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A hybrid microfluidic platform for energy harvesting based on piezoelectricity and reverse electrowetting for wearable biosensors

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TIME ZONE = BST

26th July 2021
Summer School (additional registration fee)

09:45-11:30	<p>Biosensors 2020 Summer School: Commercialising Biosensors Introduction, Welcome & Session 1 (Man Bock Gu, Anthony Turner and Martin Peacock)</p> <p>CASE HISTORIES – Success, failure and lessons learnt. (Chair: Martin Peacock) Each speaker will outline selected successes and failures with a reflection on lessons learnt. 10.00 – 10.30 Martin Peacock (Zimmer and Peacock, UK) The good, the bad and the ugly - a life in business. 10.30 - 11.00 Nancy Allbritton (University of Washington, USA) Persistence pays - A tale of four biotech start-ups. 11.00 – 11.30 Surendar Magar (President and CEO, LifeSignals, Inc., USA) Challenges facing a start-up targeting wireless biosensors for mass markets.</p>
11:30-11:45	<p>Break</p>
11:45-13:45	<p>11.45 - 12.15 Frances Ligler (University of North Carolina at Chapel Hill and North Carolina State University, USA) The path to license: How to commercialize your inventions without being an entrepreneur. 12.15 – 12.45 Menno Prins (Eindhoven University of Technology, The Netherlands) Heli Biomonitoring – a journey in continuous sensing. 12.45 – 13.15 Koji Sode (Ultizyme International Ltd., Japan & University of North Carolina at Chapel Hill and North Carolina State University, USA) Rewards and drawbacks of being engaged in the R&D of blood glucose monitoring, the largest market in the biosensor industry. 13.15 – 13.45 George Ligler (University of North Carolina at Chapel Hill and North Carolina State University, USA) To publish or patent—or both, or neither.</p>
13:45-14:15	<p>Break</p>
14:15-15:45	<p>Breakout sessions led by each of the speakers via zoom</p>
15:45-16:00	<p>Break</p>
16:00-17:10	<p>Chaired panel discussion & Wrap-up and farewell Chair: Anthony Turner Martin Peacock, Nancy Allbritton, Surendar Magar, Frances Ligler, Menno Prins, Koji Sode, George Ligler. The panel will discuss question from the chair together with questions from the audience including the broad areas of: • How best to protect your technology? • Choosing whether to start a company or to license technology. • How to sell your technology. • Making a success of a start-up.</p>

27th July 2021 MAIN CONGRESS

08:00-08:30	<p>Welcome and introduction to the congress Anthony P.F. Turner and Man Bock Gu and the Congress Committee</p>			
08:30-09:50	<p>Plenary session 1 Session Chairs: Man Bock Gu and Anthony P.F. Turner</p> <p>The Anthony and Alice Turner Endowed Lecture 08:30-09:10 [PLN01] Unconventional bioelectronics for heart and brain diseases <u>Dae-Hyeong Kim</u>, Seoul National University, Republic of Korea</p> <p>09:10-09:50 [PLN02] Label-free organic bioelectronic analytical sensors: A new trend in single-molecule detection <u>Luisa Torsi</u> University of Bari, Italy</p>			
<p>09:50-10:15 Networking in the Lounge</p>				
10:15-11:45	<p>Stream 1A - DNA- and nucleic acid-based sensors and aptasensors Session Chairs: Hyun Gyu Park & Wing Cheung Mak</p> <p>10:15-10:30 [O1A.01] A 10-minute universal cancer test based on interfacial biosensing <u>A. Ali Ibn Sing</u>, L. G. Carrascosa, M. Trau The University of Queensland, Australia</p> <p>10:30-10:45 [O1A.02] LAPS modified with various aptamers for simultaneous detection of multiple marine toxins <u>Y.L. Tian</u>¹, P. Zhu¹, Y.T. Chen¹, L.P. Du¹, W. Chen¹, C.S. Wu¹, P. Wang² ¹<i>Xi'an Jiaotong University, China.</i> ²<i>Zhejiang University, China</i></p> <p>10:45-11:00 [O1A.03] Dual-reporting DNA nanosensor with exceptionally broad detection range <u>B. Kang</u>¹, S.V. Park¹, H.S. Tom², S.S. Oh¹ ¹<i>Pohang University of Science and Technology (POSTECH), Republic of Korea.</i> ²<i>Stanford University, USA</i></p> <p>11:00-11:15 [O1A.04] An electrochemical biosensor using aflatoxin G1 aptamer developed by a newly modified GO-SELEX</p>	<p>Stream 2A - Smartphone diagnostics, wearable biosensors and mobile health Session Chairs: Dae-Hyeong Kim & Mun'delanji C. Vestergaard</p> <p>10:15-10:30 [O2A.01] Lubricin (PRG4): A versatile protein for electrochemical sensing <u>S.M. Silva</u>¹, M. Russo², A. F. Quigley³, R. M. I. Kapsa⁴, G. W. Greene², S. E. Moulton¹ ¹<i>Swinburne University of Technology, Australia.</i> ²<i>Deakin University, Australia.</i> ³<i>Royal Melbourne Institute of Technology, Australia.</i> ⁴<i>University of Wollongong, Australia</i></p> <p>10:30-10:45 [O2A.02] Instrument-free voltammetry using a mobile phone <u>C.F. Hogan</u>, D. Elton, P. O'Conghaile <i>La Trobe University, Australia</i></p> <p>10:45-11:00 [O2A.03] Direct electron transfer type L-lactate sensor for wearable multiplexed biosensor system toward continuous monitoring of metabolites in sweat <u>K. Hiraka</u>¹, S. Motohashi¹, W. Tsugawa¹, R. Asano¹, M.A. Yokus², K. Ikebukuro¹, M.A. Daniele^{2,3}, K. Sode^{3,2} ¹<i>Tokyo University of Agriculture and Technology, Japan.</i> ²<i>North Carolina State</i></p>	<p>Stream 3A - Single molecule detection Session Chairs: Hans H. Gorris & Hatice Altug</p> <p>10:15-10:45 [KEYNOTE 3A] Continuous biomarker monitoring with single-molecule resolution: Principles, proof of concept, and applications <u>M.W.J. Prins</u> <i>Eindhoven University of Technology & Helia Biomonitoring, The Netherlands</i></p> <p>10:45-11:00 [O3A.01] Aptamer-functionalized solid-state nanopore for the specific detection of proteins L. Reynaud¹, <u>A. Bouchet-Spinelli</u>¹, J-M. Janot², A. Buhot¹, S. Balme², C. Raillon¹ ¹<i>Univ. Grenoble Alpes, CEA, CNRS, IRIG-SyMMES, France.</i> ²<i>EM Montpellier, France</i></p> <p>11:00-11:15 [O3A.02] A digital single-molecule nanopillar SERS platform for predicting and monitoring immune toxicities in immunotherapy <u>A. Wuethrich</u>¹, J. Li¹, A. I. Sina¹, H.H. Cheng¹, Y. Wang², A. Behren³, P. N. Mainwaring¹, M. Trau¹ ¹<i>The University of Queensland, Australia.</i> ²<i>Macquarie University, Australia.</i> ³<i>Olivia Newton-John Cancer Research Institute, Australia</i></p> <p>11:15-11:30 [O3A.03]</p>	<p>Stream 4A - Lab-on-a-chip and multiplexed sensors Session Chairs: Xian-En Zhang & Danila Moscone</p> <p>10:15-10:30 [O4A.01] Automated optofluidic system for Type-1 diabetes screening <u>C. S. Huertas</u>¹, C. Szydzik^{1,2}, V. Bansal¹, A. Hardikar³, A. Mitchell¹ ¹<i>RMIT University, Australia.</i> ²<i>Monash University, Australia.</i> ³<i>University of Sydney, Australia</i></p> <p>10:30-10:45 [O4A.02] Ultra-sensitive and reusable graphene oxide-modified double interdigitated capacitive (DIDC) sensing chip for detecting SARS-CoV-2 <u>P.K. Sharma</u>^{1,2}, E.S. Kim^{1,2}, S. Mishra³, E. Ganbold¹, Ryun-Sang Seong¹, A. Kaushik⁴, N.Y. Kim^{1,2} ¹<i>RFIC Centre, Kwangwoon University, Republic of Korea.</i> ²<i>Kwangwoon University, Republic of Korea.</i> ³<i>NDAC Centre, Kwangwoon University, Republic of Korea.</i> ⁴<i>Florida Polytechnic University, USA</i></p> <p>10:45-11:00 [O4A.03] Selective isolation of EMT-related exosome by using a fully-integrated microfluidic device H.G. Gwak, <u>S.Y. Park</u>, J.M. Kim, J.D. Lee, S.I. Kim, K.A. Hyun, H.I. Jung <i>Yonsei University, Republic of Korea</i></p>

I.I.T. Tran, M.B. Gu
Korea University, Republic of Korea

11:15-11:30 [O1A.05]
A mini potentiostat-based portable electrochemical sandwich-type aptasensor for the early diagnosis of periodontitis

B.H. Lee, C.M. Joe, S.H. Kim, M.B. Gu
Korea University, Republic of Korea

University, USA. ³University of North Carolina at Chapel Hill, USA

11:00-11:15 [O2A.04]
Mouthguard glucose sensor with Prussian blue as an electron-transfer mediator for reduction of influence of salivary contaminants

T. Arakawa, Z. Zhang, K. Tomoto, K. Toma, K. Mitsubayashi
Tokyo Medical and Dental University, Japan

11:15-11:30 [O2A.05]
A flexible polyaniline biosensor array for multi-channel cardiovascular health monitoring

Y.P. Rachim, S. Kang, J.H. Baek, S.M. Park
Pohang University of Science and Technology, Republic of Korea

11:30-11:45 [O2A.06]
Surface resonance based RF sensor for glucose mapping in aqueous solutions

J. Malik^{1,2}, F. Bien^{1,2}
¹SB-Solutions Inc., Republic of Korea. ²Ulsan National Institute of Science and Technology, Republic of Korea

Single-molecule detection of DNA and proteins in a plasmonic nanopore by Surface Enhanced Raman Spectroscopy (SERS)

J-A. Huang
University of Oulu, Finland

11:30-11:45 [O3A.04]
Massively parallel single molecule counting for quantitative biosensing using dark-field imaging of plasmonic nanoparticles

P. Bakthavathsalam, D. Bennett, M. Sriram, B. Markhali, G. Walker, S. Stelzer-Braid, W. Rawlinson, R.D. Tilley, J.J. Gooding
UNSW Australia, Australia

11:00-11:15 [O4A.04]
Wide-field imaging system for digital CFU assay through 10-million droplet analysis

S. Ki, D. Kang
Incheon National University, Republic of Korea

11:15-11:30 [O4A.05]
A manual centrifuge and paper devices for point-of-care diagnosis

J.E. Lee, Y. Hao, H.P. Wang, Z.S. Dong, S.J. Chen, C.F. Chen
National Taiwan University, Taiwan

11:30-11:45 [O4A.06]
Controlled integration of inhalation exposure system for reconstituting lung physiological functions on a chip

K.C. Lin, J.W. Yang, C.Z. Yen, G.Y. Chen
National Chiao Tung University, Taiwan

11:45-12:15

Networking in the Lounge

12:15-13:45

Stream 1B - DNA- and nucleic acid-based sensors and aptasensors
Session Chairs: Luisa Torsi & Nako Nakatsuka

12:15-12:30 [O1B.01]
Ultrasensitive plasmonic detection of circulating microRNAs using horizontally tethered PNA probes

R. D'Agata^{1,2}, N. Bellassai¹, M.C. Giuffrida³, A. Rozzi⁴, A. Finotti⁵, G. Gasparello⁵, R. Corradini⁴, R. Gambari⁵, J. Dostalek², W. Knoll², G. Spoto^{1,3}
¹Department of Chemical Sciences, University of Catania, Italy. ²AIT-Austrian Institute of Technology GmbH, Tulln, Austria. ³INBB, Istituto Nazionale di Biostrutture e Biosistemi, Roma, Italy. ⁴Department of Chemistry, Life Sciences and Environmental Sustainability, University of Parma, Italy. ⁵Department of Life Sciences and Biotechnology, Section of Biochemistry and Molecular Biology, University of Ferrara, Italy

12:30-12:45 [O1B.02]
DNA nanotechnology toolbox for next-generation biosensor design

I. Rutten, S. Safdar, K. Ven, A. Montserrat, D. Daems, J. Spasic, J. Lammertyn

Stream 2B - Smartphone diagnostics, wearable biosensors and mobile health

Session Chairs: Arben Merkoçi & Kar Seng Teng

12:15-12:30 [O2B.01]
Smartphone enabled dynamic chemiluminescence biomarker quantitation using acoustic tweezer approach

X. Duan, X. Chen
Tianjin University, China

12:30-12:45 [O2B.02]
Battery-free and flexible tag for wireless in situ quantification of urinary albumin/creatinine ratio to monitor early nephropathy

G. Xu, Y. Jia, X. Li, C. Cheng, J. Xu, Z. Liu, Q. Liu
Zhejiang University, China

12:45-13:00 [O2B.03]
Wireless battery-free flexible electrochemical devices for long-term in vivo monitoring peritonitis and peritoneal carcinomatosis

J. Xu, C. Chen, G. Xu, Y. Lu, Q. Liu
Zhejiang University, China

Stream 3B - Nanobiosensors, nanomaterials & nanoanalytical systems

Session Chairs: Can Dincer & Aurlie Spinelli

12:15-12:45 [KEYNOTE 3B]
Nanopore blockade sensors for ultrasensitive detection of single protein molecules in complex biological samples

K. Chuah¹, Y.F. Wu¹, S.R.C. Vivekchand¹, K. Gaus², P.J. Reece³, A.P. Micolich³, J.J. Gooding¹

¹Australian Centre for NanoMedicine and the ARC Centre of Excellence in Convergent Bio-Nano Science and Technology, The University of New South Wales, Australia. ²EMBL Australia Node in Single Molecule Science and the ARC Centre of Excellence in Advanced Molecular Imaging, The University of New South Wales, Australia. ³The University of New South Wales, Australia

12:45-13:00 [O3B.01]
Two-dimensional hybrid plasmonic metamaterials for biosensing applications

G.I. Tselikov¹, V.G. Kravets², D.I. Yakubovsky¹, D. Grudinin¹, A.N. Grigorenko², A.V. Kabashin³

Stream 4B - Lab-on-a-chip and multiplexed sensors
Session Chairs: Meno Prins & ChienFu Chen

12:15-12:45 [KEYNOTE 4B]
Microneedle-peptide biosensing technology for multiplexed monitoring of kinase cancer biomarkers in skin

M. Pellerano¹, P. Henri¹, N. Rajendran², D. Miura², L. Meunier¹, T. Cass³, O. Guy², S. Sharma², M.C. Morris¹
¹Institut des Biomolécules Max Mousseron, CNRS, University Montpellier, France. ²College of Engineering, Swansea University Bay Campus, Swansea, UK. ³Imperial College London, UK

12:45-13:00 [O4B.01]
Optimization of gas sensors for breath analysis and food monitoring

A. Milone^{1,2}, Silvia Rizzato^{1,2}Luigi Carbone², Riccardo Scarfiello², Giuseppe Maruccio^{1,2}, Anna Grazia Monteduro^{1,2}
¹Omnics Research Group, Department of Mathematics and Physics, University of Salento, Italy. ²CNR NANOTEC - Istituto di Nanotecnologia, Italy

KU Leuven, Belgium

12:45-13:00 [O1B.03]

Ultrasensitive label-free electrochemical aptasensor for selective detection of lactoferrin

M. Naseri, M. Mohammadniaei, J. Ashley, Y. Sun
Denmark Technical University, Denmark

13:00-13:15 [O1B.04]

Terahertz biosensor for PCR-free DNA detection in relation to tumor marker MIA

M. Richter¹, C. Weisenstein¹, D. Schaar², A. K. Wigger¹, A. K. Bosserhoff², P. Haring Bolívar¹
¹Institute of High Frequency and Quantum Electronics HQE, University of Siegen, Germany. ²Institute of Biochemistry, Friedrich-Alexander-University Erlangen-Nürnberg, Germany

13:15-13:30 [O1B.05]

The prospects of using a GlyFS sensor on screen printed electrodes for the electrochemical detection of glycine

K. Murugappan, U. Sundaramoorthy, A. Damry, C. Jackson, A. Tricoli
Australian National University, Australia

13:30-13:45 [O1B.06]

Potential vs shortcomings of epitope MIPs for the recognition of natural and recombinant proteins

A. Yarman¹, G. Caserta², X. Zhang¹, P. Borrero¹, S. Frielingsdorf², E. Supala³, A. T. Waffo², I. Zebger², O.r Lenz², F.F. Bier¹, R. E. Gyurcsányi³, U. Wollenberger¹, F. W. Scheller⁴
¹Universität Potsdam, Germany. ²Technische Universität Berlin, Germany. ³Budapest University of Technology and Economics, Hungary. ⁴Universität Potsdam, Institute for Biochemistry and Biology/UP Transfer GmbH, Germany

13:00-13:15 [O2B.04]

Non-invasive biosensing with saliva as model medium

S.K. Jha
Indian Institute of Technology Delhi, India

13:15-13:30 [O2B.05]

Smartphone-based potential-scanning localized surface plasmon resonance biosensor with MXene coated gold nanomushroom for glycosylated hemoglobin detection

Z. Chen, Q. Zhang, S.S. Low, J. Liu, Y. Lu, Prof. Q. Liu
Zhejiang University, China

13:30-13:45 [O2B.06]

Roll-to-roll printing of nanotechnology-based biosensors; Bringing nanobiosensors to mass market

K.S. Teng
Swansea University, UK

¹Moscow Institute of Physics and Technology, Russia. ²The University of Manchester, UK. ³Aix-Marseille University, France

13:00-13:15 [O3B.02]

Electrical monitoring of infection biomarkers in chronic wounds using nanochannels

A. Iglesias-Mayor¹, O. Amor-Gutiérrez¹, C. Toyos-Rodríguez¹, A. Bassegoda², T. Tzanov², A. de la Escosura-Muñiz^{1,3}
¹NanoBioAnalysis Group - Department of Physical and Analytical Chemistry, University of Oviedo, Spain. ²Grup de Biotecnologia Molecular i Industrial, Department of Chemical Engineering, Universitat Politècnica de Catalunya, Spain. ³Biotechnology Institute of Asturias, University of Oviedo, Spain

13:15-13:30 [O3B.03]

Heat-transfer method: a thermal analysis technique for the detection of a variety of biomedical targets

A. Hudson¹, R. Crapnell², O. Jamieson¹, K. Betlem³, Dr. K. Eersels⁴, B. van Grinsven⁴, T. Cleij⁴, C. Banks², M. Peeters¹
¹Newcastle University, UK. ²Manchester Metropolitan University, UK. ³Universite Libre de Bruxelles, Belgium. ⁴Maastricht University, The Netherlands

13:30-13:45 [O3B.04]

Design of a nanobiosensor via advanced laser and gold nanoparticle deposition techniques

C. Hughes^{1,2}, R. McCann^{1,2}, B. Freeland^{1,2}, F. Regan^{1,3}, N. Barron^{4,5}, D. Brabazon^{1,6}
¹Dublin City University, Ireland. ²Advanced Processing Technologies Centre, Ireland. ³DCU Water Institute, Ireland. ⁴University College Dublin, Ireland. ⁵National Institute for Bioprocessing Research and Training, Ireland. ⁶Form Advanced Manufacturing Research Centre, Ireland

13:00-13:15 [O4B.02]

Multiplexed lab-on-a-chip platform for DNA and protein analysis using graphene transistors

P. Alpuim^{1,2}, J.R. Guerreiro¹, T. Domingues¹, Dr. A. Purwidyantri¹, Dr. A. Ipatov¹, P.D. Cabral^{1,2}, M. Prado¹, J. Borme¹
¹International Iberian Nanotechnology Laboratory, Portugal. ²University of Minho, Portugal

13:15-13:30 [O4B.03]

High resolution Electro-Optical imaging for live cell based (bio)sensing

M. Gheorghiu, C. Polonschii, S. Gáspár, S.M. David, E. Gheorghiu
International Centre of Biodynamics, Romania

13:30-13:45 [O4B.04]

Semi-quantitative detection of the inflammatory biomarkers, C-reactive protein and procalcitonin for rapid pneumonia triage

A. Iles, P. He, I. Katis, P. Galanis, A. John, J. Teeling, C. Holmes, J. Amin, R. Eason, C. Sones
University of Southampton, UK

13:45-14:15

Networking in the Lounge

14:15-15:45

Stream 1C - Novel transducers
Session Chairs: Hyonchol Kim & Larysa Baraban

14:15-14:30 [O1C.01]

Electrocatalytic acupuncture of redox-active nitric oxide with high space-time resolution

T. Gao, J. Guo, T. Wei
Nanjing Normal University, China

Stream 2C - Natural & synthetic receptors (including MIPs)

Session Chairs: Koji Sode & Zeynep Altintas

14:15-14:30 [O2C.01]

A gold nanoparticle decorated MIP sensor for ultrasensitive nonenzymatic glucose detection in human serum

Stream 3C - Rapid methods for the detection of viruses

Session Chairs: Frances Ligler & Alexander Winton

14:15-14:30 [O3C.01]

An AIEgen/graphene oxide composite based two-stage "turn-on" biosensor for rapid

Stream 4C - Nanobiosensors, nanomaterials & nanoanalytical systems

Session Chairs: Pedro Estrela & Man Bock Gu

14:15-14:45 [KEYNOTE 4C]

Graphene quantum dots for biosensing and bioimaging

14:30-14:45 [O1C.02]

Vibrating cantilevers modified with macroporous molecularly imprinted polymers (MIPs) films for selective chemosensing of proteins

M. Dabrowski, C. Ayela, A. Kuhn
Université de Bordeaux, CNRS, Bordeaux INP, ENSCBP, , France

14:45-15:00 [O1C.03]

Biosensing by direct observation of leaky waveguide modes

N.J. Goddard, R. Gupta
Process Instruments (UK) Ltd, UK

15:00-15:15 [O1C.04]

Realtime biosensing from small molecules to mammalian cells using advanced quartz crystal resonator methods

S. Ghosh¹, A. Guha¹, J. Nasterski¹, C. Da-Silva-Granja¹, V. Ostani²
¹Loughborough University, UK. ²University of Cambridge, UK

15:15-15:30 [O1C.05]

UV-activated Semiconductor-based Biosensor for Lactate Monitoring in Sweat

N. Taleghani, F. Taghipour
University of British Columbia, Canada

15:30-15:45 [O1C.06]

Regenerable miniaturized microbalance arrays for longitudinal, multiplexed monitoring of biosystems

M. Daniele^{1,2}, S. Menegatti¹, T. Fabiani¹, H. Reese¹, V. Pozdin¹
¹North Carolina State University, USA.
²University of North Carolina at Chapel Hill, USA

E. Sehit, J. Drzazgowska, D. Buchenau, Dr. Z. Altintas
Technical University of Berlin, Germany

14:30-14:45 [O2C.02]

The “Abta-sensor” ~development of antibody–aptamer one-to-one complex to realize a novel biosensing principle~

E. Wilson¹, J. Lee¹, S. Henley¹, R. Asano², K. Ikebukuro², K. Sode¹
¹University of North Carolina at Chapel Hill, USA. ²Tokyo University of Agriculture and Technology, Japan

14:45-15:00 [O2C.03]

Bioinspired herbicide binding proteins from Chlamydomonas reinhardtii as novel synthetic biomimetics for sensing applications

A. Antonacci¹, P. Calandra², G. Barone³, F. Lo Celso⁴, V. Scognamiglio¹
¹Institute of Crystallography, National Research Council, Italy. ²Institute of Nanostructured Materials, National Research Council, Italy. ³Università degli Studi di Palermo, Dipartimento STEBICEF, Italy. ⁴Università degli Studi di Palermo, Dipartimento di Fisica e Chimica, Italy

15:00-15:15 [O2C.04]

Label-free colorimetric detection of calprotectin using photonic crystals-based sensor and molecular imprinting technology

S. Resende^{1,2,3}, M. F. Frasco^{1,2,3}, P. P. Freitas^{4,5}, M.G.F. Sales^{1,2,3}
¹BioMark@UC, Faculty of Sciences and Technology, University of Coimbra, Coimbra, Portugal. ²BioMark@ISEP, School of Engineering, Polytechnic Institute of Porto, Porto, Portugal. ³CEB, Centre of Biological Engineering, University of Minho, Braga, Portugal. ⁴Instituto de Engenharia de Sistemas e Computadores - Microsistemas e Nanotecnologias, Lisboa, Portugal. ⁵INL - International Iberian Nanotechnology Laboratory, Braga, Portugal

15:15-15:30 [O2C.05]

Integrated approaches toward high-affinity synthetic protein binders obtained via computationally simulated epitopes for biosensing

Z. Altintas¹, R. Tchinda¹, A. Tutsch¹, J. Drzazgowska¹, M. Mroginski¹, F. Scheller², B. Schmid¹, R. Sussmuth¹
¹Technical University of Berlin, Germany.
²University of Potsdam, Germany

detection of SARS-CoV-2 nucleic acid sequence

Q. Zhang¹, B. Yin¹, Y. Huang¹, J. Hao², S.H.D. Wong¹, M. Yang¹

¹Department of Biomedical Engineering, the Hong Kong Polytechnic University, Hong Kong.
²Department of Applied Physics, the Hong Kong Polytechnic University, Hong Kong

14:30-14:45 [O3C.02]

Inkjet-printed Smartphone-based Aptasensor for the Label-Free Detection of SARS-CoV-2

J. Marrugo-Ramírez¹, G. Rosati¹, C. de Carvalho Castro e Silva^{2,1}, A. Bonini^{3,1}, M. Urban¹, A. Merkoçi^{1,4}
¹Catalan Institute of Nanoscience and Nanotechnology (ICN2), Spain. ²Graphene and Nanomaterials Research Center – MackGraphe, Brazil. ³Department of Chemistry and Industrial Chemistry – University of Pisa, Italy. ⁴ICREA, Institució Catalana de Recerca i Estudis Avançats, Spain

14:45-15:00 [O3C.03]

Lateral flow device for the dual detection of SARS-CoV-2 Coronavirus Nucleocapsid and Spike protein: A large-scale, rapid, point-of-care testing solution for Covid-19

A. Iles, P. He, M. Humbert, A. John, I. Katis, T. Clark, M. Christodoulides, R. Eason, C. McCormick, C. Sones
University of Southampton, UK

15:00-15:15 [O3C.04]

Reagent-free Electrochemical Sensor for Intact SARS-CoV-2 Viral Detection

A. Mahmud, H. Yousefi, D. Chang, J. Das, S. Gomis, J. Chen, H. Wang, E. Sargent, S. Kelley
University of Toronto, Canada

15:15-15:30 [O3C.05]

Hand-held devices for Detection of SARS-CoV-2 Viral Particles using Direct, Reagent-Free Electrochemical Sensing

H. Yousefi, A. Mahmud, D. Chang, J. Das, S. Gomis, J. Chen, H. Wang, C. Flynn, T. Been, L. Yip, E. Coomes, Z. Li, S. Mubareka, A. McGeer, N. Christie, S. Gray-Owen, A. Cochrane, J. Rini, E. Sargent, S. Kelley
University of Toronto, Canada

15:30-15:45 [O3C.06]

Development of Protein Catalyzed Capture Agents for Applications in SARS-CoV-2 Sensing

A. Winton¹, M. Idso², M. Coppock¹, J. Hopkins², Sanchao Liu¹, Bert Lai³, A. Eliassen³, Sunga

P. Chen

Nanyang Technological University, Singapore

14:45-15:00 [O4C.01]

Biosensing applications of Au/Cu foam based microfabricated gold electrode arrays

V.B. Juska, M.E. Pemble
Tyndall National Institute, University College Cork, Ireland

15:00-15:15 [O4C.02]

Quantification of stable RNAs combining the Cas13a toolkit and nanozyme-amplified readout

M. Broto¹, M. Kaminski², C. Adrianus¹, H. Kim¹, Dr. E. Gray³, J.J. Collins^{2,4}, M.M. Stevens¹
¹Imperial College London, UK. ²Massachusetts Institute of Technology, USA. ³University College London, UK. ⁴Broad Institute of MIT and Wyss Institute for Biologically Inspired Engineering Harvard, USA

15:15-15:30 [O4C.03]

Development of high-performance electrochemical biosensors for clinical analysis

F. Beck¹, C. Horn², A.J. Baeumner¹
¹University of Regensburg, Germany. ²Roche Diagnostics, Germany

15:30-15:45 [O4C.04]

Infrared Metasurfaces Augmented by Artificial Intelligence for Monitoring Dynamics between All Major Classes of Biomolecules

A. John-Herpin, D. Kavungal, L. von Mücke, H. Altug
École Polytechnique Fédérale de Lausanne (EPFL), Switzerland

Hong², J. Yee², R. Calder², K. Museth³, H. Agnew³, M. Klimas³, J. Heath²
¹US Army Research Laboratory, USA. ²Institute for Systems Biology, USA. ³Indi Molecular, Inc., USA

15:45-16:45 **Poster Session 1**

WORKSHOP - QSense QCM-D analysis in virus research – instrument portfolio and three user case examples

16:45-17:00

28th July 2021

08:30-09:30 **Poster Session 2**

WORKSHOP - Achieving ultra-high sensitivity COVID-19 detection with a MIP enabled sensor

09:30-11:00 **Plenary Session 2 & Announcement of Biosensors and Bioelectronics Prize**

Chair of Prize Committee Anthony P.F. Turner; Prize presented by Nigel Clear (Elsevier)

Session Chairs: Justin Gooding & Xian-En Zhang

09:40-10:20 [PLN03]

Designing nanomaterials for ultrasensitive biosensing

Molly Stevens

Imperial College London, UK

10:20-11:00 [PLN04]

Nanophotonics and metasurfaces for optical biosensing

Hatice Altug

Ecole Polytechnique Federal de Lausanne, Switzerland

11:00-11:15 **Networking in the Lounge**

11:15-12:45 **Stream 1D - DNA- and nucleic acid-based sensors and aptasensors**

Session Chairs: Joong Hyun Kim & Weihong Tan

11:15-11:30 [O1D.01]

DNA aptasensors for neurochemical sensing in complex media

N. Nakatsuka¹, A. Faillétaz¹, K. Vadodaria², D. Eggemann¹, F. H. Gage², D. Momotenko¹, J. Vörös¹

¹Institute for Biomedical Engineering, Switzerland. ²The Salk Institute for Biological Studies, USA

Stream 2D - Bioelectronics (including biocomputing, bio-fuel and photovoltaic cells, and electronic noses)

Session Chairs: Sotiria Psoma & Ana Cecilia Roque

11:15-11:45 [KEYNOTE 2D]

Self-assembling proteins for bio-inspired nano-electronics

J. Champavert^{1,2}, J. Hurtaud¹, C. Mathevon¹, A. Jorge-Robin¹, P. Rannou², V. Forge¹

¹CEA Grenoble - LCBM - AFFOND - UMR 5249, France. ²CNRS/CEA Grenoble/Univ. Grenoble Alpes - SyMMES - UMR 5819, France

Stream 3D - Nanobiosensors, nanomaterials & nanoanalytical systems

Session Chairs: Cian Hughes & Zdeněk Farka

11:15-11:30 [O3D.01]

A SERS based nano-mesoporous gold platform to analyse immune checkpoint proteomic heterogeneity in single cancer cells.

E. Ahmed, P Komatineni, MK Masud, MSA Hossain, AAI Sina, Y Yamauchi, M Trau

The University of Queensland, Australia

Stream 4D - Lab-on-a-chip and multiplexed sensors

Session Chairs: Sanjiv Sharma & Pedro Alpuim

11:15-11:30 [O4D.01]

A rapid all-on-paper-based biosensor toolkit for pathogens

A. Fifame Oussou-Azo, M. C. Vestergaard

Kagoshima University, Japan

¹Loughborough University, UK. ²Nazarbayev University, School of Sciences and Humanities, Chemistry Department, Kazakhstan

11:45-12:00 [O1D.03]

Fishing and pre-concentration of microRNAs by LNA-modified magnetic beads for enhancement of electrochemical detection
S. Ustuner, M. Lindsay, P. Estrela
University of Bath, UK

12:00-12:15 [O1D.04]

Portable electrode-embedded lateral flow biosensors using a pair of sandwich-type binding aptamers
J.T. Kim, C.M. Joe, S.H. Kim, M.B. Gu
Korea University, Republic of Korea

12:15-12:30 [O1D.05]

Multivalent DNA biosensor for infectious disease diagnostics with single-molecule control
D. Huang, R.A. McKendry
London Centre for Nanotechnology, UCL, UK

Fluorometric real-time bioelectrocatalytic analysis platform for P450 BM3 on 96-well indium tin oxide electrode arrays

R. Frank, H-G. Jahnke, A.A. Robitzki
Leipzig University, Germany

12:00-12:15 [O2D.02]

A bioelectronic nose combined with genetic engineering for odor detection
P. Zhu¹, L.P. Du¹, Y.L. Tian¹, Y.T. Chen¹, W. Chen¹, C.S. Wu¹, P. Wang²
¹Xi'an Jiaotong University, China. ²Zhejiang University, China

12:15-12:30 [O2D.03]

Self-powered L-lactate sensor based on BioCapacitor principle employing extremophile derived engineered cathodic enzyme
T. Satomura¹, I. Lee^{2,3}, K. Batchu^{3,4}, T. Le⁴, K. Hiraka², W. Tsugawa², S. Suye¹, K. Sode^{3,4}
¹Division of Engineering, Faculty of Engineering, University of Fukui, Japan.
²Graduate School of Engineering, Tokyo University of Agriculture and Technology, Japan.
³University of North Carolina at Chapel Hill, USA.
⁴North Carolina State University, USA

12:30-12:45 [O2D.04]

Intelligent gels for artificial olfaction
A. Roque, C. Esteves, S. Palma, I. Moreira, A. Oliveira, G. Teixeira, I. Padrão, J. Santos, Guilherme Rebordão
NOVA University of Lisbon, Portugal

plasmonic biosensor based on DNA-assembled advanced plasmonic architectures

S. Song, J. U. Lee, S. J. Sim
Korea University, Republic of Korea

11:45-12:00 [O3D.03]

Label-free and highly sensitive nanoplasmonic biosensor-based autophagy flux sensing for clinical application
Y. J. Choi, J. U. LEE, S. J. Sim
Korea University, Republic of Korea

12:00-12:15 [O3D.04]

Single particle cryo-electron microscopy observation based strategic design of direct electron transfer type enzyme and its sensor applications
K. Ito¹, J. Okuda-Shimazaki^{2,3}, W. Tsugawa¹, K. Ikebukuro¹, R. Asano¹, T. Hashimoto⁴, Y. Tanaka⁴, B. Humbel⁵, R. Kanno⁵, K. Sode^{2,3}
¹Tokyo University of Agriculture and Technology, Japan. ²University of North Carolina at Chapel Hill, USA. ³North Carolina State University, USA. ⁴Tohoku University, Japan. ⁵Okinawa Institute of Science and Technology Graduate University, Japan

11:45-12:00 [O4D.03]

AstroBio-CubeSat: A Lab-in-Space for chemiluminescence-based astrobiology experiments
D. Calabria¹, I. Trozzi¹, J.R. Brucato², A. Nascetti³, L. Iannascoli³, A. Meneghin², D. Paglialonga³, C. Pacelli⁴, G. Impresario⁴, S. Carletta⁵, L. Anfossi⁵, L. Popova⁶, A. Donati⁶, M. Balsamo⁶, D. Caputo³, G. de Cesare³, E. Marchegiani¹, M. Zangheri¹, M. Guardigli¹, M. Mirasoli¹
¹University of Bologna, Italy. ²INAF-Astrophysical Observatory of Arcetri, Italy. ³Sapienza University, Italy. ⁴ASI - Italian Space Agency (ASI), Italy. ⁵University of Torino, Italy. ⁶Kayser Italia S.r.l., Livorno, Italy

12:00-12:15 [O4D.04]

Nanowire sensor devices for real time blood cells analysis
L. Baraban^{1,2}, J. Schuett^{1,2}, D. Sandoval-Bojorquez¹, S. Mata-Oliveros¹, M. Bachmann³, G. Cuniberti²
¹Helmholtz Center Dresden Rossendorf, Germany. ²Max Bergmann Center of Biomaterials, Germany. ³Institute of RadiopharmaceuticaA, Germany

12:15-12:30 [O4D.05]

Specially-designed photonic crystal fibre, an efficient SERS-platform for next generation of liquid-biopsy needle
G. Humbert¹, D. U.S², F. Beffara^{1,2}, J. Perumal², A. Puteri Mahyuddin³, M. Choolani³, J-L. Auguste¹, S. Vedraïne¹, M. Olivo²
¹University of Limoges, France. ²Singapore Bioimaging Consortium, A*STAR, Singapore. ³Yong Loo Lin School of Medicine, Singapore

12:30-12:45 [O4D.06]

Automated system for rapid molecular detection of antibiotic resistant pathogens at the level of single colony forming units
N. Borst^{1,2}, M. Schulz¹, S. Calabrese¹, M. Specht¹, A. Gerhards³, M. Handel³, F. Hausladen⁴, K. Stock⁴, N. Paust^{1,2}, F. von Stetten^{1,2}
¹Hahn-Schickard, Germany. ²University of Freiburg, Germany. ³Hohenstein Institute GmbH, Germany. ⁴Institute for Laser Technology in Medicine and Measurement Technique, Germany

Stream 1E - DNA- and nucleic acid-based sensors and aptasensors

Session Chairs: Mihaela Gheorghiu & Yi-Kuang Yen

13:15-13:30 [O1E.01]

Gold Nanoparticle-Assisted SELEX: A Visualizing and Self-Monitoring Platform for Facile Selection of Target-Binding Aptamers
E.S. Lee, Y.P. Kim

Hanyang University, Republic of Korea

13:30-13:45 [O1E.02]

Detection of Interferon gamma using graphene/conductive polymer modified paper-based electrochemical aptasensor
Y.S. Yeh¹, Y.K. Yen²

¹Institute of Manufacturing Technology, National Taipei University of Technology, Taiwan. ²Department of Mechanical Engineering, National Taipei University of Technology, Taiwan

13:45-14:00 [O1E.03]

Nicking-assisted molecular amplification for real-time optomagnetic DNA detection

B. Tian¹, J. Fock², G.A.S. Minero¹, M.F. Hansen¹
¹Technical University of Denmark, Denmark.
²Blusense Diagnostics ApS, Denmark

14:00-14:15 [O1E.04]

Microfluidic channel integrated and gold nanoflowers-structured electrochemical aptasensor device for the real-time detection of di(2-ethylhexyl) phthalate

K.Y. Lee, N.G. Gurudatt, W. Heo, K.A. Hyun, H.I. Jung
Yonsei university, Republic of Korea

Stream 2E - Immunosensors

Session Chairs: Ryutaro Asano & Sang Jun Sim

13:15-13:30 [O2E.01]

Developing of Rotational Diffusometry for Detecting Tumor Necrosis Factor Alpha by Using Janus Particles

W.L. Chen¹, H.S. Chuang²

¹Department of Biomedical Engineering, National Cheng Kung University, Taiwan.

²Medical Device Innovation Center, National Cheng Kung University, Taiwan

13:30-13:45 [O2E.02]

Enhanced EDL-gated FET biosensors for direct protein detection in physiological sample

C.R. Wu, P.H. Chen, Y.L. Wang, C.-C. Wu
National Tsing Hua University, Taiwan

13:45-14:00 [O2E.03]

PM Q-probe: a fluorescent binding protein that converts many natural antibodies to a fluorescent biosensor

H. Ueda¹, J. Dong^{1,2}, T. Yasuda¹, M. Takahashi¹, K. Sasamoto¹, H. Oyama³, I. Morita³, H.J. Jeong⁴, T. Kitaguchi¹, N. Kobayashi³

¹Tokyo Institute of Technology, Japan.

²Weifang Medical University, China. ³Kobe Pharmaceutical University, Japan. ⁴Hongik University, Republic of Korea

14:00-14:15 [O2E.04]

Repeated measurement of cardiac marker by surface plasmon-enhanced fluorescence immunosensor for prevention of perioperative myocardial infarction

K. Tomo, K. Oishi, T. Arakawa, K. Mitsubayashi
Tokyo Medical and Dental University, Japan

14:15-14:30 [O2E.05]

Direct detection of extracellular vesicles in plasma and serum samples using a fiber optic SPR dip probe

Y. Yildizhan¹, V. Vajrala¹, E. Geurickx², F. Delport³, D. De Sutter², S. Eyckerman², J. Swinnen¹, A. Hendrix², J. Lammertyn¹, D. Spasic¹

¹KU Leuven, Belgium. ²Ghent University, Belgium. ³FOX Biosystems, Belgium

Stream 3E - Single molecule detection and antibiotic sensitivity testing

Session Chairs: Jian-An Huang & Volker Gatterdam

13:15-13:30 [O3E.01]

Detection of photoactive proteins using elongated metallic nanoparticles

K. Sulowska¹, J. Grzelak¹, Mr. M. Domagalska¹, Dr. E. Rozniecka², Prof. J. Niedziolka-Jonsson², Prof. S. Mackowski¹

¹Nicolaus Copernicus University, Poland.

²Polish Academy of Sciences, Poland

13:30-13:45 [O3E.02]

Digital detection of subfemtomolar concentrations of prostate-specific antigen by single molecule immunosensing

H.H. Gorris¹, M.J. Mickert¹, Z. Farka², U. Kostiv³, A. Hlavacek⁴, D. Horak³, P. Skladal²

¹University of Regensburg, Germany. ²CEITEC MU, Masaryk University, Czech Republic.

³Institute of Macromolecular Chemistry of the Czech Academy of Sciences, Czech Republic.

⁴Institute of Analytical Chemistry of the Czech Academy of Sciences, Czech Republic

13:45-14:00 [O4E.03]

Probing DNA hybridization kinetics in living cells using a 3D single-molecule tracking method

Y.-L. Chen, T. Yeh, S. Hong

University of Texas at Austin, USA

14:00-14:15 [O3E.04]

Bacterial navigation through uniform and non-uniform mazes

M. Nayak¹, A. Sudalaiyadum Perumal¹, V. Tokarova^{1,2}, O. Kaspar^{1,2}, Prof. D. Nicolau¹

¹McGill University, Canada. ²University of Chemical Technology, Prague, Czech Republic

14:15-14:30 [O3E.05]

Real-time monitoring of bacterial growth and antibiotic susceptibility in blood using vertical capacitance aptasensors

J.H. Song¹, S.M. Lee¹, I.H. Park², D. Lee², K.S. Lee¹, J.S. Shin², K.H. Yoo¹

¹Yonsei University, Republic of Korea. ²Yonsei University College of Medicine, Republic of Korea

Stream 4E - Lab-on-a-chip and multiplexed sensors

Session Chairs: Peng Chen & Jeong-Woo Choi

13:15-13:30 [O4E.01]

Multiplexed surface protein profiling of tumor-derived extracellular vesicles by an electrokinetic sensor

S. Cavallaro¹, V. Arapi², L. Berisha¹, P. Hååg², C. Stiller¹, K. Viktorsson², R. Lewensohn², A.E. Karlström¹, J. Linnros¹, A. Dev³

¹KTH Royal Institute of Technology, Sweden.

²Karolinska Institutet, Sweden. ³Uppsala University, The Ångström laboratory, Sweden

13:30-13:45 [O4E.02]

Electrocatalytic nitric oxide sensor for organ-on-chips

E. Tanumihardja¹, A. Paradelo Rodríguez², B. Mei², W. Olthuis¹, A. van den Berg¹

¹BIOS Lab-on-a-Chip group, University of Twente, The Netherlands. ²Photocatalytic Synthesis group, University of Twente, The Netherlands

13:45-14:00 [O4E.03]

Dielectric Fano metasurface for high-resolution imaging and biosensing

D. Conteduca¹, I. Barth¹, G. Pitruzzello¹, C.P. Reardon¹, E.R. Martins², T.F. Krauss¹

¹Photonics Group, University of York, UK. ²São Carlos School of Engineering, University of São Paulo, Brazil

14:00-14:15 [O4E.04]

A point-of-care microfluidic system for traumatic brain injury diagnosis and prognosis

A.D. Krausz, S.E. Mena, M.P. de Beer, F. Korley, M.A. Burns

University of Michigan, USA

14:15-14:30 [O4E.05]

Surface Plasmon Resonance Imaging in combination with Ganglioside Microarray and Deep Learning for Detection of Multiple Sclerosis Biomarkers in Patient Serum

A. Malinick, A. Lambert, D.I. Stuart, Q. Cheng¹

¹University of California, Riverside, USA.

14:30-15:00

Networking in the Lounge

15:00-17:00

Stream 1F - Microfluidics and immobilisation technology

Session Chairs: Michael Daniele & Evgeni Eltzov

15:00-15:15 [O1F.01]**Microfluidic model for lymphatic transport**G. Lee^{1,2}, W. Polacheck^{1,2}, F. Ligler^{1,2}¹University of North Carolina at Chapel Hill, USA. ²North Carolina State University, USA**15:15-15:30 [O1F.02]****Paper-origami device enabling low-cost and rapid microbial analysis**K. Mao, F. Tuerk, Z. Yang

Cranfield University, UK

15:30-15:45 [O1F.03]**Stimuli-responsive plasma-polymerized hydrogels for biosensing and biomedical applications**M. Levien, Amin, K.D. Weltmann, K. Fricke

Leibniz Institute for Plasma Science and Technology (INP), Germany

15:45-16:00 [O1F.04]**Microfluidic and electrical study of the antibiotic susceptibility of single bacteria**G. Pitruzello, D. Conteduca, S. Johnson, T. Fraser Krauss

University of York, UK

16:00-16:15 [O1F.05]**Innovative nanoparticle functionalization strategy designed for microfluidic single-cell cytokine secretion dynamic profiling of immune cells**M. Mistretta, Y. Bounab, B. Beitz, S. Dixneuf, C. Vedrine

BIOASTER, France

16:15-16:30 [O1F.06]**Paper-based microfluidic devices for rapid detection of microbial contamination in water**Y. Pan¹, K. Mao¹, J. Reboud¹, J. Cooper¹, Z. Yang²¹University of Glasgow, UK. ²Cranfield University, UK**16:30-16:45 [O1F.07]****Phage endolysin biointerface for electrochemical paper-based bacteria sensors****Stream 2F - Enzyme-based biosensors**

Session Chairs: Hyun Chul Yoon & John D. Brennan

15:00-15:30 [KEYNOTE 2F]**Combining light with enzyme electrochemistry for multiplexing and improved potential behaviour**M. Riedel¹, W. Parak², F. Lisdat¹¹Biosystems Technology, Institute for Applied Life Sciences, Technical University Wildau, Germany. ²Institute of Nanostructures and Solid-State Physics, University Hamburg, Germany**15:30-15:45 [O2F.01]****MXene-enabled minimally invasive polymer microneedle biosensor for continuous glucose monitoring**H. Kim¹, H. Yoon¹, M. Sharifuzzaman¹, S. Seonu¹, J. Park², J. Park¹¹Kwangwoon University, Republic of Korea. ²National NanoFab Center, Republic of Korea**15:45-16:00 [O2F.02]****Non-invasive early detection of calpain 2-enriched non-small cell lung cancer using a human serum albumin-based calpain-2 nanosensor**S-H. Kwon¹, X. Xu², Y.I. Park³, J.H. Kim⁴, J.H. Choi⁵, R. Lee⁶¹Korea Basic Science Institute, Seoul, Republic of Korea. ²University of Technology Sydney, Australia. ³Chonnam National University, Republic of Korea. ⁴Yonsei Wonju Hospital, Republic of Korea. ⁵Kangwon National University, Republic of Korea. ⁶Kumamoto University, Japan**16:00-16:15 [O2F.03]****2D bio-fluorometric gas-imaging system (sniff-cam) for transdermal ethanol vapor based on enzymatic recognition**K. Iitani, K. Toma, T. Arakawa, K. Mitsubayashi

Institute of Biomaterials and Bioengineering, Tokyo Medical and Dental University (TMDU), Japan

16:15-16:30 [O2F.04]**Wireless, battery-less RFID tag design pluggable to direct electron transfer reaction of glucose dehydrogenase from Ewingella Americana****Stream 3F - Immunosensors**

Session Chairs: Kazunori Ikebukuro & Ozcan Aydogan

15:00-15:15 [O3F.01]**Co-NTA chemistry for improved surface regeneration and oriented His6-tagged bioreceptor coupling on a fiber optic SPR biosensor**J.H. Qu¹, F. Delport², M. Sillen¹, N. Geukens¹, P. Declerck¹, J. Lammertyn¹, D. Spasic¹¹KU Leuven, Belgium. ²Ox Biosystems, Belgium**15:15-15:30 [O3F.02]****Surface functionalization strategies for the development of a nanobody-based pesticide biosensor**A. Debela¹, M. Pucci^{1,2}, I. Bazin¹¹LGEI, IMT Mines Ales, University of Montpellier, Ales, France. ²C2MA, IMT Mines Ales, Univ Montpellier, Ales, France**15:30-15:45 [O3F.03]****Disposable immunoelectrochemical cell based on the integration of mass-produced pins into microcentrifuge tubes for differential diagnosis of stroke**A. González-López¹, C. García-CaboFernández², L. Benavente Fernández², S. Calleja Puerta², L. Lobo¹, B. Fernández¹, E. Costa-Rama¹, R. Pereiro¹, M.T. Fernández-Abedul¹¹Department of Physical and Analytical Chemistry, University of Oviedo, Spain.²Department of Neurology, Hospital Universitario Central de Asturias (HUCA), Spain**15:45-16:00 [O3F.04]****Electrochemical Immitance Spectroscopy and Multivariate Data analysis for Detection of Therapeutic Drugs**S. Phal, P. Geladi, B. Sethson, S. Tesfalidet

Umeå University, Sweden

16:00-16:15 [O3F.05]**An open-microcavity photonic-crystal biosensor for sensitive label-free bioassays**J.Y. Ye¹, K. Baryeh¹, C. Christenson¹, M. Cadenal¹, F. DeLuna¹, M. Attia¹, S. Ahadian², R. Nasiri², M. R. Dokmeci², M. Goudie²¹The University of Texas at San Antonio, USA. ²University of California, USA**16:15-16:30 [O3F.06]****Stream 4F - Nanobiosensors, nanomaterials & nanoanalytical systems**

Session Chairs: Nayoung Kim & Stefano Mariani

15:00-15:15 [O4F.01]**Layer-by-layer nano-assembly for label-free biosensing with nanostructured porous silicon interferometers**S. Mariani¹, V. Robbiano¹, L. Strambini², A. Debrassi³, G. Egri³, L. Dähne³, G. Barillaro^{1,2}¹Dipartimento di Ingegneria dell'Informazione, Università di Pisa, Italy. ²Istituto di Elettronica e di Ingegneria dell'Informazione e delle Telecomunicazioni, Consiglio Nazionale delle Ricerche, Pisa, Italy. ³Surflay Nanotec GmbH, Berlin, Germany**15:15-15:30 [O4F.02]****Common-path interferometric photonic biosensor with wide dynamic range and ultra-low limit of detection for small proteins**I. Barth, D. Conteduca, T.F. Krauss

University of York, UK

15:30-15:45 [O4F.03]**Low-cost and portable photonic immunosensor based on guided mode resonance**A. Drayton, C. Reardon, T. F. Krauss

University of York, UK

15:45-16:00 [O4F.04]**Surface-enhanced Raman scattering artificial-nose: functionalised plasmonic surfaces for high dimensionality analyses**N. Kim¹, M.R. Thomas¹, M.S. Bergholt¹, I.J. Pence¹, H. Seong¹, P. Charchar², N. Todorova², A. Nagelkerke¹, I. Yarovsky¹, M.M. Stevens¹¹Imperial College London, UK. ²MIT University, Australia**16:00-16:15 [O4F.05]****Photon-upconversion nanoparticles as a background-free label in immunosensing and bioimaging**Z. Farka¹, M.J. Mickert², A. Hlavacek³, H.H. Gorris², P. Skladal¹¹Masaryk University, Czech Republic. ²University of Regensburg, Germany. ³Czech Academy of Sciences, Czech Republic

G. Le Brun¹, A. Leprince², O. Crahay¹, M.-C. Eloy³, K. Glinel⁴, J. Mahillon², J.-P. Raskin¹
¹Institute of Information and Communication Technologies, Electronics and Applied Mathematics, Université catholique de Louvain (UCLouvain), Belgium. ²Laboratory of Food and Environmental Microbiology, Earth and Life Institute, Université catholique de Louvain (UCLouvain), Belgium. ³Louvain Institute of Biomolecular Science and Technology, Université catholique de Louvain (UCLouvain), Belgium. ⁴Institute of Condensed Matter and Nanosciences (Bio and Soft Matter), Université catholique de Louvain (UCLouvain), Belgium

A. Shafaat^{1,2}, R. Zalneravicius³, D. Ratautas^{4,5}, M. Dagys⁴, R. Meškys⁴, R. Rutkiene⁴, J.F. Gonzalez^{1,2}, J. Sotres^{1,2}, T. Ruzgas^{1,2}
¹Faculty of Health and Society, Malmö University, Malmö, Sweden. ²Biofilms - Research Center for Biointerfaces, Malmö University, Malmö, Sweden. ³State Research Institute, Centre for Physical Sciences and Technology, Vilnius, Lithuania. ⁴Vilnius University, Vilnius, Lithuania. ⁵Vilnius Gediminas Technical University, Vilnius, Lithuania

16:30-16:45 [O2F.05]
A flower-like paper-based origami biosensor for pesticide detection in gas phase
F. Arduini^{1,2}, V. Caratelli¹, G. Fegatelli¹, G. Ciampaglia¹, G. Palleschi¹, D. Moscone¹
¹Tor Vergata University, Italy. ²SENSE4MED, Italy

16:45-17:00 [O2F.06]
PQQ-Glucose Dehydrogenase-Calmodulin Chimera Enzyme: Different Triggered Activation for Multipurpose Biosensors
P. Bollella^{1,2}, A. Melman², Z. Guo³, S. Edwardraja⁴, W. Johnston³, K. A. Alexandrov³, E. y Katz²
¹Dipartimento di Chimica, Università degli Studi di Bari "Aldo Moro" Italy. ²Department of Chemistry and Biomolecular Science, Clarkson University, Potsdam USA. ³CSIRO-QUT Synthetic Biology Alliance, Queensland University of Technology Australia. ⁴Australian Institute for Bioengineering and Nanotechnology, The University of Queensland, Australia

Traumatic brain injury (TBI) biomarker immuno-sensor for the one-step rapid detection of ubiquitin C-terminal hydrolase L1 (UCH-L1)
J. Lee¹, H. Hirano², W. Tsugawa², K. Sode¹
¹University of North Carolina at Chapel Hill, USA. ²Tokyo University of Agriculture and Technology, Japan

16:30-16:45 [O3F.07]
Detection of Biofuel Contaminants Using Electrochemical Sensing
M. Brothers^{1,2}, J. Harris², M. St. Lawrence^{3,4}, D. Riddle², J. Hollomon^{1,5}, C. Mauzy², O. Ruiz³, S. Kim²
¹UES Inc, USA. ²711th Human Performance Wing, AFRL, USA. ³Aerospace Systems, AFRL, USA. ⁴UDRI, USA. ⁵Materials and Manufacturing Directorate, AFRL, USA

16:15-16:30 [O4F.06]
Zwitterion-embedded molecular imprinted mesoporous organosilica: extraordinary sensitivity and selectivity to small molecules
Y. Kim, J. Lee
KIST Europe, Germany

16:30-16:45 [O4F.07]
Controlling Bio-interfaces at Ultra-High Spatial Resolutions for High-Performance Biosensing
R. Rastogi, M. Beggiano, S. Krishnamoorthy
Luxembourg Institute of Science and Technology (LIST), Luxembourg

16:45-17:00 [O4F.08]
Spin-enhanced fluorescent nanodiamond biosensing for ultrasensitive lateral flow diagnostics
B.S. Miller, R.A. McKendry
University College London, UK

17:00-18:00 **Poster Session 3**

29th July 2021

08:00-09:00 **Poster Session 4**

09:00-10:30
Stream 1G - CRISPR-based Biosensors
Session Chairs: Abu Ali Ibn Sina & Moon Il Kim
09:00-09:30 [KEYNOTE 1G]
CRISPR-powered electrochemical biosensor for multiplexed amplification-free miRNA diagnostics
R. Bruch^{1,2}, J. Baaske³, S. Madlener⁴, W. Weber³, G.A. Urban^{1,5}, C. Dincer^{1,2}
¹University of Freiburg, Germany. ²Freiburg Center for Interactive Materials and

Stream 2G - Organism-, whole cell- and organ-based biosensors
Session Chairs: Justin Gooding & Andrew Kralicek
09:00-09:15 [O2G.01]
CRISPR/Cas12a-powered ultrasensitive immunosensing for the detection of single microorganisms
E. Deng, Y. Li, E. Goldys
University of New South Wales, Australia

Stream 3G - Theranostics, implantable and ingestible sensors
Session Chairs: Lingyin Meng & Hisakage Funabashi
09:00-09:30 [KEYNOTE 3G]
Advanced nanobiosensing technology for stem cell research
K.B. Lee
Rutgers University, USA
09:30-09:45 [O3G.01]

Stream 4G - Smartphone diagnostics, wearable biosensors and mobile health
Session Chairs: Guozhen Liu & Joost Nelis
09:00-09:15 [O4G.01]
Wearable potentiostat for smartphone-based sweat analysis
G. Rosati¹, M.A. Aroca^{1,2}, Q. Yang¹, V. Abarintos¹, J. Osma², A. Merkoçi¹

Bioinspired Technologies – FIT, Germany.
3Signalling Research Centres BIOSs and CIBSS, Germany. 4Medical University of Vienna, Austria. 5Freiburg Materials Research Center – FMF, Germany

09:30-09:45 [O1G.01]

CRISPR/cas12a and aptamer associated universal biosensing platform for ultra-sensitive analytes detection

Y. Li^{1,2}, F. Deng^{1,2}, L. Qiao^{1,2}, G. Liu^{1,2}

¹University of New South Wales, Australia.

²Australian Centre for NanoMedicine, Australia

09:45-10:00 [O1G.02]

A novel impedimetric CRISPR-dCas9 biosensor for detection of PIK3CA mutations in breast cancer patients by monitoring circulating tumor DNA as liquid biopsy marker in blood

Onur Uygun¹, L. Yeniay², F. Girgin Sagin³

¹Kafkas University Faculty of Medicine Medical Biochemistry Department Bornova, Turkey.

²Ege University Faculty of Medicine

Department of Surgery of General

Bornova Turkey. ³Ege University Faculty of

Medicine Medical Biochemistry Department

Bornova, Turkey

10:00-10:15 [O1G.03]

CRISPR-Cas9 enabled digital nucleic acid detection

S. Safdar¹, S. Driesen¹, K. Ven¹, S. Eyckerman^{2,3},

J. Lammertyn¹, D. Spasic¹

¹KU Leuven, Belgium. ²Ghent University,

Belgium. ³VIB, Belgium

09:15-09:30 [O2G.02]

Olfactory bulb neuronal network chip-based biosensor for long-term detection of dysosmia model in Alzheimer's disease at early-stage

M.X. Liu, F. Gao, K.Q. Gao, C.J. He, L.J.

Zhuang, P. Wang

Zhejiang University, China

09:30-09:45 [O3G.03]

A novel olfactory biosensor based on 3D organoid-on-a-chip

N. Jiang, L.J. Zhuang, M.X. Liu, P. Wang

Zhejiang University, China

09:45-10:00 [O2G.04]

Microengineered Physiological Biomimicry: Human Lung-on-a-chip and the Health Applications

G.Y. Chen^{1,2}, J.W. Yang^{3,1}, K.C. Lin^{3,1}, S.J.

Cheng^{3,1}, K.Y. Hsieh^{3,1}, S.L. Chen^{3,1}, C.Y. Chen^{3,1}

¹Institute of Biomedical Engineering, College

of Electrical and Computer Engineering,

National Chiao Tung University, Taiwan.

²Department of Biological Science and

Technology, National Chiao Tung University,

Taiwan. ³Department of Electrical and

Computer Engineering, College of Electrical

and Computer Engineering, National Chiao

Tung University, Taiwan

10:00-10:15 [O2G.05]

Electrochemical biosensors for detection of bacterial virulence molecules: towards enhanced infection management

F. AlZahra'a Alatraktchi

Roskilde University, Denmark

10:15-10:30 [O2G.06]

Sensing an opportunity: insect odorant receptors are novel sensing elements for the development of next generation chemical sensors

A. Kralicek¹, R. Khadka¹, N. Aydemir¹, J.

Cheema^{1,2}, C. Hamiaux¹, D. Colbert¹, N.

Rorsman³, D. Lunn³, J. Travas-Sejdic^{2,4}, C.

Carraher¹

¹New Zealand Institute for Plant & Food

Research Ltd, New Zealand. ²University of

Auckland, New Zealand. ³OxSyBio, UK.

⁴MacDiarmid Institute for Advanced Materials

and Nanotechnology, New Zealand

Adaptive in vivo device for theranostics of inflammation: real-time monitoring of cytokines and drug delivery

G.Z. Liu^{1,2}, C.M. Cao², R.H. Jin³, Prof. X. Chen³

¹University of New South Wales, Australia.

²Central China Normal University, China. ³Xian

Jiaotong University, China

09:45-10:00 [O3G.02]

Electrochemistry-based ingestible sensing system for monitoring small molecular targets of alimentary canal

C. Cheng¹, L. Zhou², Z. An¹, G. Xu¹, Y. Lu¹, Q.

Liu¹

¹College of Biomedical Engineering &

Instrument Scien, Zhejiang University, China.

²Department of Chemistry, Zhejiang University,

China

10:00-10:15 [O3G.03]

Microneedle platforms for theranostic applications

N. Rajendran¹, O. Howells¹, C. Bolton², Ms. S.

Asl Amiri¹, Dr. G. Blayney¹, O. Guy¹, C. Eng³,

H. Ashraf², S. Sharma¹

¹Swansea University, UK. ²SPTS Technologies,

UK. ³BioMEMS Technologies Ltd, UK

10:15-10:30 [O3G.04]

Pain-free, micron-sized electrochemical continuous glucose monitoring based on open circuit potential measurement using a direct electron transfer type enzyme

I. Lee¹, N. Loew², J.O. Shimazaki³, W.

Tsugawa⁴, K. Ikebukuro⁴, J.E. Dick¹, K. Sode³

¹University of North Carolina at Chapel Hill,

USA. ²Tokyo University of Science, USA.

³University of North Carolina at Chapel Hill and

North Carolina State University, USA. ⁴Tokyo

University of Agriculture and Technology,

Japan

¹Catalan Institute of Nanoscience and Nanotechnology, Spain. ²Universidad de los Andes, Colombia

09:15-09:30 [O4G.02]

Development of a portable smartphone-based electrochemical biosensor for on-site detection of aflatoxins in food samples

S. Jafari^{1,2}, D. Migliorelli¹, L. Burr¹M. McKeague¹,

S. Generelli¹, S.J. Sturla²

¹CSEM SA, Switzerland. ²ETHZ, Switzerland

09:30-09:45 [O4G.03]

A hybrid microfluidic platform for energy harvesting based on piezoelectricity and reverse electrowetting for wearable biosensors

I. Sopian¹, A. Tourlidakis², S.D. Psoma¹

¹The Open University, UK. ²University of Western

Macedonia, Greece

09:45-10:00 [O4G.04]

A printed potentiometric wearable sensor for sodium, potassium and pH monitoring in sweat

V. Mazaracchio¹, S. Nappi¹, L. Fiore¹, G.

Marrocco¹, F. Arduini^{1,2}

¹University of Rome Tor Vergata, Italy.

²Sense4Med srl, Italy

10:00-10:15 [O4G.05]

Augmented reality apps for colorimetric detection with paper-based biosensors

R. de la Rica, S. Russell, A. Alba-Patiño, C.

Adrover

Balearic Islands Health Research Institute,

Spain

10:30-10:45

Networking in the Lounge

10:45-12:05

Plenary Session 3

Session Chairs: Arben Merkoçi & Frances Ligler

10:45-11:25 [PLN05]

Ultrasensitive label-free nanophotonic biosensors for point-of-care diagnosis

Laura M. Lechuga

Catalan Institute of Nanoscience and Nanotechnology, Spain

11:25-12:05 [PLN06]

Microengineered devices for advancing preclinical and clinical research

Nancy Allbritton

University of Washington, USA

12:05-12:30

Networking in the Lounge

12:30-14:00

Stream 1H - DNA- and nucleic acid-based sensors and aptasensors

Session Chairs: Benjamin Miller & Mark Platt

12:30-13:00 [KEYNOTE 1H]

Aptamers for molecular medicine

W. Tan

Hunan University, China. University of Florida, USA

13:00-13:15 [O1H.01]

Detection of circulating breast cancer cells at low concentration using optical fibers with nanoplasmonic amplification

M. Loyez¹, E. Hassan², M. Lobry¹, F. Liu², C. Caucheteur¹, R. Wattiez¹, M. DeRosa², W. Willmore², J. Albert²

¹University of Mons, Belgium. ²Carleton University, Canada

13:15-13:30 [O1H.02]

Universal electrochemical approach for real-time DNA detection based on mediator displacement loop mediated isothermal amplification (LAMP)

Z. Bagherian¹, M. Trotter², L. Becherer^{1,2}, N. Borst^{1,2}, F. von Stetten^{1,2}

¹IMTEK, University of Freiburg, Germany. ²Hahn-Schickard, Germany

13:30-13:45 [O1H.03]

A novel and easily adaptable biochip format for the characterization of binding kinetics between RNA and proteins.

R.A. Higuera^{1,2}, L. Sperotto^{3,4}, M. Aziz^{3,4}, M. Sattler^{3,4}, W. Kaiser²

¹Physics Department, Technical University of Munich, Germany. ²Dynamic Biosensors GmbH, Germany. ³Institute of Structural Biology, Helmholtz Zentrum München, Germany. ⁴Biomolecular NMR, Bayerisches NMR Zentrum and Center for Integrated

Stream 2H - Immunosensors

Session Chairs: Laura Lechuga & Jing Yong Ye

12:30-12:45 [O2H.01]

Nanoparticles enhanced DigITOF for detection of E. coli directly from urine

S. KC¹, T. Venema², R. Parchen², L.J.M. Coin¹, M.A.T. Blaskovich¹

¹University of Queensland, Australia. ²BiosparQ BV, The Netherlands

12:45-13:00 [O2H.02]

Washing-free detection of cortisol in human serum using a displacement immunosensor

P. Nandhakumar, H. Yang

Pusan National University, Republic of Korea

13:00-13:15 [O2H.03]

Wash-free immunosensing on a smartphone by controlling the movement of retroreflective Janus microparticle.

K.R. Kim, H.J. Chun, K.W. Lee, K.Y. Jeong, J-H. Kim, H.C. Yoon

Ajou University, Republic of Korea

13:15-13:30 [O2H.04]

Convenient and universal fabrication of high affinity bispecific bivalent antibody-enzyme complex as sensing element using two Catcher/Tag systems

H. Kimura¹, R. Asano¹, W. Tsugawa¹, K. Ikebukuro¹, K. Sode²

¹Tokyo University of Agriculture and Technology, Japan. ²Joint Department of Biomedical Engineering, University of North Carolina at Chapel Hill, North Carolina State University, USA

13:30-13:45 [O2H.05]

SARS-CoV-2 Humanized Antibody Detection with Immunofluorescent Paper-based Device

Stream 3H - Organism-, whole cell- and organ-based biosensors/ DNA- and nucleic acid-based sensors and aptasensors

Session Chairs: Giulio Rosati & Andrew Kralicek

12:30-12:45 [O3H.01]

Novel multilayer ultra-high-dense microelectrode arrays for high resolution bioelectronic analysis of living cells

H-G. Jahnke, S. Schmidt, R. Azendorf, A.A. Robitzki

Leipzig University, Germany

12:45-13:00 [O3H.02]

On-sensor cryopreservation for cell-based lab-on-a-chip systems

D. Özsoylu^{1,2}, T. Isik^{3,4}, M.M. Demir⁴, M.J. Schöning¹, T. Wagner¹

¹Aachen University of Applied Sciences, Germany. ²Dokuz Eylül University, Turkey. ³University of Bristol, UK. ⁴Izmir Institute of Technology, Turkey

13:00-13:15 [O3H.03]

Label-free bioelectronic monitoring of virus-induced alterations in functional neuronal networks

A.A. Robitzki¹, V. teKamp², C. Prönncke¹, S. Schmidt¹, H-G. Jahnke¹, S. Finke²

¹Leipzig University, Germany. ²Friedrich-Loeffler-Institute, Germany

13:15-13:30 [O3H.04]

Programmable rolling circle amplification-based DNA nanoflowers for intracellular ratio-metric aptasensing

N. Kim¹, E. Kim^{1,2}, H. Kim¹, M.R. Thomas¹, M.M. Stevens¹

¹Imperial College London, UK. ²Incheon National University, Republic of Korea

Stream 4H - Smartphone diagnostics, wearable biosensors and mobile health

Session Chairs: Conor Hogan & Junko Okuda-Shimazak

12:30-12:45 [O4H.01]

An internet of things-based intensity and time-resolved fluorescence reader for point-of-care testing: application to malaria diagnosis

O. Alonso¹, N. Franch¹, J. Canals¹, K. Arias-Alpizar², E. de la Serna², E. Baldrich^{2,3}, A. Diéguez¹

¹University of Barcelona, Spain. ²Diagnostic Nanotools Group, Molecular Biology and Biochemistry Research Center for Nanomedicine (Cibim-Nanomedicine). Vall d'Hebron Hospital Research Institute (VHIR), Spain. ³CIBER de Bioingeniería, Biomateriales y Nanomedicina (CIBER-BBN), Spain

12:45-13:00 [O4H.02]

Towards a rapid and dual smartphone-read diagnostic test for Zaire and Sudan ebolaviruses

D. Cherkaoui¹, P. Brangel¹, B.S. Miller¹, V. Turbe¹, Y. Chen², M.M. Stevens², R.A. McKendry¹

¹London Centre for Nanotechnology and Division of Medicine, University College London, UK. ²Department of Materials, Department of Bioengineering and Institute for Biomedical Engineering, Imperial College London, UK

13:00-13:15 [O4H.03]

An automated and mobile magnetoresistive biosensor system for early hepatocellular carcinoma diagnosis

C. Yao, E. Ng, S.X. Wang

Stanford University, USA

Protein Science Munich at Chemistry Department, Technical University of Munich, Germany

13:45-14:00 [O1H.04]

Highly complex, surface-bound nucleic acid array libraries for protein detection, enzymatic assays and molecular encryption

J. Lietard¹, E. Schaudy¹, M. Somoza^{1,2}

¹University of Vienna, Austria. ²Technical University of Munich, Germany

S. Kasetsirikul^{1,2}, M. Umer¹, N. Soda^{1,3}, K. R. Sreejith¹, M. J. A. Shiddiky^{1,3}, N. T. Nguyen¹
¹Queensland Micro and Nanotechnology Centre, Griffith University, Australia. ²School of Engineering and Built Environment, Griffith University, Australia. ³School of Environment and Science, Griffith University, Australia

13:30-13:45 [O3H.05]

Development of a continuous insulin sensor based on faradaic electrochemical impedance spectroscopy and redox probe-modified insulin binding aptamer

M. Khanwalker¹, J. Lee¹, J.T. LaBelle², C.B. Cook³, M.R. Caplan⁴, B. Morrow², C. Beck², K. Sode¹

¹University of North Carolina Chapel Hill, USA.

²Grand Canyon University, USA. ³Mayo Clinic School of Medicine, USA. ⁴Phoenix Country Day School, USA

13:45-14:00 [O3H.06]

G-quadruplex based SWCNTs Nanobiosensor System for lead ions (Pb²⁺) Detection in Water Samples

N. Yildirim-Tirgil^{1,2}, H. Cho¹, H. Lee¹, A. Busnaina¹, A.Z. Gu^{1,3}

¹Northeastern University, USA. ²Ankara Yildirim Beyazit University, Turkey. ³Cornell University, USA

13:15-13:30 [O4H.04]

Integrated and miniaturized optical and electrochemical system for noninvasive monitoring of tissue oxygenation and metabolites in sweat

M. Yokus¹, T. Songkakul¹, A. Bozkurt¹, M. Daniele^{1,2}

¹North Carolina State University, USA.

²University of North Carolina at Chapel Hill, USA

13:30-13:45 [O4H.05]

Perspective on optical biosensors: Evolutionary and current quantum leaps

F.S. Ligler

NC University and UNC--Chapel Hill, USA

14:00-15:00

Poster Session 5

15:00-16:30

Stream 11 - DNA- and nucleic acid-based sensors and aptasensors
Session Chairs: Dan Nicolau & Byung Chan Kim

15:00-15:30 [KEYNOTE 11]

A paper-based point-of-care sensing platform utilizing functional nucleic acids

M. Ali, M. Liu, C. Liu, Y. Li, J. D. Brennan
McMaster University, Canada

15:30-15:45 [O11.01]

Ultra-simple microfluidic devices for quantification of unbound and total analyte concentrations in biofluids using electrochemical aptamer based sensors

Z. Watkins, M. Friedel, J. Heikenfeld
University of Cincinnati, USA

15:45-16:00 [O11.02]

Novel microneedle approach for coupling interstitial fluid analytes to ex-vivo affinity biosensors

M. Friedel, Z. Watkins, A. Karajic, J. Heikenfeld
Novel Devices Laboratory, University of Cincinnati, Cincinnati, Ohio, USA

16:00-16:15 [O11.03]

Stream 21 - Printed biosensors and microfabrication

Session Chairs: Ki-Bum Lee & Maria Smolander

15:00-15:15 [O21.01]

Biosensor solutions compatible with sustainable development

M. Smolander, L. Hakola, M. Vilkman, K. Kiri, T. Alajoki, T. Kololuoma, H. Sandberg
VTT Technical Research Centre of Finland, Finland

15:15-15:30 [O21.02]

Chemical surface patterning by maskless Atmospheric-Pressure Plasma Printing for biosensing applications

L. Barillas¹, E. Makhneva¹, K.D. Weltmann¹, H. Seitz², K. Fricke¹
¹Leibniz Institute for Plasma Science and Technology (INP), Germany. ²University of Rostock, Germany

15:30-15:45 [O21.03]

Innovative stretchable screen-printed electrodes produced from green and non-petrol carbon source

D. Zappi^{1,2}, G. Varani², A. Antonacci¹, V. Scognamiglio¹, M.T. Giardi^{1,2}

Stream 31 - Commercial biosensors, manufacturing and markets/Printed Biosensors

Session Chairs: Martin Peacock & Vince Siu

15:00-15:15 [O31.01]

Current status and future perspectives of continuous glucose monitoring systems - the flagship technologies in biosensor

K. Sode
Joint Department of Biomedical Engineering, University of North Carolina at Chapel Hill and North Carolina State University, USA

15:15-15:30 [O31.02]

Raspberry Pi based, UV-fluorescent spectrophotometer device for the analysis of oil types obtained from oil spills

M. Bills¹, A. Loh², K. Sosnowski¹, B. Nguyen¹, U-H. Yim², J-Y. Yoon¹

¹University of Arizona, USA. ²Korea Institute of Ocean Science & Technology, Republic of Korea

15:30-15:45 [O31.03]

Upscaling of microfluidic biosensor manufacturing by imprinting, printing and lamination processes on polymer foils

Stream 41 - Enzyme-based biosensors

Session Chairs: Fred Lisdat & Paolo Bollella

15:00-15:15 [O41.01]

Ultrasensitive particle-based detection of glyphosate and other small molecules using an interferometric optical readout and biomimetic interaction principles

D. Rettke¹, J. Döring², S. Martin¹, T. Venus¹, I. Estrela-Lopis¹, S. Schmidt³, K. Ostermann², T. Pompe¹

¹Universitaet Leipzig, Germany. ²Technische Universitaet Dresden, Germany. ³Heinrich-Heine-Universitaet Düsseldorf, Germany

15:15-15:30 [O41.02]

Origami paper-based sensor for precision medicine in Alzheimer disease

V. Caratelli¹, A. Ciampaglia¹, J. Guiducci¹, D. Moscone¹, F. Arduini^{1,2}

¹University of Rome Tor Vergata, Italy. ²Sense4Med srl, Italy

15:30-15:45 [O41.03]

Bio-Nano-PEDOT interface: enabling conducting polymer-based biosensors via functional groups and nanostructures

L. Meng¹, A.P.F. Anthony², W.C. Mak¹

Sequence-Independent Assay for HIV Viral Load Quantitation

O. El Merhebi, Y. Gerasimova, K. Chumbimuni-Torres

University of Central Florida, USA

16:15-16:30 [O11.04]

Aptasensor for Homoserine Lactone Detection based on Selectively Binding Induced Impedance Changes Using Nano-Porous Anodized Alumina Membrane as Sensing Platform

N. Jiang, S. Banerjee, P. Shrotriya, M. Nilsen-Hamilton

Iowa State University, USA

¹Istituto di Cristallografia, CNR, Italy. ²Biosensor Srl, Formello, RM, Italy

15:45-16:00 [O21.04]

Consumer or research-grade? A comparison of inkjet technologies for biosensing applications

G. Rosati¹, E. Nguyen¹, L. Zhao¹, Q. Yang¹, M. Urban², P. Fornasiero², A. Merkoçi¹

¹Catalan Institute of Nanoscience and Nanotechnology, Spain. ²University of Trieste, Italy

16:00-16:15 [O21.05]

Biosensor development for infectious disease: new technologies for measuring host biomarkers of infection and for choosing the most suitable antibiotic.

D.K. Corrigan

University of Strathclyde, UK

16:15-16:30 [O21.06]

Bioinspired microfabrication of organic, flexible, and degradable biosensors

M. Xu, S. Pradhan, V.K. Yadavalli
Virginia Commonwealth University, USA

M. Smolka¹, P. Tören¹, A. Haase¹, D.Nees¹, St. Ruttloff¹, L. Kuna¹, C. Schaudel¹, M. Rumpfer¹, B. Hierschläger², I. Katzmayer², M. Sonnleitner², M.W. Thesen³, M. Lohse³, W. Weigel⁴, M. Strbac⁵, N. Okulova⁶, J. Kafka⁶, J. Hesse¹, S. Resch⁷, A. Falk⁷

¹JOANNEUM RESEARCH, Austria. ²GENSPEED Biotech GmbH, Austria. ³micro resist technology GmbH, Germany. ⁴Scienion AG, Germany. ⁵TECNALIA Research & Innovation, Spain. ⁶Inmold AS, Denmark. ⁷BioNanoNet Forschungsgesellschaft mbH, Austria

15:45-16:00 [O31.04]

An immunomagnetic chronoamperometric assay with nanomaterial modified screen-printed electrodes for point-of-site detection of marine shellfish toxin in clams

J.L.D. Nelis¹, D. Migliorelli², S. Jafari², S. Generelli², J. Lou-Franco¹, J.P. Salvador^{3,4}, M.P. Marco^{3,4}, C. Cao¹, C.T. Elliott¹, K. Campbell¹

¹Queen's University Belfast, UK. ²The Swiss Center for Electronics and Microtechnology (CSEM), Switzerland. ³The Spanish Council for Scientific Research (CSIC), Spain. ⁴CIBER de Bioingeniería, Biomateriales y Nanomedicina (CIBER-BBN), Spain

¹Linköping University, Sweden. ²Cranfield University, UK

15:45-16:00 [O41.04]

Quasi-direct electron transfer type sensing system for glycosylated proteins based on engineered fructosyl peptide oxidase

M. Hatada¹, S. Saito², W. Tsugawa², K. Ikebukuro², K. Sode¹

¹University of North Carolina at Chapel Hill, North Carolina State University, USA. ²Tokyo University of Agriculture and Technology, Japan

16:00-16:15 [O41.05]

The long term continuous glucose monitoring system employing enzyme sensor with super-stabilized engineered DET type FADGDH

J. Okuda-Shimazaki¹, H. Yoshida², P. Tanikella¹, Ms. I. Lee^{1,3}, K. Mori⁴, K. Sode¹

¹University of North Carolina at Chapel Hill and North Carolina State University, USA. ²Kagawa University, Japan. ³Tokyo University of Agriculture and Technology, Japan. ⁴Ultizyme International, Ltd, Japan

16:15-16:30 [O41.06]

Design of an electroactive glucose binding protein-based biosensor through

incorporation of non-natural amino acids

E. Zeynaloo^{1,2}, E. M. Zahran¹, Y. Yang^{2,3}, E. Dikici^{2,3}, T. Head^{2,3}, L. G. Bachas¹, S. Daunert^{2,3}

¹Department of Chemistry, University of Miami, USA. ²Department of Biochemistry and Molecular Biology, Miller School of Medicine, University of Miami, USA. ³Dr. JT Macdonald Foundation Biomedical Nanotechnology Institute, University of Miami, USA

16:30-16:45

Biosensors 2021 Post Prize Awards
Chair: Anthony P.F. Turner

16:45-17:15

Closing session and announcement of Biosensors 2023
Man Bock Gu and Arben Merkoçi