

11th International
Congress of the IUPESM

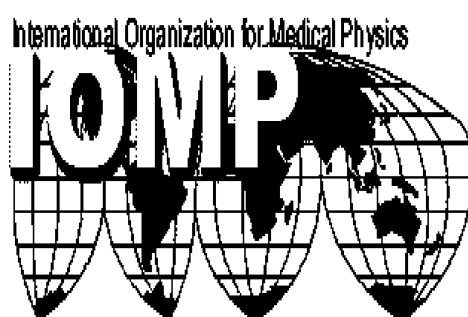
**MEDICAL
PHYSICS AND
BIOMEDICAL
ENGINEERING**

**WORLD
CONGRESS
2009**



For the benefit
of the Patient.

Sept 7–12, 2009
Munich, Germany



The International Federation for Medical and Biological Engineering, IFMBE, is a federation of national and transnational organizations representing internationally the interests of medical and biological engineering and sciences. The IFMBE is a non-profit organization fostering the creation, dissemination and application of medical and biological engineering knowledge and the management of technology for improved health and quality of life. Its activities include participation in the formulation of public policy and the dissemination of information through publications and forums. Within the field of medical, clinical, and biological engineering, IFMBE's aims are to encourage research and the application of knowledge, and to disseminate information and promote collaboration. The objectives of the IFMBE are scientific, technological, literary, and educational.

The IFMBE is a WHO accredited NGO covering the full range of biomedical and clinical engineering, healthcare, healthcare technology and management. It is representing through its 58 member societies some 120.000 professionals involved in the various issues of improved health and health care delivery.

IFMBE Officers

President: Makoto Kikuchi, Vice-President: Herbert Voigt, Former-President: Joachim H. Nagel

Treasurer: Shankar M. Krishnan, Secretary-General: Ratko Magjarevic

<http://www.ifmbe.org>

Previous Editions:

IFMBE Proceedings WC 2009, "World Congress on Medical Physics and Biomedical Engineering",
Vol. 25, 2009, Munich, Germany, CD

IFMBE Proceedings SBEC 2009, "25th Southern Biomedical Engineering Conference 2009",
Vol. 24, 2009, Miami, FL, USA, CD

IFMBE Proceedings ICBME 2008, "13th International Conference on Biomedical Engineering"
Vol. 23, 2008, Singapore, CD

IFMBE Proceedings ECIFMBE 2008 "4th European Conference of the International Federation for Medical and Biological Engineering", Vol. 22, 2008, Antwerp, Belgium, CD

IFMBE Proceedings BIOMED 2008 "4th Kuala Lumpur International Conference on Biomedical Engineering",
Vol. 21, 2008, Kuala Lumpur, Malaysia, CD

IFMBE Proceedings NBC 2008 "14th Nordic-Baltic Conference on Biomedical Engineering and Medical Physics",
Vol. 20, 2008, Riga, Latvia, CD

IFMBE Proceedings APCMBE 2008 "7th Asian-Pacific Conference on Medical and Biological Engineering",
Vol. 19, 2008, Beijing, China, CD

IFMBE Proceedings CLAIB 2007 "IV Latin American Congress on Biomedical Engineering 2007, Bioengineering Solution for Latin America Health", Vol. 18, 2007, Margarita Island, Venezuela, CD

IFMBE Proceedings ICEBI 2007 "13th International Conference on Electrical Bioimpedance and the 8th Conference on Electrical Impedance Tomography", Vol. 17, 2007, Graz, Austria, CD

IFMBE Proceedings MEDICON 2007 "11th Mediterranean Conference on Medical and Biological Engineering and Computing 2007", Vol. 16, 2007, Ljubljana, Slovenia, CD

IFMBE Proceedings BIOMED 2006 "Kuala Lumpur International Conference on Biomedical Engineering",
Vol. 15, 2004, Kuala Lumpur, Malaysia, CD

IFMBE Proceedings WC 2006 "World Congress on Medical Physics and Biomedical Engineering",
Vol. 14, 2006, Seoul, Korea, DVD

IFMBE Proceedings BSN 2007 "4th International Workshop on Wearable and Implantable Body Sensor Networks",
Vol. 13, 2006, Aachen, Germany

IFMBE Proceedings ICBMEC 2005 "The 12th International Conference on Biomedical Engineering",
Vol. 12, 2005, Singapore, CD

IFMBE Proceedings EMBEC'05 "3rd European Medical & Biological Engineering Conference, IFMBE European Conference on Biomedical Engineering", Vol. 11, 2005, Prague, Czech Republic, CD

IFMBE Proceedings ICCE 2005 "The 7th International Conference on Cellular Engineering",
Vol. 10, 2005, Seoul, Korea, CD

IFMBE Proceedings NBC 2005 "13th Nordic Baltic Conference on Biomedical Engineering and Medical Physics",
Vol. 9, 2005, Umeå, Sweden

World Congress on Medical Physics
and Biomedical Engineering
7–12 September, 2009
Munich, Germany

Micro- and Nanosystems in Medicine,
Active Implants, Biosensors

Editors

Prof. Dr. Olaf Dössel
Univ. Karlsruhe
Inst. Biomedizinische Technik
Kaiserstr. 12
76128 Karlsruhe
Germany
E-mail: olaf.doessel@ibt.uni-karlsruhe.de

Prof. Dr. Wolfgang C. Schlegel
Deutsche Krebsforschungszentrum (DKFZ)
Abt. Medizinische Physik in der
Strahlentherapie
Im Neuenheimer Feld 280
69120 Heidelberg
Germany
E-mail: w.schlegel@dkfz-heidelberg.de

ISSN 1680-0737
ISBN 978-3-642-03886-0

e-ISBN 978-3-642-03887-7

Also available as set Vol. I–XIII ISBN 978-3-642-03897-6

DOI 10.1007/978-3-642-03887-7

Library of Congress Control Number: 2009934297

© International Federation for Medical and Biological Engineering 2009

This work is subject to copyright. All rights are reserved, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilm or in any other way, and storage in data banks. Duplication of this publication or parts thereof is permitted only under the provisions of the German Copyright Law of September 9, 1965, in its current version, and permissions for use must always be obtained from Springer. Violations are liable to prosecution under the German Copyright Law.

The use of general descriptive names, registered names, trademarks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

The IFMBE Proceedings is an Official Publication of the International Federation for Medical and Biological Engineering (IFMBE)

Typesetting: Data supplied by the authors
Production & Cover design: Scientific Publishing Services Pvt. Ltd., Chennai, India.

Printed on acid-free paper

9 8 7 6 5 4 3 2 1

springer.com

Table of Contents

Silicon Eye	1
<i>Sandeep Thuvakkadan and Vignesh Janardhanan Nair</i>	
Automated Assembly of Dynamic Micro-Bead Arrays Using a Multi-arm Laser Manipulator with Computer Vision	5
<i>Y. Tanaka, H. Kawada, S. Tsutsui, M. Ishikawa, and H. Kitajima</i>	
A Nano-porous Aerogel Biochip for Molecular Recognition of Nucleotide Acids	8
<i>Yen Kuang Li, Den-Kai Yang, Yun-Chu Chen, Hung-Ju Su, Jui-Chuang Wu, and Yui Whei Chen-Yang</i>	
Biodegradable Polymeric Implants as Drug Delivery Systems for Brain Cancer Therapy	11
<i>Norased Nasongkla</i>	
CH ₂ -Symmetric/CH ₂ -Antisymmetric Stretch Ratio Sensor for Cell Analysis	15
<i>S. van den Driesche, W. Witarski, and M.J. Vellekoop</i>	
Optimization of Ligand Surface Concentration for Biosensor Based on Imaging Ellipsometry	19
<i>Yu Niu and Gang Jin</i>	
Are Defibrillation Thresholds Ruled by a Hyperbolic Strength Duration Relationship?	22
<i>Werner Irnich</i>	
Development of a Patient Controlled, Telemetric Bolus System for an Implantable Infusion Pump	26
<i>A. Knopp, K.-H. Otto, S. Klein, and B. Nestler</i>	
Finite Element Modelling of Microphysiometry on Cellular Specimen	30
<i>M. Brischwein, D. Grundl, X. Zhang, and Wolf</i>	
CD146 Detection with Real-Time Total Internal Reflection Imaging Ellipsometry	34
<i>Li Liu, Yu Niu, YongHong Meng, She Chen, XiYun Yan, and Gang Jin</i>	
Space Saving Mixed Signal FPGAs for Improving Processing Power and Memory Capacity as a Replacement for μ Cs in Portable Biosensor Devices	37
<i>M. Schmidhuber, J. Bähr, F. Ilchmann, J. Wiest, and B. Wolf</i>	
Nanomaterial Based Electrochemical Transducing Platforms for Biomedical Applications	41
<i>A. de la Escosura-Muñiz, A. Ambrosi, M. Maltez, B. Pérez-López, S. Marín, and A. Merkoçi</i>	
Sensor Chips for Multiparametric Real Time Monitoring of Cell Metabolism and Drug Response	45
<i>M. Zottmann, J. Wiest, T. Flurschütz, M. Schmidhuber, and B. Wolf</i>	
Microfluidic Platform for the Initiation and Investigation of Cellular Interactions on a Single-Cell Level	49
<i>M. Kirschbaum, M.S. Jäger, and C. Duschl</i>	

Esophageal Flow Control Module for Treatment of Obesity	53
<i>S.S.R.F. Rosa, J.C. Carvalho Júnior, L.M. Brasil, A.F. Rocha, and J.C. Carvalho</i>	
Basic Concepts for Active Implantable Valve Development	57
<i>M. Biehl and O. Scholz</i>	
Estimation of Magnetic Nanoparticle Diameter with a Magnetic Particle Spectrometer	61
<i>S. Biederer, T. Knopp, T.F. Sattel, K. Lüdtke-Buzug, B. Gleich, J. Weizenecker, J. Borgert, and T.M. Buzug</i>	
Fate of Drug Loaded-LNCs in Cell Culture Medium – Impact on Drug Delivery Strategies	65
<i>H.W. Rohm, T. Perrier, N. Lautram, K.-P. Schmitz, P. Saulnier, and M. Löbler</i>	
Speeding Up Sensor Response Times by Modifying the Geometry of the Fluidic Channel of a Disposable Array Compatible Sensor Housing for Surface Acoustic Wave Biosensors.....	69
<i>B.E. Rapp, F.J. Gruhl, K. Länge, and M. Rapp</i>	
Surface Acoustic Wave (SAW) Biosensor Chip System – A Promising Alternative for Biomedical Applications	73
<i>F.J. Gruhl, B.E. Rapp, M. Rapp, and K. Länge</i>	
Multiparametric NeuroLab with Integrated MEA & Life Support	77
<i>F. Ilchmann, J. Meyer, M. Schmidhuber, M. Zottmann, B. Becker, and B. Wolf</i>	
QCM Based on Flow System for Cardiovascular Disease	80
<i>K. Wong-ek, O. Chailapakul, J. Prommas, K. Jaruwongrungsee, N. Nuntawong, and A. Tuantranont</i>	
Automated 24 Well Neuro-Screening System with Life Support	84
<i>F. Ilchmann, B. Becker, D. Grundl, J. Meyer, and B. Wolf</i>	
Manufacture of SU-8 Micro-Grippers for Mechanical Characterization of Gut Epithelial Cells	87
<i>R.E. Mackay, H.R. Le, R.P. Keatch, and Q. Zhao</i>	
Mathematical Methods for Interpretation of Metabolic Signals from Living Cells on Biohybrid Sensor Chips	91
<i>T. Flurschütz, D. Grundl, M. Zottmann, J. Wiest, and B. Wolf</i>	
Electroactive Nanoporous Valve for Controlled Drug Delivery	95
<i>R. Kurz, A. Sickinger, and A. Robitzki</i>	
Fieldbus Controlled Live Support System for Cell-Based Biohybrid Measuring Systems.....	98
<i>F. Demmel, D. Grundl, M. Schmidhuber, J. Wiest, and B. Wolf</i>	
Traveling-Wave Electrohydrodynamics: A Versatile Method for Collecting Nanoscaled Objects from Fluids	101
<i>M. Boettcher, M.S. Jaeger, M. Stuke, and C. Duschl</i>	
Preparation of Functional Magnetic Cationic Polymeric Liposomes via a Simple Process	104
<i>X.F. Liang, H.J. Wang, and J. Chang</i>	
Fluorescent Gold Nanoclusters for Biomedical Applications	108
<i>Cheng-An J. Lin, Chin-Hsien Lee, Hung-I Yeh, and Walter H. Chang</i>	

Microelectrode Array (MEA) High Resolution Electrophysiological Mapping of Cardiac Cell, Tissue and Organ Preparations	112
<i>T. Meyer, U. Kraushaar, and E. Guenther</i>	
α-Fetoprotein Analysis in Human Serum through Quartz Crystal Microbalance	116
<i>S.L. Huang, C.S. Lin, Y.S. Lu, S.B. Jong, M.H. Yang, H.Y. Chang, H.Y. Hsun, and Y.C. Tyan</i>	
Development of a Generic Multiple Frequency Signal Generator for BioMEMS	120
<i>N.A. Kadri, K.F. Hoettges, and M.P. Hughes</i>	
Precise Deposition of Electrospun Nanofibers and Electrospraying of Nanoparticles as Enabling Techniques for Biomedical Engineering Applications	124
<i>S. Neubert, M. Eblenkamp, D. Pliszka, S. Sundarraj, S. Ramakrishna, and E. Wintermantel</i>	
Nanomaterials for Positive Contrast Imaging of MR-Visible Implants	128
<i>I. Slabu, G. Güntherodt, T. Schmitz-Rode, M. Hodenius, N. Krämer, G.A. Krombach, J. Otto, U. Klinge, and M. Baumann</i>	
Femtosecond Laser Microstructuring and Bioactivation of Titanium Surfaces for Middle Ear Ossicular Replacement Prostheses	132
<i>J. Ilgner, S. Biedron, D. Klee, E. Fadeeva, B. Chichkov, and M. Westhofen</i>	
Automation of Chemosensitivity Testing - Enabling Personalized Cancer Therapy	136
<i>B. Becker, D. Grundl, S. Etzbach, M. Zottmann, M. Brischwein, and B. Wolf</i>	
A Novel Fabrication Route to Integrating Label-Free Detection of DNA Hybridization in Microfluidic Channel	140
<i>J.H. Jiang, M.L. Bo, D.C. Jiang, J. Wang, L. Yang, K.-L. Paul Sung</i>	
Concept of a Microfluidics and Tunneling Effect-Based BioMEMS to Detect Cells	144
<i>Shengbo Sang, Ulrike Fröber, and Hartmut Witte</i>	
Simulation of Drug Release for the Development of Drug-Eluting Stents – Influence of Design and Manufacturing Parameters on Drug Release Kinetics	148
<i>N. Grabow, S. Siewert, K. Sternberg, H. Martin, and K.-P. Schmitz</i>	
Application of an Electronic Nose to Diagnose Liver Cirrhosis from the Skin Surface	150
<i>K. Witt, T. Jochum, W. Poitz, K.J. Bär, and A. Voss</i>	
Development and Fabrication of Multielectrode Arrays for Immuno-Assisted Whole Cell Detection Systems	153
<i>A. Steude, O. Pänke, S. Schmidt, and A.A. Robitzki</i>	
Sample Preparation on-Chip: Accumulation, Lysis of and DNA Extraction from Bacteria	157
<i>M. Moschallski, C. Dorrer, M. Kubon, P. Rothacher, J. Weile, B. Hagmeyer, K. Fuchsberger, K.-H. Boven, A. Moeller, R. Mohrlok, and M. Stelze</i>	
Towards Artificial Liver Sinusoids by Dielectrophoretic Cell Assembly in Microfluidic System for Use in Substance Screening	161
<i>J. Schütte, B. Angres, K. Benz, C. Freudigmann, B. Hagmeyer, F. Holzner, M. Kubon, J. Böttger, R. Gebhardt, H. Becker, and M. Stelze</i>	
Application of Supported Phospholipids Bilayer Bilayers for Biosensor Based on Imaging Ellipsometry	165
<i>Y.Y. Chen, Y.B. Zhang, C.X. Wang, Z.J. Ding, C.H. Huang, W.R. Chang, and G. Jin</i>	

Chitosan Cushioned Air Stable Single PEGylated Phospholipid Bilayers	169
<i>Y.B. Zhang, Y.Y. Chen, Z.J. Ding, C.X. Wang, C.H. Huang, and G. Jin</i>	
Application of Carbonyl Iron Powder as a Novel Mediator for Arterial Embolization Hyperthermia—Feasibility Investigation	172
<i>Lingyun Zhao, Wei Jiang, Yongjian Jin, Xiaowen Wang, Xufei Wang, and Jintian Tang</i>	
Development of a Multifunctional Microfluidic System for Studies of Nerve Cell Activity during Hypoxic and Anoxic Conditions	176
<i>Nazanin Bitaraf, Ahmed Ahmed, Michael Druzin, and Kerstin Ramser</i>	
A Novel Microfluidic Based Technique for Encapsulation of Langerhans' Islets Using High Viscosity Alginate and BaSO₄ Nanoparticles	180
<i>F. Ehrhart, Patrick Stumpf, S. Wiedemeier, E. Weyand, R. Danzebrink, M.M. Weber, J. Metze, V. Sukhorukov, U. Zimmermann, and H. Zimmermann</i>	
Analysis of Chemotactic Activity of Mammalian Cells in a Microfluidic Device	183
<i>A. Lankenau, A. Renner, and C. Duschl</i>	
An Adjustable Optofluidic Micro Lens Enhancing Single Cell Analysis Systems	185
<i>M. Rosenauer and M.J. Vellekoop</i>	
Artificial Urinary Bladder – Focal Technical Challenges	189
<i>M. Roth, D. Kirchleitner, D. Jocham, and H. Wassermann</i>	
Design and Performance of an Improved Active Subretinal Chip	192
<i>Steffen Kibbel, Alex Harscher, Walter-G. Wrobel, Eberhart Zrenner, and Albrecht Rothermel</i>	
An Intelligent Implant System for Monitoring and Biofeedback Therapy of Snoring	196
<i>Dan Anker Hofsøy, Johannes Clauss, and Bernhard Wolf</i>	
Driving Force of a Neutrophile in Liquid Using Concentration Marangorni Effect for Developing Microcapsule for Drug Delivery Systems	200
<i>M. Tamagawa and K. Matsumura</i>	
Cellular Uptake of Gold Nanoparticles into Normal and Cancer Cells	202
<i>Jade Trono, Kazue Mizuno, Noritaka Yusa, Takehisa Matsukawa, and Mitsuru Uesaka</i>	
Study to Trap Fluid Microcapsules in Artificial Blood Vessel by Producing Local Acoustic Radiation Force	206
<i>Kohji Masuda, Ryusuke Nakamoto, Yusuke Muramatsu, Yoshitaka Miyamoto, Keri Kim, and Toshio Chiba</i>	
Diamond Microelectrodes for Amperometric Detection of Secretory Cells Activity	208
<i>A. Pasquarelli, V. Carabelli, Y. Xu, Z. Gao, A. Marcantoni, E. Kohn, and E. Carbone</i>	
Local Electrical Stimulation of Single Myocytes Using Three-Dimensional Electrode Arrays with Small Interelectrode Distances	212
<i>D. Braeken, R. Huys, D. Jans, Josine Loo, D.R. Rand, G. Borghs, G. Callewaert, and C. Bartic</i>	
On-Surface Amplification of L-Glutamate Using a Patterned Bi-enzymatic System	216
<i>D.R. Rand, D. Braeken, Y. Mulla, G. Borghs, and C. Bartic</i>	
The Role of Microrheological Red Blood Cell Properties in Efficiency of Drug Transport and their Delivery to Cellular Targets	220
<i>A.V. Muravyov, S.V. Cheporov, F.A. Chuchkanov, and A.A. Muravyov</i>	

A Polymer Based Local Drug Delivery System on Plasma Activated Silicon Implant Surfaces	223
<i>H.W. Rohm, K. Sternberg, T. Stöver, G. Paasche, S. Barcikowski, A. Hahn, and K.-P. Schmitz</i>	
Particle-Size Distribution of Dextran- and Carboxydextrans-Coated Superparamagnetic Nanoparticles for Magnetic Particle Imaging.....	226
<i>K. Lüdtke-Buzug, S. Biederer, T.F. Sattel, T. Knopp, and T.M. Buzug</i>	
Size Depended Electrical Properties of Hydroxyapatite Nanoparticles	230
<i>V. Bystrov, N. Bystrova, Yu. Dekhtyar, A. Karlov, A. Katahev, C. Meissner, E. Paramonova, N. Polyaka, and A. Sapronova</i>	
Microscale Organization of Chondrocyte Array in Hydrogel by Dielectrophoresis	233
<i>S. Miyata and Y. Takeuchi</i>	
Iron Oxide Nanoparticles Conjugated with Trastuzumab as an Immunospecific Probe for Detecting HER2 Antigen	235
<i>S. Rasaneh, H. Rjabi, and H. Babaei</i>	
Determination of Tannic Acid Precipitated with Bovine Serum Albumin by Visible Light Scattering by a Flow-Injection System	237
<i>Tzong-Jih Cheng, Chien-Yu Chung, Po-Chung Chen, and Richie L.C. Chen</i>	
Magnetron Enhanced Plasma-Polymerization for Biocompatible Sensor Coatings and Membranes on Polymeric Based Materials	241
<i>F. Olcaytug, L. Ledernez, G. Dame, P. Zahn, H. Yasuda, and G. Urban</i>	
Fully Electronic Cellular Migration Assays with Field-Effect Transistor Arrays	242
<i>S. Ingebrandt, S. Schäfer, R. Stockmann, and A. Offenhäusser</i>	
Artificial Urinary Diversion System – Kinematic Requirements on Fixation.....	245
<i>D. Kirchleitner, M. Roth, D. Jocham, and H. Wassermann</i>	
Compact Drug Delivery System for Analysis Arrays	248
<i>M. Scheuenpflug and T.C. Lueth</i>	
Effect of Polymer Molecular Weight on Morphology and Particle Size of Chitosan Microspheres Prepared via Spray Drying Method	251
<i>S. Taranejoo, M. Rafienia, M. Janmaleki, M. Kamali, and L. Sadeghzadeh</i>	
The Use of Body Motion for Powering Biomedical Devices	253
<i>E. Romero, R.O. Warrington, and M.R. Neuman</i>	
Economic Feasibility Studies in the Field of Active Implants and Biosensors over Simulations: A Methodology for Structured and Valid Results	257
<i>Ch. Elsner, D. Häckl, and H. Wiesmeth</i>	
Dual Phosphatidylglycerol-Based Thermosensitive Liposomes for MR-Guided Chemothermotherapy	259
<i>T. Wang, M. Hossann, M. Peller, H.M. Reinl, M. Reiser, R.D. Issels, and L. H. Lindner</i>	
Monitoring Adherent Cell Cultures in Microtiter-Plates by a Wireless Sensory System	261
<i>J. Wissenwasser, M. Milnera, L. Farmer, C. Höpfner, M. Vellekoop, and R. Heer</i>	

In-vitro Characterization of an Implantable Thermal Flow Sensor for Hydrocephalus	265
<i>J. Burger, T. Bork, A. Hogg, M. Lempen, D. Mueller, D. Joss, T. Bardyn, P. Buechler, H. Keppner, and Y. Tardy</i>	
Concentration-Dependent Multi-parametric Functional Screening of CNS Drugs with Neuronal Networks on Microelectrode Arrays	269
<i>O.H.-U. Schroeder, A. Gramowski, K. Jügelt, and D.G. Weiss</i>	
Electric Field Characteristics of Bipolar Impedance Sensors	273
<i>P. Kassanos, R.H. Bayford, and A. Demosthenous</i>	
Hemodynamic Response with an Artificial Myocardial Assistance in Chronic Animal Examination	277
<i>Y. Shiraishi, T. Yambe, Y. Saijo, M. Shibata, H. Liu, T. Sugai, A. Tanaka, S. Konno, A. Baba, T. Fujimoto, K. Imachi, M. Yoshizawa, S. Nitta, H. Sasada, K. Tabayashi, Y. Sato, M. Umezu, and D. Homma</i>	
Implantable Sensor System for the Monitoring of Bone Healing	281
<i>M. Sattler, J. Clauss, M. Schmidhuber, J. Belsky, and B. Wolf</i>	
Spontaneous Activity of Rat Embryonic Cardiac Myocytes	285
<i>D. Jans, D. Braeken, D. Rand, C. Bartic, and G. Callewaert</i>	
The Design and Construction of a Set of Modular Synthetic BioLogic Devices for Programming Cells	289
<i>B. Wang, R. Kitney, M. Buck, M. Jovanovic, N. Joly, and E. James</i>	
An Innovative Rotational Magnetic System to Enhance Cell Transfection with Magnetic Nanoparticles	293
<i>Dahmani Ch., Helling Fl., Weyh Th., and Plank Ch.</i>	
PROTMINE: A Web Service Based Tool to Interpreter Clinical Proteomic Data	297
<i>M. Giacomini, S. Ravaschio, S. De Nadai, A. Petretto, and G. Melioli</i>	
Silicon Based Multi Parametric Biohybrid Microsensor Chips.....	299
<i>Y. Eminaga, J. Wiest, M. Remm, M. Brischwein, and B. Wolf</i>	
Stent-Based Plasmid Gene Delivery into Porcine Coronary Artery.....	303
<i>L.H. Zhang, T. Luo, C. Zhang, P. Luo, X. Jin, H.F. Sun, C.X. Song, and R.L. Gao</i>	
Disruption of Microvessels by Focused Ultrasound with Microbubbles to Cause the Extravasation of Macromolecules and Observed by Two-Photon Fluorescence Microscopy	306
<i>Kuo-Wei Lu , Chi-Hsun Huang, Chun-Chin Wang, and Win-Li Lin</i>	
Micro— and Nanosensors for Medical Applications	310
<i>Urban Gerald A.</i>	
Ferroelectric Nanoparticles for Contrast Enhancement Microwave Tomography: Feasibility Assessment for Detection of Lung Cancer	311
<i>S. Semenov, N. Pham, and S. Egot-Lemaire</i>	
MEA Neurosensor, the Tool for Synaptic Activity Detection: Acute Amyloid-β Oligomers Synaptotoxicity Study	314
<i>I. Benilova, I. Kuperstein, K. Broersen, J. Schymkowitz, F. Rousseau, C. Bartic, and B. De Strooper</i>	

Development of Tri-component Copolymer Rods as Implantable Drug Delivery Systems for Liver Cancer Therapy	317
<i>N. Nasongkla, P. Akarajiratun, and S. Hongeng</i>	
Microchip-Integrated EOSCs (Electrolyte Oxide Semiconductor Capacitors) as Devices for High Efficiency and Selective Electroporation of Mammalian Cells	321
<i>M. Maschietto, S. Girardi, M. Dal Maschio, and S. Vassanelli</i>	
Sensors for Healthcare Monitoring – Proteins, Viruses and Blood-Group-Typing	325
<i>F.L. Dickert, P.A. Lieberzeit, A. Seifner, R. Schirhagl, and Christof Jungbauer</i>	
The Interaction between Charged Macroions Induced by Rod-Like Ions	329
<i>K. Bohinc, A. Iglič, S. Maset, and S. May</i>	
Integration of Micro Fluidic Bio-chip Design and Automatic Fluorescent Identification for Rapid Sperm Mobility Assessment	332
<i>Li-Chern Pan, Fang-Chi Hsu, Yun-Ying Wu, Fan-Gang Tseng, Da-Jen Yao, Yieh-Loong Tsai, and Jiann-Loung Hwang</i>	
Interfacing Metallic Ohmic Contacts in Biocompatible Ceramic Substrates with Diamond Surfaces for Biosensing Applications	336
<i>M.A. Neto, E.L. Silva, A.J.S. Fernandes, F.J. Oliveira, and R.F. Silva</i>	
Chemical Modification of Surfaces for Biochemical and Medical Sensor Applications	339
<i>V.C. Ayala, K. Moosmann, O. Prucker, J. Rühe, and L.M. Reindl</i>	
Minimizing Stress Exposure to Cells Using Novel Microfluidic Cell Capture Devices	343
<i>G. Kijanka, I.K. Dimov, R. Burger, and J. Ducréé</i>	
Development of EGFR-Targeting Nanomedicine for Effectively and Noninvasively Treats Lung Cancer Patients by Aerosol Delivery	347
<i>Ching-Li Tseng, Yueh-Hsiu Wu, Su-Wen Yu, Kai-Chiang Yang, and Feng-Huei Lin</i>	
Amperometric Microbiosensors Based on PQQ-Dependent Glucose Dehydrogenase towards the Development of an ATP Biosensor for <i>in vitro</i> Analysis	351
<i>C. Weber, E. Gauda, E. Hecht, B. Mizaikoff, and C. Kranz</i>	
Remote Controlled Drug Release Induced by a Rotating Magnetic Field	355
<i>W. Andrä, T. Gesener, A. Raabgrund, and M.E. Bellemann</i>	
Microfluidics for Drug Delivery	359
<i>S. Haeberle, D. Hradetzky, A. Schumacher, M. Vosseler, S. Messner, and R. Zengerle</i>	
Cell Based Assays for Label Free Investigation of Living Cells	363
<i>J. Wiest, M. Schmidhuber, D. Grundl, F. Demmel, M. Zottmann, H. Grothe, M. Brischwein, and B. Wolf</i>	
Silicon Based Devices for Intracellular Applications	365
<i>R. Gómez-Martínez, M. Duch, A. Sanchez, J.A. Plaza, and J. Esteve</i>	
Cell Select – A New Concept for Collecting of Rare Cell Populations <i>in vivo</i>	369
<i>S. Pietschmann, R. Martin, T. Schoen, J.P. Spatz, and U. Pison</i>	
Combined AFM-SECM: Towards a Novel Platform for Imaging Microbiosensors	372
<i>Justyna Wiedemair, Jong-Seok Moon, D.E. Eaton, Boris Mizaikoff, and Christine Kranz</i>	

Microfluidic Platform for Investigating Small Blood Vessels.....	376
<i>Conrad Lochovsky, Andrei Vagaon, Sanjesh Yasotharan, Darcy Lidington, Julia Voigtlaender-Bolz, Steffen-Sebastian-Bolz, and Axel Günther</i>	
Characterization of Electron Conduction in Unsaturated Organic Monolayers on Silicon(111) Using Electrical Impedance Spectroscopy	378
<i>T.C. Chilcott, H.G.L. Coster, and D. Zamri</i>	
The Study of Micro Liter Insulin Injection System by Osmotic Pressure for Diabetes Therapy	382
<i>Toshiaki Nagakura, Kazuki Inada, Yuuto Susuki, Naohiro Yoshida, Akira Yamada, Masashi Ikeuchi, and Koji Ikuta</i>	
Amperometric Monitoring of Substance-P Levels in Biological Fluids	384
<i>J. Horak, B. Enderle, H. Bakirci, and G.A. Urban</i>	
High Throughput Microelectrode Array Platforms for Quantitative Pharmacology, Toxicology, and Drug Development Using Spontaneously Active Neural Tissue	385
<i>Guenter W. Gross</i>	
Author Index	387