

## COST Action TD 1003 meeting, University of Catania

April 28-30, 2014

### Integrated approaches for biomolecular detection: nanostructures, biosensors and

#### lab-on-chip devices

28 April

13:30	<b>Registration</b>
14:50	<b>Workshop opening</b>

	Session: Integrated devices and microfluidics Chair: <b>Fabio Beltram</b>
15:15-15:50 1	<b>Invited</b> Andrew J. deMello SPLENDID ISOLATION: USING PICOLITER DROPLETS IN CHEMISTRY AND BIOLOGY ETH Zürich, Zurich, Switzerland
15:50-16:10 2	C. Pöhlmann <sup>1</sup> , C. Reinemann <sup>2</sup> , B. Strehlitz <sup>2</sup> , T. Elßner <sup>1</sup> RAPID AND SENSITIVE IDENTIFICATION OF BIOTHREAT AGENTS USING ELECTROCHEMICAL BIOCHIPS AND A PORTABLE DETECTION PLATFORM <sup>1</sup> Bruker Daltonik GmbH, Leipzig, Germany <sup>2</sup> Helmholtz Centre for Environmental Research – UFZ, Leipzig, Germany
16:10-16:30 3	D. Marchal, B. Limoges REAL-TIME ELECTROCHEMICAL MONITORING OF DNA AMPLIFICATION REACTIONS Université Paris Diderot - UMR CNRS 7591, Paris Cedex 13, France
16:30-16:50 4	U. Zywiets, C. Reinhardt, A. B. Evlyukhin, B. N. Chichkov LASER PRINTING OF SILICON NANOPARTICLES WITH OPTICAL MAGNETIC RESPONSE FOR SENSOR APPLICATION Laser Zentrum Hannover e.V., Hannover, Germany
16:50-17:10	Break
	Session: Integrated devices and microfluidics; Biosensing Chair: <b>Jakub Dostalek</b>
17:10-17:35 5	<b>Invited</b> Luigi G. Occhipinti HETEROGENEOUS INTEGRATION TECHNOLOGIES FOR SMART SYSTEMS IN HEALTHCARE University of Cambridge, Cambridge, UK
17:35-17:55 6	A. Candiani, A. Cucinotta, S. Selleri, A. Manicardi, R. Corradini DNA BIOSENSORS IMPLEMENTED ON PNA-FUNCTIONALIZED MICROSTRUCTURED OPTICAL FIBERS BRAGG GRATINGS University of Parma, Parma
17:55-18:15 7	V. Melissinaki <sup>1,2</sup> , M. Farsari <sup>1</sup> , S. Pissadakis <sup>1</sup> FABRY-PEROT VAPOUR MICROSENSOR ONTO FIBER ENDFACE FABRICATED BY MULTIPHOTON POLYMERIZATION TECHNIQUE <sup>1</sup> Foundation for Research and Technology-Hellas (FORTH), Heraklion, Crete, Greece <sup>2</sup> University of Crete, Heraklion, Crete, Greece

18:15-18:35 8	F. Remy-Martin <sup>1</sup> , M. El Osta <sup>2</sup> , G. Lucchi <sup>2</sup> , R. Zeggari <sup>1</sup> , T. Leblois <sup>1</sup> , <u>C. Frydman</u> <sup>3</sup> , D. Suckau <sup>4</sup> , P. Ducoroy <sup>2</sup> , W. Boireau <sup>1,2</sup> CHARACTERIZATION OF THE BREAST CANCER MARKER CANDIDATE LAG3 IN HUMAN PLASMA BY HYPHENATED SPRI-MALDI-MS ANALYSIS. <sup>1</sup> Université de Franche Comté, CLIPP, Besançon, France <sup>2</sup> Université de Bourgogne, Dijon, France <sup>3</sup> HORIBA Scientific, Palaiseau, France <sup>4</sup> Bruker Daltonik GmbH, Bremen, Germany
18:35-18:55 9	<u>W. Pardo</u> <sup>1,2</sup> , M. Mir <sup>1,3</sup> , J. Samitier <sup>1,2,3</sup> INTEGRATED LAB-ON-A-CHIP MULTIPROBE DNA ELECTROCHEMICAL ARRAY <sup>1</sup> Institute for Bioengineering of Catalonia (IBEC), Barcelona, Spain <sup>2</sup> University of Barcelona, Barcelona, Spain <sup>3</sup> Networking Research Center on Bioengineering, Biomaterials and Nanomedicine (CIBER-bbn), Barcelona, Spain

## 29 April

	Session: Nanostructures and molecular assemblies Chair: <b>Andrew J. De Mello</b>
9:00-9:35 10	<b>Invited</b> Luisa De Cola INTERACTIONS OF CELLS WITH SOFT AND HARD MATERIALS Université de Strasbourg, France and KIT, Germany
9:35-9:55 11	F. W. Scheller <sup>1</sup> , D. Dechtrirat <sup>1,2</sup> , A. Yarman <sup>1,2</sup> , N. Gajovic-Eichelmann <sup>2</sup> SAM/MIP ARCHITECTURES FOR THE MEASUREMENT OF LECTINS AND E-COLI <sup>1</sup> University of Potsdam, Potsdam, Germany City <sup>2</sup> Fraunhofer Institute for Biomedical Technique, Potsdam, Germany
9:55-10:15 12	<u>Alexander Bittner</u> LIQUIDS AT BIOMOLECULAR NANOSTRUCTURES CIC nanoGUNE, Ikerbasque, San Sebastián, Spain
10:15-10:35 13	<u>S. Sankaran</u> , J. Voskhul, P. Jonkheijm SUPRAMOLECULAR BACTERIAL SYSTEMS University of Twente, Twente, The Netherland
10:35-11:15	<b>Break and Posters</b>
	Session: Nanostructures and molecular assemblies Chair: <b>Benoit Limoges</b>
11:15-11:35 14	<u>J.-J. Toulmé</u> <sup>1</sup> , G. Durand <sup>1</sup> , C. Ravelet <sup>2</sup> , E. Dausse <sup>1</sup> , E. Peyrin <sup>2</sup> DETECTING SMALL MOLECULES WITH A KISS. <sup>1</sup> University of Bordeaux, Pessac, France <sup>2</sup> University Grenoble Alpes, France
11:35-11:55 15	R. Stoltenburg, C. Reinemann, <u>B. Strehlitz</u> APTAMERS FOR ENVIRONMENTAL APPLICATIONS Helmholtz Centre for Environmental Research GmbH – UFZ, Leipzig, Germany
11:55-12:15 16	<u>Andrea Danani</u> , Marco A. Deriu, Gianvito Grasso, Ginevra Licandro, Alessio Prunotto. THE ROLE OF HYDROPHOBIC SURFACES IN INCREASING RECOGNITION AND BINDING AFFINITY OF AMYLOIDOGENIC JOSEPHIN DOMAINS: A MOLECULAR MODELING INVESTIGATION University for Applied Sciences of Southern Switzerland (SUPSI), Manno, Switzerland

12:15-13:20	<b>Lunch</b>
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	Session: Biosensing Chair: <b>Luisa De Cola</b>
13:20-13:55 17	<b>Invited</b> Fabio Beltram NANOTECHNOLOGY AND NEW PARADIGMS FOR NANOMEDICINE: MOLECULAR SENSING AND DELIVERY Scuola Normale Superiore, Italy
13:55-14:15 18	<u>J. Dostalek</u> <sup>1</sup> , M. Bauch <sup>1</sup> , U. Sauer <sup>2</sup> , C. Preininger <sup>2</sup> , S. Hageneder <sup>1</sup> PLASMONIC AMPLIFICATION FOR FLUORESCENCE BIOSENSORS <sup>1</sup> Biosensor Technologies, AIT – Austrian Institute of Technology, Wien, Austria <sup>2</sup> Bioresources, AIT – Austrian Institute of Technology, Tulln, Austria
14:15-14:35 19	S. Chevalier, C. Tardin, P. Rousseau and <u>L. Salomé</u> A SINGLE-DNA MOLECULE BIOCHIP University of Toulouse, Toulouse, France
14:35-14:55 20	William Palau <sup>1</sup> , Cyril Masante <sup>2</sup> , Michel Ventura <sup>2</sup> , <u>Carmelo Di Primo</u> <sup>1</sup> BIOSENSING BY SPR OF RNA-RNA INTERACTIONS AT THE 3'END OF THE HEPATITIS C VIRUS <sup>1</sup> INSERM U869, University of Bordeaux, IECB, Pessac, France <sup>2</sup> CNRS UMR 5234, University of Bordeaux, Bordeaux, France
14:55-15:15 21	<u>C. Bala</u> TUNING THE BIO-SENSING INTERFACE FOR TARGET ANALYTE DETECTION University of Bucharest, Bucharest, Romania
15:15-15:35 22	J-P. Salvétat, P. Vincent ELECTROCHEMICAL HYDROGEN PEROXYDE DETECTION WITH A SINGLE CARBON NANOTUBE TERMINATED BY PLATINIZED PLATINUM CRPP, CNRS, Pessac, France
15:35-15:55 23	<u>A. Yarman</u> <sup>1</sup> , L. Peng <sup>1</sup> , J.-H. Jeoung <sup>2</sup> , H. Dobbek <sup>2</sup> , U. Wollenberger <sup>1</sup> , F. W. Scheller <sup>1</sup> DIRECT ELECTRON TRANSFER AND CATALYSIS OF A NEW PEROXIDASE <sup>1</sup> University of Potsdam, Potsdam, Germany City; <sup>2</sup> Humboldt Universität zu Berlin, Berlin, Germany
15:55-16:25	<b>Break and posters</b>
	Session: Nanostructures and molecular assemblies Chair: <b>Lluïsa Perez Garcia</b>
16:25-16:45 24	<u>J. Safarik</u> , M. Safarikova MAGNETIC SOLID-PHASE EXTRACTION Institute of Nanobiology and Structural Biology of GCRC, Ceske Budejovice, Czech Republic
16:45-17:05 25	Catarina Gonçalves <sup>1</sup> , Yoann Lalatonne <sup>2</sup> , Liliana Melro <sup>1</sup> , Giorgio Badino <sup>1</sup> , Miguel Ferreira <sup>1</sup> , Laurence Motte <sup>2</sup> , Carlos Geraldes <sup>4</sup> , José Alberto Martins <sup>3</sup> , <u>F. M. Gama</u> <sup>1</sup> SUPERPARAMAGNETIC IRON OXIDE NANOPARTICLES STABILIZED BY DEXTRIN NANOGEL: NEW NANOMAGNETOGEL AS CONTRAST AGENT FOR MAGNETIC RESONANCE IMAGING. BIODISTRIBUTION <sup>1</sup> Minho University, Braga, Portugal <sup>2</sup> UMR 7244 CNRS, Université Paris 13, Bobigny, France <sup>3</sup> Universidade do Minho, Braga, Portugal <sup>4</sup> Universidade de Coimbra, Portugal

	Session BioInspired and Open Resources Approaches: Are there any links? Chair: <b>Jean-Pierre Aimé</b>
17:05-17:35 26	<u>R. Melet</u> , O. Acher SAMPLE OF SCIENCE: A PEER-SHARING PLATFORM FOR SCIENTIFIC SAMPLES Sample of Science Editorial Office, Palaiseau , France
17:35-18:05 27	<u>P.T.M. van Boheemen</u> , L. Evers OPEN BIOTECHNOLOGY FOR CREATIVITY IN SCIENCE Open Wetlab, Waag Society, Amsterdam
18:05-18:35 28	<u>N. Landrain</u> , T <sup>1,2</sup> DO-IT-YOURSELF BIOLOGY: CHALLENGES AND PROMISES FOR AN OPEN SCIENCE AND TECHNOLOGY MOVEMENT <sup>1</sup> Association La Paillasse (Paris Community Lab for Biotech), 226 rue Saint Denis 75002 Paris, France <sup>2</sup> Institute for Systems and Synthetic Biology, Genopole - Université d'Évry Val d'Essonne - CNRS, 91034 Évry, France

### 30 April

	Session Biosensing Chair: <b>Camelia Bala</b>
9:00-9:20 29	<u>T. Hianik</u> <sup>1</sup> , G. Castillo <sup>1</sup> , P. Nadazdy <sup>1</sup> , A. Poturnayova <sup>1</sup> , G. Mez <sup>2</sup> , L. Kocsis <sup>2</sup> , A. Csámpai <sup>3</sup> , K. Pribransky <sup>4</sup> , Z. Keresztes <sup>4</sup> DETECTION OF PLASMIN ACTIVITY AT BIOMIMETIC SURFACES USING ELECTROCHEMICAL, ACOUSTIC AND AFM METHODS <sup>1</sup> Comenius University, FMFI UK, Mlynska dolina F1, Bratislava, Slovakia <sup>2</sup> MTA-ELTE Research Group of Peptide Chemistry, Budapest, Hungary <sup>3</sup> Eotvos Lorand University, Budapest, Hungary <sup>4</sup> Hungarian Academy of Sciences, Budapest, Hungary
9:20-9:40 30	<u>A. Heuer-Jungemann</u> <sup>1</sup> , A.H. El-Sagheer <sup>3,4</sup> , T. Brown <sup>3</sup> and A.G. Kanaras <sup>1,2</sup> CANCER THERANOSTICS VIA DNA-GOLD NANOPARTICLE CONJUGATES <sup>1</sup> Physics and Astronomy, <sup>2</sup> Institute of Life Sciences, University of Southampton, UK <sup>3</sup> University of Oxford, Oxford, UK <sup>4</sup> Suez University, Suez, Egypt
9:40-10:00 31	S. Deshpande, A. P.F. Turner, <u>A. Tiwari</u> A HIGHLY SENSITIVE AUTO-SWITCHABLE NANOIMMUNOSENSOR BASED ON TEMPERATURE-GATED ANTIBODY CONJUGATE ON GOLD NANORODS Linköping University, Linköping, Sweden
10:00-10:20 32	<u>L. Motiei</u> , Z. Pode, D. Margulies TARGETED PROTEIN SURFACE SENSORS AS A TOOL FOR ANALYZING SMALL POPULATIONS OF PROTEINS IN BIOLOGICAL MIXTURES Weizmann Institute of Science, Rehovot, Israel 76100
10:20-10:40 33	<u>M. Pesavento</u> <sup>1</sup> , N. Cennamo <sup>2</sup> , A. Donà <sup>1</sup> , P. Pallavicini <sup>1</sup> , G. D'Agostino <sup>1</sup> , L. Zeni <sup>2</sup> PLASTIC OPTICAL FIBER SENSORS BASED ON BIOMIMETIC MOLECULARLY IMPRINTED POLYMERS AND GOLD NANOSTARS WITH SURFACE PLASMON RESONANCE INTERROGATION <sup>1</sup> University of Pavia, Pavia, Italy <sup>2</sup> Second University of Naples, Aversa, Italy
10:40-11:00	<b>Break</b>

	<p>Session: Biosensing  Chair: <b>Maria Minunni</b></p>
11:00-11:20 34	<p><u>Seughwan Lee</u>, Kirsi I. Pakkanen, Louise H.S. Jensen, Andy Horsewell, and Jan B. Madsen  CONFORMATION OF MUCINS IN SOLUTION AND ON SURFACE AS PROBED BY  MICROSCOPIES AND IMMUNO-ASSAYS  Technical University of Denmark, Kgs. Lyngby, Denmark</p>
11:20-11:40 35	<p><u>A. Giannetti</u><sup>1</sup>, B. Adinolfi<sup>1</sup>, S. Tombelli<sup>1</sup>, S. Carpi<sup>2</sup>, C. Trono<sup>1</sup>, P. Nieri<sup>2</sup>, M. Pellegrino<sup>3</sup>,  G. Sotgiu<sup>4</sup>, G. Varchi<sup>4</sup>, F. Baldini<sup>1</sup>  PMMA-NANOPARTICLES AS CARRIERS OF MOLECULAR BEACON FOR THERANOSTIC  APPLICATIONS  <sup>1</sup> CNR-IFAC, Sesto Fiorentino, Italy  <sup>2</sup> Department of Pharmacy, University of Pisa, Pisa, Italy  <sup>3</sup> Department of Translational Research and of the New Technologies in Medicine and  Surgery, University of Pisa, Pisa, Italy  <sup>4</sup> CNR-ISOF, Bologna, Italy</p>
11:40-12:00 36	<p><u>G. Sciutto</u><sup>1</sup>, M. Zangheri<sup>2</sup>, M. Guardigli<sup>2</sup>, M. Mirasoli<sup>2</sup>, S. Prati<sup>1</sup>, R. Mazzeo<sup>1</sup>, A. Roda<sup>2</sup>  PORTABLE BIOSENSORS FOR ON SITE DETECTION OF PROTEINS IN ARTWORKS BY  CHEMILUMINESCENT IMMUNOCHEMICAL CONTACT IMAGING  <sup>1</sup>Microchemistry and Microscopy Art Diagnostic Laboratory, University of Bologna,  Ravenna, Italy  <sup>2</sup> Department of Chemistry "G. Ciamician", University of Bologna, Bologna, Italy</p>
12:00-12:20 37	<p><u>Y. Nissinkorn</u>, L. Motiei, D. Margulies  TARGETED PROTEIN SURFACE SENSORS: A GENERAL APPROACH FOR TRACKING PROTEIN  CONFORMATIONAL CHANGES AND BINDING INTERACTIONS IN THEIR NATIVE  ENVIRONMENT  Weizmann Institute of Science, Rehovot, Israel</p>
12:20-13:30	<b>Lunch</b>

**MC MEETING 14:00-16.30**

## Posters

1	<p><u>Ahmet Emin Topal</u>, Mustafa Ürel, Alper Devrim Özkan, Berna Şentürk, Mustafa Özgür Güler, Ayşe Begüm Tekinay, Aykutlu Dâna          NANOMECHANICAL CHARACTERIZATION OF REGENERATING EXTRACELLULAR MATRIX VIA FORCE-DISTANCE MAPPING          National Nanotechnology Research Center (UNAM), Bilkent University, Ankara, Turkey</p>
2	<p><u>G. Granata</u><sup>1</sup>, G. M. L. Consoli<sup>1</sup>, C. Geraci<sup>1</sup>, R. Lo Nigro<sup>2</sup>, G. Malandrino<sup>3</sup>          NANOSTRUCTURES FROM AN AMPHIPHILIC CARBOXY-CALIX[4]ARENE DERIVATIVE  <sup>1</sup>Istituto Chimica Biomolecolare-C.N.R., Catania, Italy  <sup>2</sup>Istituto per la Microelettronica e Microsistemi-C.N.R., Catania, Italy  <sup>3</sup>Università di Catania, Catania, Italy</p>
3	<p>M. Rodrigues, L. Gonzalez, M. Puig-Vidal, <u>L. Pérez-García</u>          TUNNING FORK BIOFUNCTIONALIZATION FOR THE DETECTION OF BIOMOLECULAR INTERACTIONS          University of Barcelona, Barcelona, Spain</p>
4	<p><u>S. Mariani</u><sup>1</sup>, M. L. Ermini<sup>1</sup>, S. Scarano<sup>1</sup>, F. Bellissima<sup>1,2</sup>, M. Bonini<sup>1,2</sup>, M. Minunni<sup>1,2</sup>          IMPROVEMENT IN SURFACE PLASMON RESONANCE IMAGING (SPRI) DNA SENSING BY METAL NOBLE NANOPARTICLES  <sup>1</sup>Università degli Studi di Firenze, Sesto Fiorentino, Italy  <sup>2</sup>Consorzio Sistemi a Grande Interfase, Sesto Fiorentino, Italy</p>
5	<p><u>O. Penon</u><sup>1</sup>, D. Siapkis<sup>1</sup>, S. Novo<sup>2</sup>, S. Durán<sup>3</sup>, L. Barrios<sup>2</sup>, C. Nogués<sup>2</sup>, M. Duch<sup>3</sup>, J.A. Plaza<sup>3</sup>, L. Pérez-García<sup>1</sup>          EXPLOITING THE LECTINS-CARBOHYDRATES INTERACTION: CELLULAR RECOGNITION FOR CELL TAGGING  <sup>1</sup> Universitat de Barcelona, Barcelona, Spain  <sup>2</sup> Universitat Autònoma de Barcelona, Bellaterra, Spain  <sup>3</sup> IMB-CNM (CSIC), Bellaterra, Spain</p>
6	<p><u>S.D. Psoma</u>, P. Tzanetis, A. Tzourlidakis          ENERGY HARVESTING FROM THE HUMAN BODY FOR BIOSENSOR APPLICATIONS AND PERSONALISED MEDICINE          University of Western Macedonia, Kozani, Greece</p>
7	<p><u>C. Satriano</u><sup>1</sup>, M.L. Giuffrida<sup>2</sup>, A. Copani<sup>1</sup>, G. Trusso Sfrassetto<sup>1</sup>, G. Tomaselli<sup>1</sup>, E. Rampazzo<sup>3</sup>, D. Genovese<sup>3</sup>, M. Sgarzi<sup>3</sup>, L. Prodi<sup>3</sup>, E. Rizzarelli<sup>1,2</sup>          A NANOPLATFOM BASED ON SILICA CORE-SHELL NANOPARTICLES AND CHEMOSENSORS FOR MONITORING INTRACELLULAR DYNAMICS OF COPPER TRAFFICKING  <sup>1</sup>Università di Catania, Catania, Italy  <sup>2</sup>Istituto di Biostrutture e Bioimmagini, CNR, Catania, Italy  <sup>3</sup>Università di Bologna, Bologna, Italy</p>
8	<p><u>A. Mourka</u><sup>1</sup>, V. Melissinaki<sup>2,3</sup>, M. Farsari<sup>2</sup>, A. Courjaud<sup>1</sup>, and E. Mottay<sup>1</sup>          FEMTOSECOND LASERS FOR THREE-DIMENSIONAL NANOFABRICATION BY TWO PHOTON POLYMERIZATION (2PP) TECHNIQUE  <sup>1</sup>Amplitude-Systèmes, Cité de la Photonique, Pessac, Bordeaux, France  <sup>2</sup>Foundation for Research and Technology Hellas (F.O.R.T.H.), Heraklion, Crete, Greece  <sup>3</sup>University of Crete, Heraklion, Crete, Greece</p>
9	<p><u>H. Montón</u><sup>1,2</sup>, E. Morales-Narváez<sup>1</sup>, C. Parolo<sup>1</sup>, C. Nogués<sup>2</sup>, A. Merkoçi<sup>1,3</sup>          QUANTUM DOTS FOR BIOMEDICAL AND BIOSENSING APPLICATIONS  <sup>1</sup>Nanobioelectronics &amp; Biosensors Group, Institut Català de Nanociència i Nanotecnologia - ICN2, Bellaterra (Barcelona), Spain  <sup>2</sup>Departament de Biologia Cel·lular, Fisiologia i Immunologia, Universitat Autònoma de Barcelona, Barcelona  <sup>3</sup>ICREA- Institució Catalana de Recerca i Estudis Avançats, Barcelona</p>

10	<p>M.C. Giuffrida<sup>1</sup>, R. D'Agata<sup>2</sup>, C. Valenti<sup>1</sup>, G.Spoto<sup>1,2</sup>  DETECTING MICRORNAs IN DROPLET MICROFLUIDIC DEVICES  1 I.N.B.B.Consortium, Rome, Italy  2 Università di Catania, Catania, Italy</p>
11	<p>R. D'Agata<sup>1</sup>, A. Manicardi<sup>2</sup>, M. Calcagno<sup>3</sup>, A. M. Aura,<sup>1</sup> R. Corradini<sup>2</sup>, G.Spoto<sup>1,4</sup>  HIGH SENSITIVE DETECTION OF MICRORNA-210 BY USING PNA PROBES AND SPR IMAGING  1 Università di Catania, Catania, Italy  2 Università di Parma, Parma, Italy  3 Università di Ferrara, Ferrara, Italy  4 I.N.B.B.Consortium, Rome, Italy</p>