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March 1, 2010

Volume 82, Issue 5

Pages 1569-2164

In this issue:

- Editorial
- Research Profile
- Features
- Letter to Analytical Chemistry
- Accelerated Articles
- Perspectives
- Articles
- Technical Notes
- Additions and Corrections

About the Cover:

There have been many recent advances in the nano-bio-chip (NBC) analysis methodology with implications for a number of high-morbidity diseases including HIV, cancer, and heart disease. In their Feature article, Jesse V. Jokerst of The University of Texas at Austin; Pierre N. Floriano, Nicolaos Christodoulides, and John T. McDevitt of Rice University; and James W. Jacobson and Bryon D. Bhagwandin of LabNow, Inc. discuss the construction, capabilities, and advantages of NBCs. The cover shows arrays of NBCs. Images courtesy of Glennon Simmons/McDevitt Lab and Marsha Miller of The University of Texas at Austin. [View the](#)

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Editorial

Challenges in Environmental Analytical Chemistry




Royce Murray


p 1569

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Research Profile

Naked-eye colorimetric analysis of heparin and its derivatives

Steve Miller


p 1570

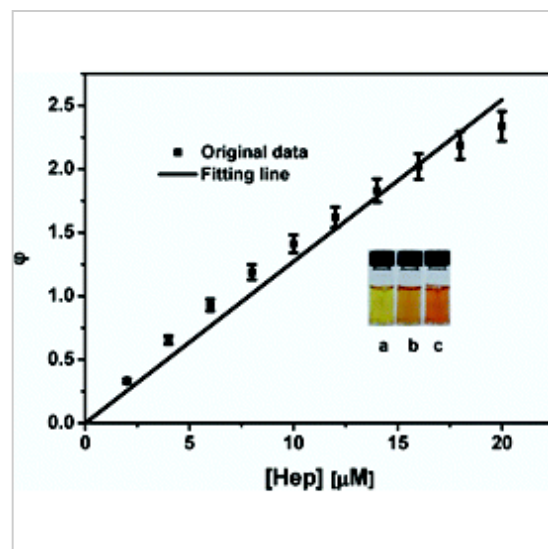
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Features

Programmable Nano-Bio-Chip Sensors: Analytical Meets Clinical

Jesse V. Jokerst, James W. Jacobson and Bryon D. Bhagwandin, Pierre N. Floriano, Nicolaos Christodoulides and John T. McDevitt

pp 1571-1579

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Letter to Analytical Chemistry

Capillary Isoelectric Focusing with an Open Tubular Immobilized pH Gradient

Chun Yang, Shuangshou Wang, Chunyan Chang, Yang Wang and Xiaoya Hu

pp 1580-1583

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Kerry M. Hassell, John R. Stutzman and Scott A. McLuckey

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Eugenia I. Yashina, Anastasiya V. Borisova, Elena E. Karyakina, Olga I. Shchegolikhina, Mikhail Yu. Vagin, Dmitry A. Sakharov, Alexandr G. Tonevitsky and Arkady A. Karyakin

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Reversible Detection of Heparin and Other Polyanions by Pulsed Chronopotentiometric Polymer Membrane Electrode

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DOI: 10.1021/ac902836e



Dynamic Labeling Strategy with ^{204}Hg -Isotopic Methylmercurithiosalicylate for Absolute Peptide and Protein Quantification

Ming Xu, Xiaowen Yan, Qingqing Xie, Limin Yang and Qiuquan Wang

pp 1616-1620

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[Abstract](#)





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pp 1643-1652

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pp 1653-1658

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Penny M. Lewis, Leah Bullard Sheridan, Robert E. Gawley and Ingrid Fritsch

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Jen-Hsien Huang, Fan-Ching Chien, Peilin Chen, Kuo-Chuan Ho and Chih-Wei Chu

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Andre R. Venter, Afrand Kamali, Shashank Jain and Semere Bairu

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Muhammad J. A. Shiddiky, Angel. A. J. Torriero, Juan M. Reyna-González and Alan M. Bond

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Ryoji Kurita, Kumi Arai, Kohei Nakamoto, Dai Kato and Osamu Niwa

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Irena Mejac, Hye-Hun Park, William W. Bryan, T. Randall Lee and Chieu D. Tran

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Sulfide Sensor Based on Room-Temperature Phosphorescence of PbO/SiO₂ Nanocomposite





Ting Zhou, Na Wang, Chenhuan Li, Hongyan Yuan and Dan Xiao

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Amperometric Immunosensor for Carcinoembryonic Antigen in Colon Cancer Samples Based on Monolayers of Dendritic Bipodal Scaffolds





Noemi Laboria, Alex Fragoso, Wolfgang Kemmner, Daniel Latta, Olle Nilsson, Mary Luz Botero, Klaus Drese and Ciara K. O'Sullivan

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Sara E. Andria, Carl J. Seliskar and William R. Heineman

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Amara Apilux, Wijitar Dungchai, Weena Siangproh, Narong Praphairaksit, Charles S. Henry and Orawon

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Maarten De Beer, Frédéric Lynen, Kai Chen, Paul Ferguson, Melissa Hanna-Brown and Pat Sandra

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Giuseppe Paglia, Demian R. Ifa, Chunping Wu, Gaetano Corso and R. Graham Cooks

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Miniature Mass Spectrometer Systems Based on a Microengineered Quadrupole Filter





Andrew Malcolm, Steven Wright, Richard R. A. Syms, Neil Dash, Marc-André Schwab and Alan Finlay

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Datasets

Andreas Ipsen, Elizabeth J. Want, John C. Lindon and Timothy M. D. Ebbels





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Vincent E. Turula, Jr., Thomas Gore, Suddham Singh and Rasappa G. Arumugham

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John Njagi, Michael Ball, Marc Best, Kenneth N. Wallace and Silvana Andreescu

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Bradley B. Schneider, Thomas R. Covey, Stephen L. Coy, Evgeny V. Krylov and Erkinjon G. Nazarov

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Structural Characterization of Phospholipids and Peptides Directly from Tissue Sections by MALDI Traveling-Wave Ion Mobility-Mass Spectrometry

Whitney B. Ridenour, Michal Kliman, John A. McLean and Richard M. Caprioli

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Pt–Ag Catalysts as Cathode Material for Oxygen-Depolarized Electrodes in Hydrochloric Acid Electrolysis

Artjom Maljusch, Tharamani Chikka Nagaiah, Stefanie Schwamborn, Michael Bron and Wolfgang Schuhmann

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Online Quench-Flow Electrospray Ionization Fourier Transform Ion Cyclotron Resonance Mass Spectrometry for Elucidating Kinetic and Chemical Enzymatic Reaction Mechanisms

David J. Clarke, Adam A. Stokes, Pat Langridge-Smith and C. Logan Mackay

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Label-Free Biomarker Sensing in Undiluted Serum with Suspended Microchannel Resonators

[Abstract](#)

Marcio G. von Muhlen, Norman D. Brault, Scott M. Knudsen, Shaoyi Jiang and Scott R. Manalis

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Blind Separation of Analytes in Nuclear Magnetic Resonance Spectroscopy and Mass Spectrometry: Sparseness-Based Robust Multicomponent Analysis

[Abstract](#) | [Supporting Info](#)

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Single Quantum Dot-Based Nanosensor for Multiple DNA Detection

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Voltammetric Method for Determining the Trace Moisture Content of Organic Solvents Based on Hydrogen-Bonding Interactions with Quinones


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Label-Free Colorimetric Assay for Methyltransferase Activity Based on a Novel Methylation-Responsive DNzyme Strategy





Wang Li, Zhuoliang Liu, Hui Lin, Zhou Nie, Jinhua Chen, Xiahong Xu and Shouzhao Yao

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Development of a Candidate Reference Measurement Procedure for the Determination of 25-Hydroxyvitamin D₃ and 25-Hydroxyvitamin D₂ in Human Serum Using Isotope-Dilution Liquid

Chromatography–Tandem Mass Spectrometry





Susan S.-C. Tai, Mary Bedner and Karen W. Phinney

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Laser Ionization Orthogonal Time-of-Flight Mass Spectrometry for Simultaneous Determination of Nonmetallic Elements in Solids





Lingfeng Li, Bochao Zhang, Rongfu Huang, Wei Hang, Jian He and Benli Huang

pp 1949-1953

Publication Date (Web): February 4, 2010 ([Article](#))

DOI: 10.1021/ac9026912

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Development of Hapten-Linked Microimmunoassays on Polycarbonate Discs





Jesús Tamarit-López, Sergi Morais, María-José Bañuls, Rosa Puchades and Ángel Maquieira

pp 1954-1963

Publication Date (Web): February 4, 2010 ([Article](#))

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Analysis of Opioid and Amyloid Peptides Using Time-of-Flight Secondary Ion Mass Spectrometry





Santiago Solé-Domènech, Björn Johansson, Martin Schalling, Jakob Malm and Peter Sjövall

pp 1964-1974

Publication Date (Web): February 1, 2010 ([Article](#))

DOI: 10.1021/ac902712f

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Silicon Photonic Microring Resonators for Quantitative Cytokine Detection and T-Cell Secretion Analysis





Matthew S. Luchansky and Ryan C. Bailey

pp 1975-1981

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DOI: 10.1021/ac902725q

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Simultaneous Quantification of Intracellular Natural and Antiretroviral Nucleosides and Nucleotides by Liquid Chromatography–Tandem Mass Spectrometry





Emilie Fromentin, Christina Gavegnano, Aleksandr Obikhod and Raymond F. Schinazi

pp 1982-1989

Publication Date (Web): February 5, 2010 ([Article](#))

DOI: 10.1021/ac902737j

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Prediction of Electron-Transfer/Capture Dissociation Spectra of Peptides





Zhongqi Zhang

pp 1990-2005

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Potent Method for the Simultaneous Determination of Glutathione and Hydrogen Peroxide in Mitochondrial Compartments of Apoptotic Cells with Microchip Electrophoresis-Laser Induced Fluorescence





Zhenzhen Chen, Qingling Li, Xu Wang, Zhiyuan Wang, Ruirui Zhang, Miao Yin, Lingling Yin, Kehua Xu and Bo Tang

pp 2006-2012

Publication Date (Web): February 9, 2010 (Article)

DOI: 10.1021/ac902741r

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Small and Reproducible Isotope Effects during Methylation with Trimethylsulfonium Hydroxide (TMSH): A Convenient Derivatization Method for Isotope Analysis of Negatively Charged Molecules





Sandra Reinnicke, Anat Bernstein and Martin Elsner

pp 2013-2019

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[Abstract](#)

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Carbon Microelectrodes with a Renewable Surface





Pavel Takmakov, Matthew K. Zachek, Richard B. Keithley, Paul L. Walsh, Carrie Donley, Gregory S. McCarty and R. Mark Wightman

pp 2020-2028

Publication Date (Web): February 10, 2010 (Article)

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Development of a Point of Care Lateral Flow Device for Measuring Human Plasma Fibrinogen





Magdalena M. Dudek, Tomas L. Lindahl and Anthony J. Killard

pp 2029-2035

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DOI: 10.1021/ac902763a

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Chemiluminescence Resonance Energy Transfer-Based Detection for Microchip

Electrophoresis

Shulin Zhao, Yong Huang, Ming Shi, Rongjun Liu and Yi-Ming Liu

pp 2036-2041

Publication Date (Web): February 2, 2010 ([Article](#))

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[Abstract](#)

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Nano Aptasensor for Protective Antigen Toxin of Anthrax

Lakshmi N. Cella, Pablo Sanchez, Wenwan Zhong, Nosang V. Myung, Wilfred Chen and Ashok Mulchandani

pp 2042-2047

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High-Resolution Desorption Electrospray Ionization Mass Spectrometry for Chemical Characterization of Organic Aerosols

Julia Laskin, Alexander Laskin, Patrick J. Roach, Gordon W. Slysz, Gordon A. Anderson, Sergey A. Nizkorodov,

David L. Bones and Lucas Q. Nguyen

pp 2048-2058

Publication Date (Web): February 10, 2010 ([Article](#))

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[Abstract](#)

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Mass Spectrometric Fragmentation Analysis of Oligosialic and Polysialic Acids

Sebastian P. Galuska, Hildegard Geyer, Christina Bleckmann, René C. Röhrich, Kai Maass, Anne K. Bergfeld,


Martina Mühlhoff and Rudolf Geyer

pp 2059-2066

Publication Date (Web): February 1, 2010 ([Article](#))

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[Abstract](#) | [Supporting Info](#)

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Discrimination of Complex Mixtures by a Colorimetric Sensor Array: Coffee Aromas





[Abstract](#) | [Supporting Info](#)

Benjamin A. Suslick, Liang Feng and Kenneth S. Suslick

pp 2067-2073

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Pyrosequencing on Nicked dsDNA Generated by Nicking Endonucleases





[Abstract](#) | [Supporting Info](#)

Qinxin Song, Haiping Wu, Fang Feng, Guohua Zhou, Tomoharu Kajiyama and Hideki Kambara

pp 2074-2081

Publication Date (Web): February 1, 2010 (Article)

DOI: 10.1021/ac902825r

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Conductometric Method for the Rapid Characterization of the Substrate Specificity of Amine-Transaminases





[Abstract](#)

Sebastian Schätzle, Matthias Höhne, Karen Robins and Uwe T. Bornscheuer

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Locally Functionalized Short-Range Ordered Nanoplasmonic Pores for Bioanalytical Sensing





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Magnus P. Jonsson, Andreas B. Dahlin, Laurent Feuz, Sarunas Petronis and Fredrik Höök

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Integration of Protein Processing Steps on a Droplet Microfluidics Platform for MALDI-MS Analysis





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Debalina Chatterjee, A. Jimmy Ytterberg, Sang Uk Son, Joseph A. Loo and Robin L. Garrell

pp 2095-2101

Publication Date (Web): February 10, 2010 (Article)

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Reaction Kinetics Studied Using Diffusion-Ordered Spectroscopy and Multiway

Chemometrics





Maryam Khajeh, Adolfo Botana, Michael A. Bernstein, Mathias Nilsson and Gareth A. Morris

pp 2102-2108

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Technical Notes

Drop-on-Demand Patterning of Bacterial Cells Using Pulsed Jet Electro spraying





Kyoungtae Kim, Byung Uk Lee, Gi Byung Hwang, Jun Hyun Lee and Sangsoo Kim

pp 2109-2112

Publication Date (Web): February 9, 2010 (Technical Note)

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Determination of β -Lactamase Residues in Milk Using Matrix-Assisted Laser Desorption/ Ionization Fourier Transform Mass Spectrometry





Zhe Xu, Hao-Yang Wang, Shi-Xin Huang, Yuan-Long Wei, Sheng-Jun Yao and Yin-Long Guo

pp 2113-2118

Publication Date (Web): February 5, 2010 (Technical Note)

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[Abstract](#)

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Signal Enhancement of Surface Enhanced Raman Scattering and Surface Enhanced Resonance Raman Scattering Using in Situ Colloidal Synthesis in Microfluidics

Rab Wilson, Stephen A. Bowden, John Parnell and Jonathan M. Cooper

pp 2119-2123

Publication Date (Web): February 2, 2010 (Technical Note)

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Magnetically Remote-Controlled Optical Sensor Spheres for Monitoring Oxygen or pH

Günter Mistlberger, Klaus Koren, Sergey M. Borisov and Ingo Klimant

pp 2124-2128


Publication Date (Web): February 2, 2010 (Technical Note)

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Recommendations for Fluorescence Instrument Qualification: The New ASTM Standard Guide

Paul C. DeRose and Ute Resch-Genger

pp 2129-2133

Publication Date (Web): February 5, 2010 (Technical Note)

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Method for Analyte Identification Using Isotachopheresis and a Fluorescent Carrier Ampholyte Assay


M. Bercovici, G. V. Kaigala and J. G. Santiago

pp 2134-2138

Publication Date (Web): February 8, 2010 (Technical Note)

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J. C. Reynolds, G. J. Blackburn, C. Guallar-Hoyas, V. H. Moll, V. Bocos-Bintintan, G. Kaur-Atwal, M. D. Howdle, E. L. Harry, L. J. Brown, C. S. Creaser and C. L. P. Thomas

pp 2139-2144

Publication Date (Web): February 10, 2010 (Technical Note)

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Approaching the Complexity of Elastase-Digested Membrane Proteomes Using Off-Gel IEF/nLC-MALDI-MS/MS





Tabiwang N. Arrey, Benjamin Rietschel, Dimitrios G. Papatotiriou, Sandra Bornemann, Dominic Baeumlisberger, Michael Karas and Bjoern Meyer

pp 2145-2149

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[Abstract](#) | [Supporting Info](#)

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Strain-Tunable Chemiresistor





Douglas H. Read and James E. Martin

pp 2150-2154

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DOI: 10.1021/ac902897e

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Focused Microwave-Induced Combustion: A New Technique for Sample Digestion





Márcia F. Mesko, Juliana S. F. Pereira, Diogo P. Moraes, Juliano S. Barin, Paola A. Mello, José Neri G. Paniz, Joaquim A. Nobrega, Maria G. A. Korn and Erico M. M. Flores

pp 2155-2160

Publication Date (Web): February 9, 2010 (Technical Note)

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Quantitative Turbidimetric Assay of Enzymatic Gram-Negative Bacteria Lysis





[Abstract](#) | [Supporting Info](#)

Pavel A. Levashov, Sergey A. Sedov, Stepan Shipovskov, Natalia G. Belogurova and Andrey V. Levashov

pp 2161-2163

Publication Date (Web): February 5, 2010 (Technical Note)

DOI: 10.1021/ac902978u

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-  Hi-Res PDF[910K]
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Additions and Corrections

Investigation of Prothrombin Time in Human Whole-Blood Samples with a Quartz Crystal Biosensor

Lothar Müller, Stefan Sinn, Hartmut Drechsel, Christiane Ziegler, Hans-Peter Wendel, Hinnak Northoff and Frank K. Gehring





p 2164

Publication Date (Web): January 29, 2010 (Addition/Correction)

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