction Coupled with Gas Chromatography–Barrier Discharge Ionization Detection
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- 11649 DOI: 10.1021/ac504159g
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- 11657 DOI: 10.1021/ac502785j
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- 11666 DOI: 10.1021/ac502944n
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11673  DOI: 10.1021/ac503915c
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11680  DOI: 10.1021/ac502969x
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Shiwei Zhou, Yong Kong, Qingming Shen, Xiaolin Ren, Jian-Rong Zhang,* and Jun-Jie Zhu*

11690  DOI: 10.1021/ac5029819
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11696 DOI: 10.1021/ac502992k
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11705 DOI: 10.1021/ac503049s
Highly Permselective Membrane Surface Modification by Cold Plasma-Induced Grafting Polymerization of Molecularly Imprinted Polymer for Recognition of Pyrethroid Insecticides in Fish
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11714  DOI: 10.1021/ac503102g
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11722  DOI: 10.1021/ac503252g
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11727  DOI: 10.1021/ac503134r
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11734  DOI: 10.1021/ac503137u
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11742  DOI: 10.1021/ac503144p
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11750  DOI: 10.1021/ac503212q
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11758  DOI: 10.1021/ac503193w
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11766  DOI: 10.1021/ac503250a
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11773 DOI: 10.1021/ac503272y
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11782 DOI: 10.1021/ac503277w
Carbon Nanotube–Bilirubin Oxidase Bioconjugate as a New Biofuel Cell Label for Self-Powered Immunosensor
Jiashun Cheng, Yajing Han, Liu Deng,* and Shaojun Guo*

11789 DOI: 10.1021/ac503284r
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11797  DOI: 10.1021/ac503355n
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Sun Yue, Xu Jie, Li Wei, Cao Bin, Wang Dou Dou, Yang Yi, Lin QingXia, Li JianLin,* and Zheng TieSong*

11803  DOI: 10.1021/ac5033676
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11811 DOI: 10.1021/ac5033963
Droplet Microfluidics for Postcolumn Reactions in Capillary Electrophoresis
Aemi S. Abdul Keyon, Rosanne M. Guijt, Christopher J. Bolch, and Michael C. Breadmore*


11819 DOI: 10.1021/ac5033947
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Ryan A. Wallace, Jennifer J. Charlton, Teresa B. Kirchner, Nickolay V. Lavrik, Panos G. Datskos, and Michael J. Sepaniak*

11826 DOI: 10.1021/ac503410s
Methodology toward 3D Micro X-ray Fluorescence Imaging Using an Energy Dispersive Charge-Coupled Device Detector
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11833 DOI: 10.1021/ac503408x
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Bent Tore Røen,* Stig Rune Sellevåg, and Elsa Lundanes

11841 DOI: 10.1021/ac5034243
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Jens Langejuergen,* Maria Allers, Jens Oermann, Ansgar Kirk, and Stefan Zimmermann

11847  DOI: 10.1021/ac503445y
Glycine Oxidase Based High-Throughput Solid-Phase Assay for Substrate Profiling and Directed Evolution of (R)- and (S)-Selective Amine Transaminases
Martin S. Weiß, Ioannis V. Pavlidis, Clare Vickers, Matthias Höhne,* and Uwe T. Bornscheuer*

11854  DOI: 10.1021/ac503454z
Rapid Screening of Peptide Probes through *In Situ* Single-Bead Sequencing Microarray
Weizhi Wang, Zewen Wei, Di Zhang, Huailei Ma, Zihua Wang, Xiangli Bu, Menglin Li, Lingling Geng, Christopher Lausted, Leroy Hood, Qiaojun Fang, Hao Wang,* and Zhiyuan Hu*

11860  DOI: 10.1021/ac503469x
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11868  DOI: 10.1021/ac5035456
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Ulrik H. Mistarz, Jeffery M. Brown, Kim F. Haselmann, and Kasper D. Rand*

11877  DOI: 10.1021/ac503509g

Concept for Simultaneous and Specific in Situ Monitoring of Amyloid Oligomers and Fibrils via Förster Resonance Energy Transfer

Bruno Aliès, Helene Eury, El Mokhtar Essassi, Genevieve Pratiel,* Christelle Hureau, and Peter Fallér*

11883  DOI: 10.1021/ac503611f


Ratiometric Time-Gated Luminescence Probe for Hydrogen Sulfide Based on Lanthanide Complexes

Zhichao Dai, Lu Tian, Bo Song, Zhiqiang Ye,* Xiangli Liu, and Jingli Yuan*

11890  DOI: 10.1021/ac5036988

Calixarene-based Extraction Chromatographic Separation of ^{135}Cs and ^{137}Cs in Environmental and Waste Samples Prior to Sector Field ICP-MS Analysis

Ben C. Russell,* Phil E. Warwick, and Ian W. Croudace

11897  DOI: 10.1021/ac503699u

Evaluation of a Benchtop Cryogen-Free Low-Field ^1H NMR Spectrometer for the Analysis of Sexual Enhancement and Weight Loss Dietary Supplements Adulterated with Pharmaceutical Substances

Guilhem Pagès, Anna Gerdova, David Williamson, Véronique Gilard, Robert Martino, and Myriam Malet-Martino*

11905  DOI: 10.1021/ac503728s

Template-Independent, in Situ Grown DNA Nanotail Enabling Label-Free Femtomolar Chronocoulometric Detection of Nucleic Acids

Fan Yang, Xian Yang, Yunzhao Wang, You Qin, Xiang Liu, Xiaoqian Yan, Ke Zou, Yong Ning, and Guo-Jun Zhang*

11913 DOI: 10.1021/ac503860d

Multiplexed and Amplified Electronic Sensor for the Detection of MicroRNAs from Cancer Cells

Cuiyun Yang, Baoting Dou, Kai Shi, Yaqin Chai, Yun Xiang,* and Ruo Yuan

11919  DOI: 10.1021/ac503900w

Simultaneous Quantification of Hg^{2+} and MeHg^+ in Aqueous Media with a Single Fluorescent Probe by Multiplexing in the Time Domain

Ziqian Zhang, Baoyan Zhang, Xuhong Qian, Zhong Li, Zhiping Xu, and Youjun Yang*

Additions and Corrections

11925 DOI: 10.1021/ac504055s

Correction to Gas to Particle Conversion-Gas Exchange Technique for Direct Analysis of Metal Carbonyl Gas by Inductively Coupled Plasma Mass Spectrometry

Kohei Nishiguchi, Keisuke Utani, Detlef Gunther, and Masaki Ohata*

Correction to Quantification of the Dissolved Inorganic Carbon Species and of the pH of Alkaline Solutions Exposed to CO₂ under Pressure: A Novel Approach by Raman Scattering

Thomas Beuvier,* Brice Calvignac, Jean-François Bardeau, Alain Bulou, Frank Boury, and Alain Gibaud*