



The 28th European Conference on Solid-State Transducers

EUROSENSORS 2014

*Organized by
University of Brescia and
National Research Council*

GUIDEBOOK

www.euroensors2014.eu

Organizing Institutions



UNIVERSITY OF BRESCIA



DEPARTMENT OF INFORMATION ENGINEERING
UNIVERSITY OF BRESCIA



NATIONAL RESEARCH COUNCIL



NATIONAL INSTITUTE OF OPTICS
NATIONAL RESEARCH COUNCIL

Under the Auspices of:



COMUNE DI BRESCIA



ITALIAN ASSOCIATION FOR
SENSORS AND MICROSYSTEMS

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Welcome to EUROSENSORS 2014

Dear Colleague,

on behalf of all the members of the Local Organizing Committee we welcome you to the 28th edition of the EUROSENSORS Conference in Brescia, Italy.

The conference series was initiated by the first meeting in Cambridge (1987), followed by the conferences in Enschede (1988), Montreux (1989), Karlsruhe (1990), Rome (1991), San Sebastian (1992), Budapest (1993), Toulouse (1994), Stockholm (1995), Leuven (1996), Warsaw (1997), Southampton (1998), The Hague (1999), Copenhagen (2000), Munich (2001), Prague (2002), Guimaraes (2003), Roma (2004), Barcelona (2005), Gothenburg (2006), Lyon (2007), Dresden (2008), Lausanne (2009), Linz (2010), Athens (2011), Kraków (2012), and Barcelona (2013).

Since 1987, the EUROSENSORS Conference has been a forum for scientists and engineers from academia, research centres, national research institutes, and industry to present and discuss the latest results in sensors, actuators, microsystems and nanosystems.

The EUROSENSORS Conference now attracts hundreds of participants every year, mainly from Europe but also from countries in other continents.

In line with previous editions, EUROSENSORS 2014 in Brescia aims at providing a special occasion to promote your research and professional work, learn and discuss about innovations and potential future accomplishments, offering at the same time the opportunity to enjoy the charm of our country.

According to the established tradition, EUROSENSORS 2014 begins with the Eurosensors School on Sunday. The lectures will be given at the graduate level, spanning from the scientific basic principles to the implementation in actual devices.

The technical program on Monday to Wednesday consists of 402 contributions, composed of 145 oral and 257 poster presentations. Among them, 4 plenary lectures on cutting-edge and emerging technologies will be presented by world-wide recognized experts from both academia and industry. Moreover, 11 invited talks will be given by distinguished speakers who will cover subjects of special interest across a broad range of topics in the fields of sensors, actuators, microsystems and nanosystems.

The oral contributions will be presented in up to four parallel sessions, without overlap among the invited talks. The poster contributions will be presented in two rounds organized in different sessions scheduled for Monday and Tuesday. Yet all posters will remain on display for the entire duration of the conference.

The technical program is complemented by satellite events including the lunch workshop by Gefran S.p.A. on Monday, and the open session on the COST action TD1105 on Wednesday.

The Proceedings of EUROSENSORS 2014 will be published in *Procedia Engineering* by Elsevier. Selected papers based on the conference contributions will be published in a Virtual Special Issue of the journals *Sensors and Actuators A: Physical* and *Sensors and Actuators B: Chemical* after the standard journal reviewing process.

The number of submissions was 525. All contributed abstracts were assigned to 5 reviewers, and no abstracts received less than 3 reviews, with an average of 4.6 received reviews per abstract. The contributions accepted in the program were 402 (145 lectures + 257 posters), corresponding to 77% of the submissions.

Welcome to EUROSENSORS 2014

Abstracts were received from 47 countries. The regional distribution of the accepted contributions is the following: 85.3% from Europe, 10% from Asia/Pacific, 2% from North America, 1.5% from Latin America, and 1.2% from Middle East/Africa.

The distribution by affiliation types is the following: 77.6% from academia, 12.9% from research centres and institutes, 3.2% from government, 5.2% from industry, and 1.1% from other affiliation types.

Besides the scientific contents, EUROSENSORS 2014 will offer to the participants and accompanying persons a number of social events to make your stay in Brescia as enjoyable as possible and promote networking in a friendly atmosphere.

Special thanks go to all people who contributed to the development of the conference program and organization of the event.

In particular, we wish to thank the members of the Technical Program Committee (TPC), who exemplarily carried out the peer review work, the Local Scientific Program Committee (LSPC) chaired by Dr. E. Comini for defining the conference program, the Outstanding Poster Award Committee chaired by Prof. A. D'Amico, and the Session Chairs for their fundamental service during the conference.

In addition, we wish to thank the Lecturers of the Eurosensors School and the School Chair Prof. G. Faglia for their effort and dedication.

Moreover, we want to express our sincere gratitude to all the members of the Local Organizing Committee (LOC) chaired by Dr. M. Ferrari, the Publication and Publicity Chairs Dr. A. Ponzoni and Dr. S. Dalola, respectively, and all the local staff and Secretariat office for their invaluable contribution.

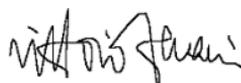
We gratefully acknowledge the University of Brescia for hosting and sustaining the conference, the Institutions of the city of Brescia, the National Research Council (CNR) and AISEM for their patronage, and the Sponsors and Exhibitors for their qualified participation and support.

Finally, we wish to warmly thank you and all the conference attendees. The quality of your work and your enthusiastic participation to the event are key features to guarantee the high scientific level and success of EUROSENSORS 2014.

We wish you a fruitful EUROSENSORS 2014 Conference and a pleasant stay in Brescia!



Prof. Giorgio Sberveglieri
General Conference Chair



Prof. Vittorio Ferrari
Program Chair

Organization

CONFERENCE CHAIRS

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Program Chair

Prof. Vittorio Ferrari – University of Brescia

Local Scientific Program Committee Chair

Dr. Elisabetta Comini – University of Brescia

Euroensors School Chair

Prof. Guido Faglia – University of Brescia

Local Organizing Committee Chair

Dr. Marco Ferrari – University of Brescia

Publication Chair

Dr. Andrea Ponzoni – CNR-INO

Publicity Chair

Dr. Simone Dalola – University of Brescia

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- Eugenio Martinelli (Italy)

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- Vardan Galstyan
- Raj Kumar
- Muhammad Ehsan Mazhar
- Riccardo Milan
- Gabriele Pellegrinelli
- Mattia Rizzi
- Gurpreet Singh Selopal
- Giulia Zambotti
- Dario Zappa

PLENARY SPEAKERS



Fiber-Optic Lossy Mode Resonance Sensors

Francisco J. Arregui

*Electrical and Electronic Engineering Department
Universidad Publica de Navarra,
Pamplona, Spain*



Nanoreactors for Atomic-Scale Microscopy

Fredrik Creemer

*DIMES-ECTM, Delft Institute of Microsystems and
Nanoelectronics
Delft University of Technology,
Delft, The Netherlands*



Selective Chemosensing and the Diagnostic Breathalyzer

Pelagia-Irene (Perena) Gouma

*Center for Nanomaterials and Sensor Development
Department of Materials Science and Engineering
State University of New York,
Stony Brook, NY, USA*



MEMS Technology Impact on Daily Life

Bruno Murari

*ST Microelectronics,
Cornaredo (Milan), Italy*

INVITED SPEAKERS



Membrane Platforms for Sensors

István Bársony

*MFA, Research Centre for Natural Sciences
Hungarian Academy of Sciences,
Budapest, Hungary*



Soft Piezoelectric MEMS Technologies for Tactile Sensing and Energy Harvesting

Massimo De Vittorio

*Istituto Italiano di Tecnologia (IIT),
Center for Bio-Molecular Nanotechnology
Dip. Ingegneria dell'Innovazione
Università del Salento
Lecce, Italy*



Wireless Sensor Networking in the Internet of Things and Cloud Computing Era

Alessandra Flammini

*Department of Information Engineering
University of Brescia,
Brescia, Italy*



Phononic Crystals and Metamaterials Promising New Sensor Platforms

Ralf Lucklum

*Institute for Micro and Sensor Systems (IMOS)
Faculty of Electrical Engineering and Information
Technology
Otto-von-Guericke-University Magdeburg,
Germany*



Gas Dependent Changes in the Electrical Behavior of Selective Metal-Oxide Layers

Stefan Palzer

*Laboratory for Gas Sensors
Department of Microsystems Engineering - IMTEK
University of Freiburg,
Freiburg, Germany*



Semiconductor Metal Oxides as Hydrogen Gas Sensors

Sukon Phanichphan

*Materials Science Research Center,
Faculty of Science
Chiang Mai University,
Chiang Mai, Thailand*

INVITED SPEAKERS



Bio-inspired Explosive Sensors and Specific Signatures

Denis Spitzer

*Laboratoire des Nanomatériaux pour les
Systèmes Sous Sollicitations Extrêmes (NS3E)
UMR 3208 ISL-CNRS-UdS,
Saint-Louis, France*



Flexible Piezoelectric Nanogenerators for Energy Autonomy

Christos Tsamis

*Institute of Nanoscience and Nanotechnology
National Center for Scientific Research
"Demokritos",
Athens, Greece*



Novel Multichannel Fluorescence Detection for Lab-on-a-Chip Applications with Quantum Rods Fluorochromes

Rafał Walczak

*Wrocław University of Technology,
Faculty of Microsystem Electronics and Photonics,
Wrocław, Poland*



Overview of p-type Semiconducting Metal Oxides (SMOX) for Gas Sensings

Udo Weimar

*Institute of Physical Chemistry
University of Tübingen (IPC),
Tübingen, Germany*



Trends in Near Infrared Spectroscopy and Multivariate Data Analysis from an Industrial Perspective

Kerstin Wiesner

*Corporate Technology,
Siemens AG, Munich, Germany*



COST Action TD1105: Overview of Sensor-Systems for Air-Quality Monitoring

Michele Penza

*Chair of COST Action TD1105 EuNetAir
ENEA, Brindisi, Italy*

Speakers

SCHOOL LECTURERS



Flexible and Printed Sensors and Sensing Systems

Danick Briand

*École Polytechnique Fédérale de Lausanne,
Switzerland*



Silicon-based Micro Mechanics: Applications, Technology and Device Principles

Fredrik Creemer

*DIMES-ECTM, Delft Institute of Microsystems
and Nanoelectronics
Delft University of Technology,
Delft, The Netherlands*



Microelectronic Technology from Solid State to Flexible Substrates: Tactile Sensors as a Case Study

Leandro Lorenzelli

*FBK-CMM Center for Materials and Microsystems,
Trento, Italy*

Social Events

Access to Social Events of EUROSENSORS 2014 will be permitted after presentation of the badge and ticket. Please do not forget to bring your badge and invitation card with you.

INFORMAL GET TOGETHER

University of Brescia, San Faustino Cloister

Via San Faustino 74/B - Brescia

Sunday, September 7, 2014

18.00 - 21.00

The Informal Get-Together reception will be held in the beautiful ex-Convent historical building of San Faustino, a complex originally built in the 9th century. Most of the complex dates back from the 16th century and was part of a Benedictine convent. During the Napoleonic times, the religious community was suppressed whilst the convent was confiscated and used as barracks. The military use of the complex continued until the 1980s, after which it became the property of the University of Brescia. The complex is built around three cloisters. The first one, named "della campanella", was the former convent main entrance. The major cloister, a square with a 35 m side bordered by an open gallery, was built in 1534 by Andrea Moroni, which is especially known because of its important architectural work in Padua. The third one had more practical uses: it was formerly surrounded by stables, workshops and warehouses. The restoration, ended by 1997, made all the buildings suitable for academic use. Some rooms still have the old frescoes, including paintings by Gian Domenico Tiepolo."

How to reach the Informal Get Together Venue

By underground (metro)

University of Brescia, San Faustino Cloister is a few steps away from "San Faustino" underground station.

By car

San Faustino Cloister is located in the historical center, in a limited traffic zone.

Car parks at walking distance:

- "Fossa Bagni" car park, in Piazzale Cesare Battisti and via Lombroso
- "Piazza Vittoria" underground car park, in Piazza Vittoria



Social Events

EVENING CONCERT

Auditorium San Barnaba
Corso Magenta 44/A - Brescia
Monday, September 8, 2014
19.30 - 21.00

The Church of San Barnaba dates back to XIII century, with a sumptuous marble XVII century Baroque façade, was turned deconsecrated and turned into a lavish Auditorium and Concert Hall. In this beautiful hall, rich in history, will take place the Evening Concert. The concert will be performed by the orchestra from the renown adjacent Conservatory "Luca Marenzio".

How to reach the Evening Concert Venue

The Auditorium San Barnaba is located in the heart of historical center, in a limited traffic zone, midway between Corso Zanardelli and Piazza Arnaldo. Entrance from Piazzetta Benedetto Michelangeli.

By underground (metro)

From the Engineering campus go to "Europa" station and take the Southbound line (end-of-line station "Sant'Eufemia") and get off at "Vittoria" underground station, then is just a 10 min walk.

By car

The Auditorium San Barnaba is located in the heart of historical center, in a limited traffic zone, midway between Corso Zanardelli and Piazza Arnaldo.

Car parks at walking distance:

- "Fossa Arnaldo" car park, in Piazza Arnaldo
- "AutosiloUno" car park, in Via Vittorio Emanuele II, 68
- "Piazza Vittoria" underground car park, in Piazza Vittoria



Social Events

CONFERENCE BANQUET **B**

Antica Cascina San Zago
Viale dei Colli 13 - Salò
Tuesday, September 9, 2014
19.30 - 23.30

The Conference Banquet will take place at "Antica Cascina San Zago" Restaurant, a strikingly refurbished farmhouse, formerly a XVII century monastery. Located on the hills overlooking Lake Garda, the inner courtyard of this ancient building is enclosed in stone walls, amid a 50.000 sq mt park, amid olive trees, and with breathtaking views over the Lake Garda.

Dress Code: Business Informal

Transportation to Salò (about 45 minutes from the Conference Venue) and return has been arranged by bus.

Meeting Point at the Conference Venue at 19.30.

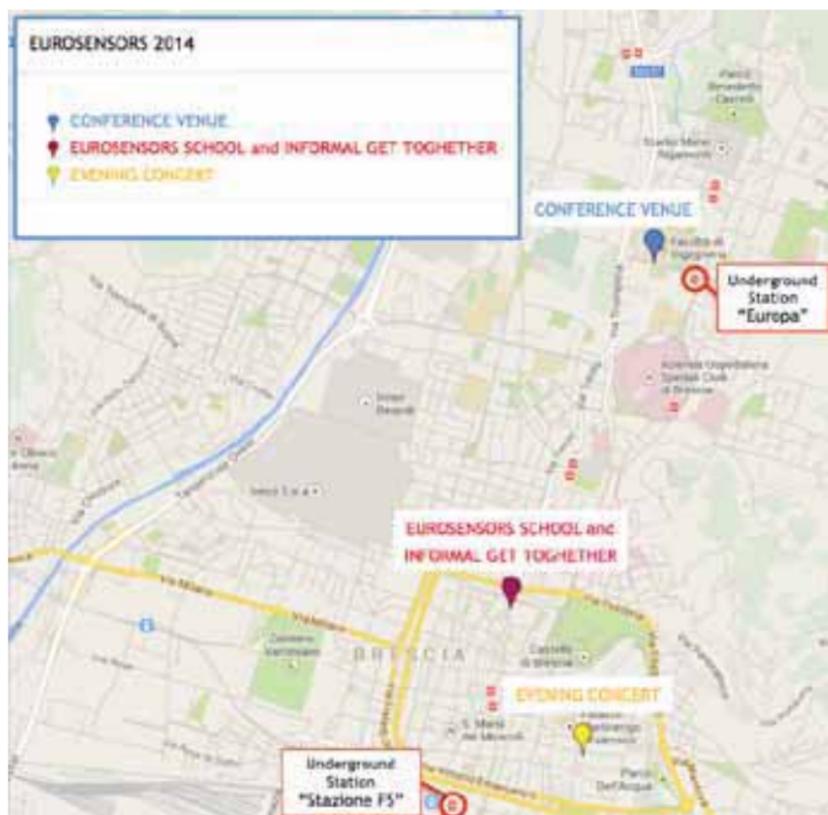
Please make sure you bring your badge and **Conference Banquet invitation card** with you

Please refer to the Secretariat Desk for detailed information about transportation.



Social Events

SOCIAL EVENT VENUE MAPS



Access to Conference Venue

CONFERENCE VENUE



UNIVERSITY OF BRESCIA
ENGINEERING CAMPUS
Via Branze 38
25123 Brescia - Italy

The EUROSENSORS 2014 Conference will be hosted in the modern facilities of the Engineering Campus at the University of Brescia.

The Università degli Studi di Brescia was officially established in 1982 with three Schools: Medicine and Surgery, Engineering, Economics and Business. The completion of the creation phase lasted nearly two decades, and actually the first university courses in Brescia were offered back in the 1960s.

The venue is located in a pleasant residential area easy to reach from the city center and offers adequate spaces to comfortably host all the participants, including fully equipped rooms for plenary and oral sessions, complemented by wide indoor and outdoor exhibition areas for poster sessions, expositions of sponsor companies, informal discussions and networking.

How to reach Brescia

By plane

Bergamo – Orio al Serio airport (BGY)

Reach Brescia by shuttle bus

This is the cheapest and easiest way to get from Bergamo - Orio al Serio Airport directly to Brescia railway station.

Reach Brescia by train

Use the public bus service ATB to get to Bergamo railway station. Then you can take a train from Bergamo to Brescia, in about one hour you will be at Brescia railway station.

Milan - Linate airport (LIN)

Reach Brescia by train

From Milan - Linate airport, you can reach Milan Central railway station ("Stazione Milano Centrale") by taxi, a 10 min ride, or by bus. You can then take a train to Brescia and get to Brescia railway station (travel time about 50 min).

Milan - Malpensa airport (MXP)

Reach Brescia by train

Milan - Malpensa airport is well connected to Milan Central railway station ("Stazione Milano Centrale") by either the "Malpensa Express" train or the "Malpensa Shuttle" bus. You can then take a train to Brescia and get to Brescia railway station (travel time about 50 min).

Verona - Villafranca airport (VRN)

Reach Brescia by train

Verona - Villafranca airport is well connected to Verona Porta Nuova railway station ("Stazione Verona Porta Nuova") by shuttle bus. From Verona Porta Nuova railway station you can take a train to Brescia railway station (travel time about 45 min).

Access to Conference Venue

By train

Brescia is one of the major train stops along the railway backbone connecting Turin to Venice, via Milan, Bergamo and Verona. The railway company is Trenitalia. There is only one railway station ("Stazione FS") in Brescia.

By car

Brescia is located along the highway ("Autostrada") A4 Milan-Venice ("Milano - Venezia"). We suggest to take the "Brescia-Ovest" exit as it is the most convenient to reach the conference venue.

Directions from airports:

- From Milan – Linate airport drive towards Milan ("Milano") and then take the highway A4 towards Venice ("Venezia").
- From Milan – Malpensa airport take the highway A8 towards Milan ("Milano") and then join the highway A4 towards Venice ("Venezia").
- From Bergamo - Orio al Serio airport take the highway A4 towards Venice ("Venezia").
- From Verona - Villafranca airport take the highway A4 towards Milan ("Milano").

How to reach the Conference Venue

By underground (metro)

From Brescia railway station "Stazione FS" underground station or from anywhere in the city center take the Northbound line (end-of-line station "Prealpino") and get off at "Europa" underground station.

The University of Brescia, Engineering Campus is just 200 m away along Via Branze and is the white building on the right.

By car

Highway A4 Milano - Venezia

Exit: Brescia Ovest.

From Brescia Ovest exit, follow signs to Stadium ("Stadio") or Hospital ("Ospedale"), which are both located in the north of the town. When the Hospital has been reached and is visible on the right, follow along Via Triumplina and turn right in Via Branze. The Engineering building is the white one on the left.

Highway A21 Piacenza - Brescia

Exit: Brescia Centro.

From Brescia Centro exit, follow signs to Stadium ("Stadio") or Hospital ("Ospedale"), which are both located in the north of the town. When the Hospital has been reached and is visible on the left, in Piazzale Spedali Civili, follow along Viale Europa and turn left in Via Branze. The Engineering building is the white one on the right.

General information

REGISTRATION DESK

On Sunday, September 7, 2014, the Registration Desk will be open at the San Faustino Cloister, Via San Faustino 74/b, Brescia, for all Eurosenors School participants and people attending the Welcome Reception.

Opening hours:
Sunday 16.00 - 20.00

During the Conference, the Registration and Information Desk will be located in the hall of the Conference Venue, Via Branze 38, Brescia.

Opening hours:
Monday and Tuesday 08.00-18.30
Wednesday 08.00-16.00

OFFICIAL LANGUAGE

The official language of the conference is English and will be used for all presentations and printed material.

BADGES

All attendees **must wear** their name badges at all times to have access to all conference sessions, exhibits and receptions.

Please make sure to bring your badge and Concert and/or Conference Banquet invitation card with you to attend the social events.

Attendance may be refused to the participants devoid of the registration documents.

LEFT-LUGGAGE DESK

An unattended left-luggage desk will be available from Monday 8 to Wednesday 10.

WIFI

Wi-Fi internet connection is available throughout the venue upon request. Please refer to the Information Desk.



SMARTPHONE APP

EUROSENSORS 2014 Mobile App is available to access the conference program.

The EUROSENSORS 2014 Mobile App provides:

- Access to up-to-date conference agenda (online program).
- Conference key information (venue, maps, sponsors etc.).
- Agenda planning feature which allows to plan customised program.

Mobile App can be downloaded for:



After downloading the Conference4me app, launch the app and search for EUROSENSORS 2014 conference and tap on it to download. The entire program will be downloaded into phone/mobile device.

Please note:

- Once downloaded, the program can be accessed even in the absence of wi-fi or data connection.
- Wi-fi or data connection is only required to check for program updates.

General information

USEFUL PHONE NUMBERS AND LINKS

Ambulance: 118

Police: 113

Fire Brigade: 115

Taxi: 030.35111

Railway tickets: www.trenitalia.com

ELECTRICITY

Electricity in Italy is 220 V, 50 Hz alternating current (AC). Italian sockets are designed to accept round pins.

CLIMATE

The weather in September is mild, warm and sunny for most part of the day and the temperature ranges from 18 to 27. Occasional rain showers may occur.

About Brescia

Brescia is Lombardy's second biggest city, a university town with a modern business satellite - Brescia Due - it is prosperous and lively. Located between two of Italy's most famous lakes, Lake Garda and Lake Iseo, Brescia is often overlooked by visitors who bypass the city itself and head straight to the undeniably beautiful lakes. A great pity, as Brescia has one of the most beautiful historic centres in the region, and some of the best Roman and Lombard remains in northern Italy such as:

Piazza della Loggia - The city's prettiest square was built in the 15th century. Torre dell'Orologio or the clock tower, was modelled on the campanile in Venice's Piazza San Marco. Porta Bruciata, in one corner, is a medieval tower and gate.

Cathedrals - The two cathedrals are found on Piazza Paolo VI. The Rotonda is a old 12th century cathedral. Inside you can see Roman remains and the apse of an 8th century basilica. The new cathedral is late Baroque style and took over 200 years to complete.

Via dei Musei - The old Roman road is lined with Roman ruins including the Roman forum, a theater and a temple built in 73AD.

Monasteries - Monastery of Santa Julia was founded in 753 and has three churches. It now houses the city museum with artifacts from prehistory to the 20th century. San Pietro in Lamosa was founded in the 11th century and is Romanesque in style.

Piazza della Vittoria - This large square was built in 1932 in what was once a medieval center. On one side of the square is a 60 meter tall tower. The Mille Miglia historic car race starts from Piazza della Vittoria and on the third Sunday of the month there's an antiques market.

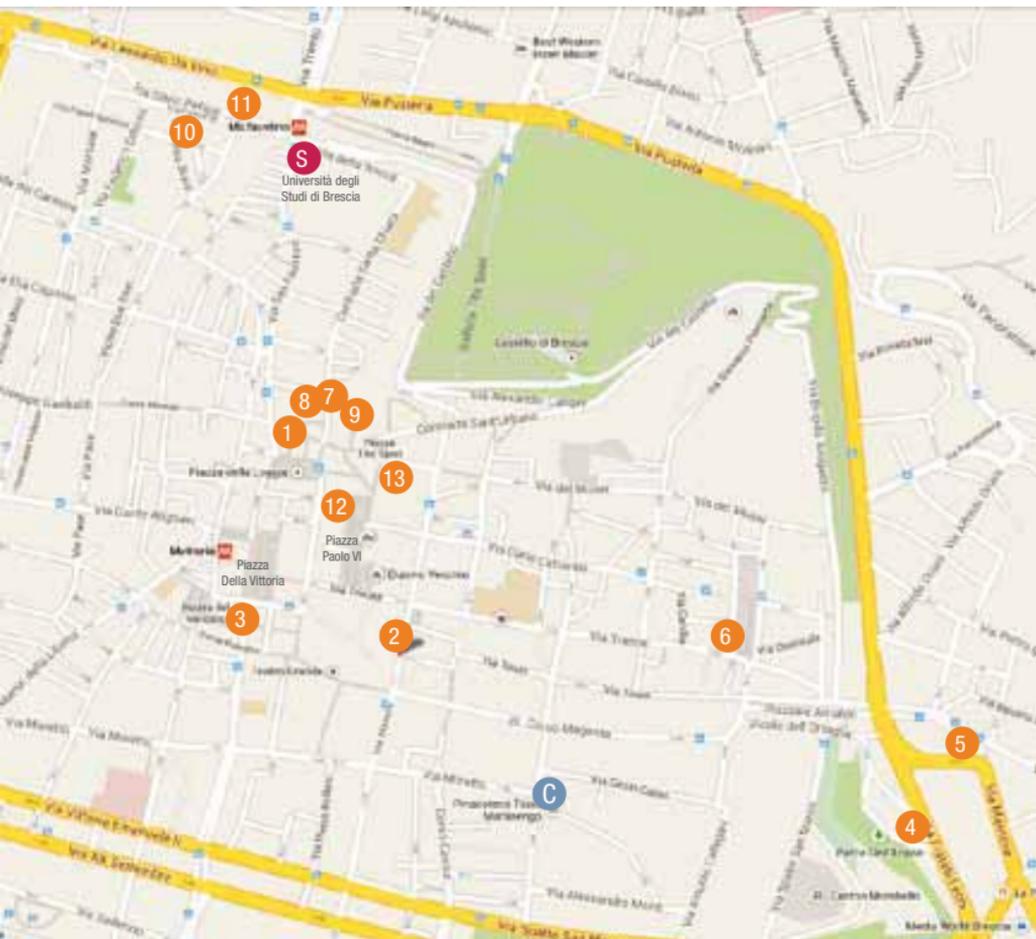
Castle - The medieval castle complex on the hill includes towers, ramparts, gardens, courtyards, drawbridges and several underground tunnels. It houses the Ancient Arms Museum, Risorgimento Museum, and a model railway exhibit. From the highest point there are good views of the city below. Brescia is also well known for the annual Mille Miglia historic car race held in spring, which starts and ends in the city.



About Brescia

RESTAURANTS (we recommend reservation)

- **Trattoria Caprese**
Piazza della Loggia 11/I
Phone: +39 030 293018 - e-mail: brescia@trattoriacaprese.it
- **Pizzeria Trattoria La Nuova Piedigrotta**
Via Mazzini, 36
Phone: +39 030 3776317
- **Pizzeria Le Arcate**
Piazza Del Mercato, 27
Phone: +39 030 49147
- **Yoshi Restaurant**
Via Fratelli Lechi, 10 – Largo Torrelunga
Phone: +39 030 3776604
- **Zushi Restaurant**
Viale Venezia, 40. 25100 Brescia
Phone: +39 030 3757862 - e-mail: brescia@zushi.eu
- **Trattoria Mezeria Di Comelli Maria & C. Snc**
Via Trieste, 66, 25121 Brescia
Phone: +39 030 40306
- **L'Osteria al Bianchi**
via Gasparo da Salò 32,
Phone: +39 030 292328 - e-mail info@osteriaalbianchi.it
- **Trattoria Gasparo**
via Gasparo da Salò, 24, 25122 Brescia (BS)
Phone: +39 030 2400226 - e mail: info@trattoriagasparo.it
- **Locanda Dei Guasconi**
Via Cesare Beccaria, 11G, 25121 Brescia
Phone: +39 030 377 1605
- **Carmen town**
Via Fratelli Bandiera, 3
Phone: +39 030 6376332 - e-mail: info@carmentown.it
- **Mentelocale**
Via Porta Pile, 3
Phone: +39 030 45705
- **I Macc de le Ure**
Piazza Paolo VI, 6, 25121 Brescia
Phone: +39 030 291552
- **Il frate**
Via dei musei, 25
Phone: +39 030 3770550 - e-mail: info@alfrate.com



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GEFRAN

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GEFRAN. You know we are there

Forty years of experience and in depth know-how, in addition to an **organisation strongly oriented towards customer needs and constant technological innovation**, have enabled Gefran to become a leader in the sector of automation and systems components for industrial process control.

Gefran is synonymous with **quality and expertise in the design and manufacture of sensors, automation and drives**, thanks to its constant attention to market trends and continuous professional training of its technical personnel.

Through **collaboration with qualified Research Centres and European universities**, as well as investments in R&D, Gefran Group strives towards constant technological development of its products and services in order to anticipate market trends.

With its wide range of highly technology products, Gefran is able to **offer a one stop shop, providing the ideal solution to applications such as plastic, metal, mobile hydraulic, electrical furnaces, hoist and crane, lift**. Gefran provides expert advice, synergy and partnership with its customers too.

Gefran Group is based in Italy, has approximately 900 employees worldwide, operates directly in 17 countries and has 8 manufacturing plants. With a network of over 70 authorised distributors the company is able to count on a global sales network.

Gefran Spa has been listed on the Milan Stock Exchange since 1998 and on the 'Star' Segment for High Requirement Shares since 2002.

100,000 references one for every need

SENSORS - A wide range of precision measurement devices for process variables: temperature, force, pressure, and position. The primary element is made in a cleanroom, protected against all interference and equipped with cutting-edge instruments.

AUTOMATION - A complete line of products for indicating and controlling process variables. Automation platforms, controllers and indicators, solid state power units and power controllers, continuously advancing to satisfy customer demands for process optimization and energy efficiency of plants and systems. Gefran also designs and builds complete electrical panels for machine automation – especially for plastic processing machines. A special division works with a variety of machine manufacturers to develop turnkey solutions for their specific needs.

MOTION CONTROL - An entire line of electric drives that control the speed of AC and DC motors, inverters and converters. Designed and produced with latest-generation technologies in Gefran's ultra-modern Drive and Motion Control Unit at Gerenzano (Varese). Gefran also provides dedicated solutions to satisfy the specific needs of every customer.

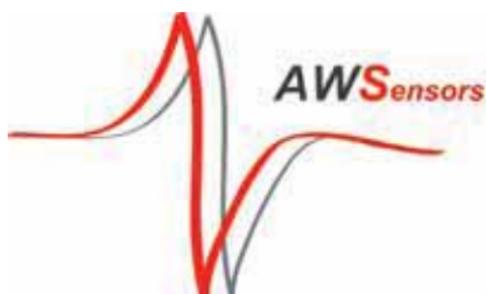
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www.ama-science.org



www.awsensors.com



www.comsol.com



ELSEVIER

www.elsevier.com



www.itmems.it



www.mcl.at



www.mdpi.com

Presentation Guidelines

The technical program consists of 402 contributions
145 oral presentations and 257 posters.

LECTURE PRESENTATIONS

The duration of a presentation slot is 15 minutes. Speakers will have 12 minutes for the presentation itself and 3 minutes for questions from the audience.

Plenary and Invited speakers will have slots of 45 and 30 minutes including questions, respectively.

A LCD projector and computer (Windows, MS PowerPoint & Adobe Acrobat Reader) will be available in every session room for presentations.

Preparation of Visuals:

PLEASE NOTE THAT SPEAKERS MUST EITHER BRING A MEMORY STICK CONTAINING THEIR PRESENTATION FILE OR THEIR OWN LAPTOP COMPUTER WITH THE APPROPRIATE PRESENTATION SOFTWARE LOADED.

Files can be uploaded to the local PCs in the lecture rooms during the breaks between the sessions. To avoid software compatibility problems, speakers are advised to EMBED ALL FONTS in their PowerPoint file AND bring a backup PDF-version of their presentation.

Speakers must arrive in their session room 15 minutes BEFORE the start of their session to report to the chair persons. An assistant from the local organization will also be available for technical assistance.

General Considerations:

Limit the number of words per visual to no more than 20.

Leave space, at least the height of a capital letter, between lines of text.

All fonts, including that on graphs, should be 18 point or larger.

Graphs and charts should have bold lines and symbols that contrast sharply with the background.

Each lecture presentation (including plenary and invited) is identified by its own code which indicates the location and time of the presentation.

POSTER PRESENTATIONS

There will be a large number of posters presented during the conference. It is essential that posters are put up in the right assigned place so that they can be easily reached by the interested attendees. The assigned placement of each poster will be marked on the panel where the poster will be presented with the number of the specific poster according to the session code reported in the conference program.

The posters must remain attached during the entire conference. Therefore, they should be put up on Monday morning and removed at the end of the conference.

The size of the panel space that is available to each poster is
120cm (high) x 90cm (wide)

The format of the poster panel is portrait (height > width).

Size and format can not be modified. Authors are free to choose a single poster (or many smaller posters) that fit on the given panel size. Posters will be attached to the panel with adhesive tape which will already be available on the panel. If more tape is needed, the poster area assistant can be contacted.

Presentation Guidelines

GUIDE TO PAPER AND SESSION NUMBERING

Each conference paper (both posters, lectures, plenary and invited) in the technical program is assigned a unique number, which indicates when and where the paper presentation takes place

Typical Session Number: A3L-B02

(A = first day (Monday), 3 = the time slot, L = Lecture session, A = 'Sala CONSILIARE' Hall).

The first character (a letter, i.e. A) indicates the day of the conference:

A = Monday

B = Tuesday

C = Wednesday

The second character (a number, i.e. 3) shows the session number of the day:

1 = early morning

2 = mid morning

3 = early afternoon

4 = mid afternoon

The third character (a letter, i.e. L) indicates the type of the presentation:

L = Lecture

P = Poster

The fourth character (a letter, i.e. B) shows the location of the paper presentation:

For oral presentations:

A = 'Aula MAGNA' Hall;

B = 'Sala CONSILIARE' Hall;

C = Room N1;

D = Room N2

For poster presentations

E, F, G, H, J, K, L: poster areas

The fifth character (a number, i.e. 02) indicates the paper numbering.

Satellite Events

EUROSENSORS SCHOOL

Sunday, September 7, 2014

University of Brescia, San Faustino Cloister
Via San Faustino 74/B, Brescia
09.15 - 18.00

Background

EUROSENSORS School addresses the fundamentals of sensor science technologies and discusses recent development/potential applications. The lectures are given at the graduate level and typically span from the scientific basic principles to the implementation in actual devices. They are intended for PhD students and young researchers in the field, researchers who have recently entered the interdisciplinary field of sensors and actuators, and for colleagues who want to brush up their fundamental knowledge in certain fields.

Schedule and Topics

09.15 - 09.30 *Guido Faglia - University of Brescia*

Eurosensors School Chair

**Welcome and Presentation of the
EUROSENSORS 2014 School**

09.30 - 10.30 *Arnaldo D'Amico - University of Rome Tor Vergata, Italy*

*Lina (Pasqualina M.) Sarro - Delft University of
Technology DIMES-ECTM, The Netherlands*

Corrado Di Natale - University of Rome Tor Vergata, Italy
Eurosensors School Advisory Board

A Way to Follow for the Sensor Science Development

10.30 - 12.30 *Fredrik Creemer - Delft University of Technology*

DIMES-ECTM, The Netherlands

**Silicon-based Micro Mechanics: Applications,
Technology and Device Principles**

Topics

1. Applications:

- a. Why micromechanics? Why silicon?*
- b. Examples of micromechanical devices*
- c. Markets and trends*

2. Technology:

- a. Basics of micromechanics manufacturing*
- b. Example flow charts*

3. Device principles:

- a. Beams, resonators, and membranes*
- b. Sensing mechanisms*
- c. Actuation mechanisms*

12.30 - 13.30 *Lunch*

13.30 - 15.30 *Danick Briand - École Polytechnique Fédérale de*

Lausanne, Switzerland

Flexible and Printed Sensors and Sensing Systems

Topics

- 1. State of the art on flexible and printed sensors*
- 2. Physical sensors*
- 3. Chemical sensors*
- 4. Biosensors and bioelectronics*
- 5. Printing and large area manufacturing*
- 6. Smart sensing systems and their integration*

15.30 - 16.00 *Coffee break*

Satellite Events

16.00 - 18.00 *Leandro Lorenzelli - FBK-CMM Center for Materials and Microsystems, Trento, Italy*
Ravinder Dhiya - FBK-CMM Center for Materials and Microsystems, Trento, Italy & University of Glasgow, Electronics and Nanoscale Engineering, UK
Andrea Adami - FBK-CMM Center for Materials and Microsystems, Trento, Italy
Microelectronic Technology from Solid State to Flexible Substrates: Tactile Sensors as a Case Study

Topics

- 1. Stretchable devices and circuits for sensitive tactile sensors in smart skin applications.*
- 2. Candidate transduction technologies for contact sensing: piezoelectric polymers, resistive, capacitive.*
- 3. Transducers and on chip conditioning electronics.*

Satellite Events

GEFRAN LUNCH WORKSHOP

Monday, September 8, 2014

University of Brescia, Engineering Campus
'Sala CONSILIARE' Hall
13.00 - 14.00

Serving our customers with innovative technologies

Gefran is a global supplier of industrial automation and process control, technology and solutions. A significant business within the Gefran Group is the Sensor Division.

Gefran sensors are capable of measuring variables such as pressure, position, temperature, and force, constantly assuring reliable and accurate measurements.

In depth technological know-how as well as remarkable application versatility are distinctions elements of Gefran sensors, a company always willing to serve its customers with innovative and state of the art products, providing them with tailor-made solutions.

A large blue graphic element on the right side of the page. It features a stylized white outline of a classical building with a dome and columns, positioned above a tall, cylindrical industrial sensor or probe. The sensor has a flared top with a grid of small squares. The entire graphic is set against a solid blue background.

GEFRAN
You know we are there

AUTOMATION, SENSORS, MOTION CONTROL

Satellite Events

COST ACTION TD1105 OPEN SESSION NEW SENSING TECHNOLOGIES FOR AIR-QUALITY MONITORING

Wednesday, September 10, 2014

University of Brescia, Engineering Campus

Room N2

09.00 - 12.30

- 09:30 - 10:00 Michele Penza - ENEA, Brindisi, Italy
COST Action Chair
COST Action TD1105: European Network on New Sensing Technologies for Air-Pollution Control and Environmental Sustainability. Overview of Sensor-Systems for Air Quality Monitoring
- 10:00 - 10:30 Michel Gerboles and Laurent Spinelle - JRC, EC DG ENV, Institute for Environment and Sustainability, Ispra, Italy
Performance Analysis of Low-Cost Gas Sensors for Air Quality Control
- 10:30 - 11:00 *Coffee Break*
- 11:00 - 11:20 Anita Lloyd Spetz - Linköping University, Linköping, Sweden
Action Vice-Chair
Gas and Particle Sensors for Air Quality Monitoring
- 11:20 - 11:40 Juan Ramon Morante - IREC, Barcelona, Spain
Action WG1 Leader
Nanostructured Metal Oxides Low-Cost Gas Sensors: Trends and Challenges
- 11:40 - 12:00 Andreas Schuetze - Saarland University, Saarbrücken, Germany
Action WG2 Leader
Highly Sensitive and Selective VOC Detection for Indoor Air Quality Applications
- 12:00 - 12:20 Julian W. Gardner - University of Warwick, Coventry, UK
Action MC Substitute
Smart Sensors in Mobile Phones for Environmental Monitoring Applications
- 12:20 - 12:30 **Closure of COST Action TD1105 EuNetAir
Open Session: Discussion and Inputs from Audience**

Next EUROSENSORS Conference

EUROSENSORS 2015, the XXIX edition of the conference series, will be held in Freiburg, Germany, from September 6 to 9, 2015.

Web-site: www.euroensors2015.org



Technical Program



The 28th European Conference on Solid-State Transducers

EUROSENSORS 2014

TECHNICAL PROGRAM

www.euroensors2014.eu

Program at a Glance

Sunday, September 7, 2014

University of Brescia, San Faustino Cloister

Via San Faustino 74/B, Brescia

09.15 - 18.00	EUROSENSORS School
16.00 - 20.00	<i>Registration</i>
18.00 - 21.00	Informal Get Together

Monday, September 8, 2014

University of Brescia, Engineering Campus

Via Branze 38, Brescia

	'Aula MAGNA' Hall	'Sala CONSILIARE' Hall	Room N1	Room N2
08.00 - 18.30	<i>Registration</i>			
08.30 - 09.30	Opening Ceremony			
09.30 - 11.00	A1L-A Plenary I			
11.00 - 11.30	<i>Coffee break</i>			
11.30 - 13.00	A2L-A Plenary II			
13.00 - 14.00		Lunch Workshop GEFRAN		
13.00 - 14.30	<i>Lunch</i>			
14.30 - 16.00	A3L-A Metal Oxides for Chemical Sensing I	A3L-B Acoustic Sensors	A3L-C Microsystems for Bio-and Medical Sensors	A3L-D MicroFluidic and MicroAnalytical Devices and Systems
16.00 - 16.30	<i>Coffee break</i>			
16.30 - 18.30	Poster sessions I			
19.30	Evening Concert			

Program at a Glance

Tuesday, September 9, 2014

University of Brescia, Engineering Campus
Via Branze 38, Brescia

	'Aula MAGNA' Hall	'Sala CONSILIARE' Hall	Room N1	Room N2
08.00 - 18.30	<i>Registration</i>			
09.00 - 10.30	B1L-A Gas Sensor Technology and Optimization	B1L-B Theory and Modeling	B1L-C Biosensors and Biomedical Devices	B1L-D Wireless and RF Sensor Applications
10.30 - 11.00	<i>Coffee break</i>			
11.00 - 12.30	B2L-A Nanowires and Nanotubes for Chemical Sensing	B2L-B Physical Sensors	B2L-C Detection Methods in Biosensors	B2L-D Energy Harvesting
12.30 - 14.00	<i>Lunch</i>			
14.00 - 16.00	B3L-A Metal Oxides for Chemical Sensing II	B3L-B MEMS-Based Physical Sensors	B3L-C Signal and Data Processing for Chemical Sensing	B3L-D Micro- and Nano-Fabrication for Sensors and Actuators
16.00 - 16.30	<i>Coffee break</i>			
16.30 - 18.30	Poster sessions II			
19.30	Conference Banquet			

Wednesday, September 10, 2014

University of Brescia, Engineering Campus
Via Branze 38, Brescia

	'Aula MAGNA' Hall	'Sala CONSILIARE' Hall	Room N1	Room N2
08.00 - 16.00	<i>Registration</i>			
09.00 - 10.30	C1L-A Chemical Sensor Development and Applications	C1L-B Sensor Systems and Applications	C1L-C Mechanical Micro-devices	COST Action TD1105 Open Session
10.30 - 11.00	<i>Coffee break</i>			
11.00 - 12.30	C2L-A Materials and Technology	C2L-B Piezoelectric Technologies for MicroPower Generation	C2L-C Optical MEMS and Optical Sensors	COST Action TD1105 Open Session
12.30 - 14.00	<i>Lunch</i>			
14.00 - 15.00	C3L-A New Technologies in Sensors and Systems	C3L-B Sensor Electronics and Signal Processing	C3L-C Actuators, Micro-mechanisms and Micromachines	
15.00 - 15.30	<i>Coffee break</i>			
15.30 - 16.00	Closing Ceremony			



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A1L-A Plenary I

Time: Monday, September 8, 2014, 09:30 - 11:00

Place: 'Aula MAGNA' Hall

Chair(s): Giorgio Sberveglieri, *University of Brescia, Brescia (Italy)*
Christofer Hierold, *ETH Zürich, Zürich (Switzerland)*

09:30 *Plenary Talk*

A1L-A01 Fiber-Optic Lossy Mode Resonance Sensors

Francisco J. Arregui, Ignacio Del Villar, Jesus M. Corres, Javier Goicoechea, Carlos R. Zamarreño, Cesar Elosua, Miguel Hernaez, Pedro J. Rivero, Abian B. Socorro, Aitor Urrutia, Pedro Sanchez, Pablo Zubiarte, Diego Lopez, Nerea De Acha, Ignacio R. Matias
Universidad Publica de Navarra, Spain

10:15 *Plenary Talk*

A1L-A04 Selective Chemosensing and Diagnostic Breathalyzer

Pelagia-Irene Gouma¹, S. Sood¹, M. Stanacevic², S. Simon³
¹*Dept. Mat. Sci. Eng., State University of New York at Stony Brook, United States;* ²*Dept. El. Eng., State University of New York at Stony Brook, United States;* ³*Dept. Biochem., State University of New York at Stony Brook, United States*

A2L-A **Plenary II**

Time: Monday, September 8, 2014, 11:30 - 13:00

Place: 'Aula MAGNA' Hall

Chair(s): Vittorio Ferrari, *University of Brescia, Brescia (Italy)*
Istvan Barsony, *Hungarian Academy of Sciences, Budapest (Hungary)*

11:30 *Plenary Talk*

A2L-A01 **MEMS Technology Impact on Daily Life**

Bruno Murari

ST Microelectronics, Italy

12:15 *Plenary Talk*

A2L-A04 **Nanoreactors for Atomic-Scale Microscopy**

Fredrik Creemer

Delft University of Technology, Netherlands

A3L-A Metal Oxides for Chemical Sensing I

Time: Monday, September 8, 2014, 14:30 - 16:00

Place: 'Aula MAGNA' Hall

Chair(s): Maximilian Fleischer, *Siemens AG, Munich (Germany)*
Elisabetta Comini, *University of Brescia, Brescia (Italy)*

14:30 *Invited Talk*

A3L-A01 Overview of P-Type Semiconducting Metal Oxides (SMOX) for Gas Sensings

Udo Weimar
University of Tübingen, Germany

15:00

A3L-A03 P-Type CuO Nanowires and Thin Film for Highly Sensitive Kelvin Probe Gas Sensing Applications

Muhammad Ehsan Mazhar, Guido Faglia, Elisabetta Comini, Camilla Baratto, Dario Zappa, Raj Kumar, Giorgio Sberveglieri
SENSOR Laboratory, Italy

15:15

A3L-A04 Influence of Conduction Mechanism Changes on the Sensor Performance of SMOX Based Gas Sensors

Julia Rebholz, Udo Weimar, Nicolae Barsan
University of Tübingen, Germany

15:30

A3L-A05 New Process Technologies for the Deposition of Semiconducting Metal Oxide nanoparticles for Sensing

Jens Kemmler², Sven Schopf¹, Lutz Mädler¹, Nicolae Barsan², Udo Weimar²
¹*Foundation Institute of Materials Science (IWT), Germany;*
²*Institute for Physical and Theoretical Chemistry, Germany*

15:45

A3L-A06 Chemical Sensors Based on a High-K Perovskite Oxide of Barium Strontium Titanate

Christina Huck¹, Arshak Poghosian¹, Matthias Bäcker¹, Steffen Reiser¹, Jürgen Schubert², Willi Zander², Vardges Begoyan³, Vahe Buniatyan³, Michael Schöning¹
¹*FH Aachen, Campus Jülich, Institute of Nano- and Biotechnologies, Germany;* ²*Forschungszentrum Jülich GmbH, Peter Grünberg Institute, Germany;* ³*State Engineering University of Armenia, Department of Microelectronics and Biomedical Devices, Armenia*

A3L-B Acoustic Sensors

Time: Monday, September 8, 2014, 14:30 - 16:00

Place: 'Sala CONSILIARE' Hall

Chair(s): Bernhard Jakoby, *Johannes Kepler University Linz, Linz (Austria)*

Philippe Robert, *CEA-LETI/MINATEC, Grenoble (France)*

14:30

A3L-B01 Multicantilever Oscillator

Francesc Torres, Arantxa Uranga, Núria Barniol
Universitat Autònoma de Barcelona, Spain

14:45

A3L-B02 Symmetric Plate Resonators for Viscosity and Density Measurement

Ali Abdallah, Erwin Reichel, Martin Heinisch, Stefan Clara,
Bernhard Jakoby
JKU, Austria

15:00

Invited Talk

A3L-B03 Phononic Crystals and Metamaterials - Promising New Sensor Platforms

Ralf Lucklum
Otto-von-Guericke-University Magdeburg, Germany

15:30

A3L-B05 Poling Effect to Piezoelectric Diaphragm-Type Ultrasonic Microsensors and Sensitivity Enhancement Through Buckling Profile Control

Kaoru Yamashita, Hikaru Tanaka, Minotu Noda
Kyoto Institute of Technology, Japan

15:45

A3L-B06 Development of a 6x6 Element Air-Coupled Multiple Moving Membrane Capacitive Micromachined Ultrasonic Transducer Array, M3-CMUT, for High Resolution Detection Applications

Tahereh Arezoo Emadi, Douglas Buchanan
University of Manitoba, Canada

A3L-C Microsystems for Bio- and Medical Sensors

Time: Monday, September 8, 2014, 14:30 - 16:00

Place: Room N1

Chair(s): Robert Puers, *KU Leuven, Leuven (Belgium)*
Jan Dziuban, *Wroclaw University of Technology, Wroclaw (Poland)*

14:30

A3L-C01 Development of High Frequency Microfluidic Biosensors for Intracellular Analysis

Claire Dalmay, Jonathan Leroy, Arnaud Pothier, Pierre Blondy
XLIM UMR CNRS 7252 / Limoges University, France

14:45

A3L-C02 Multi-Spot, Label-Free Detection of Biomarkers in Complex Media by Reflectionless Surfaces

Matteo Salina³, Fabio Giavazzi⁴, Erica Ceccarello⁴, Francesco Damin¹, Marcella Chiari¹, Marina Ciuffo², Gian Paolo Accotto², Marco Buscaglia⁴
¹*ICRM-CNR, Italy*; ²*IPSP-CNR, Italy*; ³*Proxentia S.r.l., Italy*;
⁴*Università degli Studi di Milano, Italy*

15:00

A3L-C03 Photoresist-Based Microfluidic Cell Sorter for Photodynamic Urine Diagnosis

Yoshikazu Hirai¹, Daisuke Takagi¹, Satoshi Anai², Yoshitomo Chihara², Toshiyuki Tsuchiya¹, Kiyohide Fujimoto², Yoshihiko Hirao², Osamu Tabata¹
¹*Kyoto University, Japan*; ²*Nara Medical University, Japan*

15:15

A3L-C04 Wireless Tear Glucose Sensor

Andreas Hennig¹, Jan Lauko², Anton Grabmaier¹, Chris Wilson²
¹*Fraunhofer IMS, Germany*; ²*NovioSense BV, Netherlands*

15:30 *Invited Talk*

A3L-C05 Novel Multichannel Fluorescence Detection for Lab-on-a-Chip Applications with Quantum Rods Fluorochromes

Rafał Walczak¹, Katja Werner², Jan Niehaus²
¹*Wroclaw University of Technology, Poland*; ²*CAN GmbH, Germany*

A3L-D MicroFluidic and MicroAnalytical Devices and Systems

Time: Monday, September 8, 2014, 14:30 - 16:00

Place: Room N2

Chair(s): Michael Vellekoop, *University of Bremen, Bremen (Germany)*
Christophe Pijolat, *National Graduate School of Engineering, St-Etienne (France)*

14:30

A3L-D01 Realization of a Planar Water-Gated Field Effect Transistor (WG-FET) Using 16-nm-Thick Single Crystalline Si Film

Ozan Ertop, Bedri Gurkan Sonmez, Senol Mutlu
Bogazici University, Turkey

14:45

A3L-D02 A Polymer microdevice for Tensiometry of Insoluble Components

Pieter Gijsenbergh², Martina Pepicelli¹, Chris Wirth¹, Jan Vermant¹, Robert Puers²
¹*KU Leuven CIT-SMaRT, Belgium;* ²*KU Leuven ESAT-MICAS, Belgium*

15:00

A3L-D03 MEMS-Based Porous Silicon preconcentrators Filled with carbopack for Explosives Detection

Malick Camara¹, Franck James¹, Philippe Breuil¹, Christophe Pijolat¹, Danick Briand², Nico de Rooij²
¹*Ecole Nationale Supérieure des Mines de Saint-Etienne (ENSM-SE), France;* ²*Ecole Polytechnique Fédérale de Lausanne (EPFL), Switzerland*

15:15

A3L-D04 A Novel Design and Fabrication of Multichannel Microfluidic Impedance Spectroscopy Sensor for Intensive Electromagnetic Environment Application

Marc-Peter Schmidt, Aleksandr Oseev, Christian Engel, Andreas Brose, Alexander Aman, Soeren Hirsch
Institute of Micro and Sensor Systems (IMOS), Germany

15:30

A3L-D05 Integration of Single Cell Traps, Chemical Gradient Generator and photosensors in a Microfluidic Platform for the Study of Alpha-synuclein Toxicity in Yeast

João Tiago Fernandes², Sandra Tenreiro¹, Catarina Pedrosa², Andreia Gameiro², Virginia Chu², Tiago Outeiro³, João Pedro Conde²
¹*IMM, Portugal;* ²*INESC-MN, Portugal;* ³*University Medical Center Göttingen, Germany*

15:45

A3L-D06 Real-Time in-situ Lactate Monitoring in 3D Multi-Cellular Spheroid Cultures by Using Enzyme-Based Biosensors in Hanging Drop Networks

Olivier Frey, Patrick Misun, Jörg Rothe, Andreas Hierlemann
ETH Zurich, Switzerland

A4P-E Materials and Technology

Time: Monday, September 8, 2014, 16:30 - 18:30

Place: Poster Area

Chair(s): Paddy French, *Delft University of Technology, Delft (The Netherlands)*

Ulrich Schmid, *Vienna University of Technology, Vienna (Austria)*

A4P-E01 Low-stress and long-term stable a-SiNx:H films deposited by ICP-PECVD

Dávid Dergez, Achim Bittner, Johannes Schalko, Ulrich Schmid

Vienna University of Technology, Austria

A4P-E02 Thermal Conductivity Measurements with Galvanic Metallization Lines on Porosified LTCC Applying the 3-Omega Technique

Frank Steinhäuber², Gabriela Sandulache¹, Walter Fahrner², Wolfgang Hansal¹, Achim Bittner², Ulrich Schmid²

¹*Happy Plating GmbH, Austria;* ²*Vienna University of Technology, Austria*

A4P-E03 Investigations on Work Functions of gasochromic Color Dyes As Gate Materials for FET Based Gas Sensors

Carolin Peter¹, Dominik Zimmermann², Daniel Knop¹, Sven Rademacher¹, Ina Schumacher¹, Ingo Freund², Jürgen Wöllenstein¹

¹*Fraunhofer IPM, Germany;* ²*Micronas GmbH, Germany*

A4P-E04 Circular Patterned Test Structures for Precise Determination of Piezoelectric Thin Film Constants: Application to ScxAl1-xN

Patrick Mayrhofer, Holger Euchner, Achim Bittner, Ulrich Schmid

TU Vienna, Austria

A4P-E05 Impact of Patterning Technique on the Long Term Stability of Ag Thin Films

Achim Bittner, Franz Prewein, Ulrich Schmid

Vienna University of Technology, Austria

A4P-E06 Electrical and Structural Characterization of Sn-DLC Thin Films for Piezoresistive Sensors

Gabriela Leal¹, Guilherme Wellington Alves Cardoso¹, Argemiro Soares Da Silva Sobrinho², Marcos Massi¹

¹*Federal University of São Paulo, Brazil;* ²*Technological Institute of Aeronautics, Brazil*

A4P-E07 Microwave Sensor for Mechanical Stress Measurement Based on Ferroelectric graphene nanosheet Composites

Alexander Aman, Soeren Majcherek, Marc-Peter Schmidt, Soeren Hirsch

Otto-von-Guericke-University, Magdeburg, Germany

- A4P-E08 Effect of Reactive Gas Flow Ratio on IC-PECVD Deposited a-SiC:H Thin Films**
Tobias Frischmuth², Michael Schneider², Thomas Grille¹, Ulrich Schmid²
¹Infinion Technologies Austria, Austria; ²Vienna University of Technology, Austria
- A4P-E09 Humidity Sensing Properties of Screen-Printed Carbon-Black and Fe(II) Spin Crossover Compound Hybrid Films**
Eduard Llobet³, Robert Barberà-Brunet³, Céline Etrillard¹, Jean-François Létard¹, Hélène Debéda²
¹CNRS, ICMCB Bordeaux, France; ²Université de Bordeaux, IMS, France; ³URV Tarragona, Spain
- A4P-E10 TiAlN Thin Films As High Temperature Strain Gauges**
Christof Zarfl, Peter Schmid, Ulrich Schmid, Gellert Balogh
Vienna University of Technology, Austria
- A4P-E11 Photo-Activation of Cadmium Sulfide Films for Gas Sensing**
Alessio Giberti¹, Andrea Gaiardo², Vincenzo Guidi², Cesare Malagù²
¹MIST E-R, Italy; ²University of Ferrara, Italy
- A4P-E12 Conductive Fabric Responding to Extremely Small Temperature Changes**
Elena Laukhina¹, Vladimir Laukhin², Victor Lebedev³, Concepcio Rovira³, Jaume Veciana³
¹CIBER de Bioingeniería, Biomateriales y Nanomedicina (CIBER-BBN), Spain; ²Institució Catalana de Recerca i Estudis Avançats (ICREA), Spain; ³Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Spain
- A4P-E13 Electrical, Optical and Sensing Properties of Photo-Activated ZnO Thin Films**
Barbara Fabbri¹, Andrea Gaiardo¹, Alessio Giberti¹, Vincenzo Guidi¹, Cesare Malagù¹, Alessandro Martucci², Marco Sturaro²
¹University of Ferrara, Italy; ²University of Padova, Italy
- A4P-E14 Room Temperature Gas Multisensor System Based on a Novel Polymer Nanocomposite Material**
Mikhail Yablokov¹, Alexey Vasiliev³, Andrey Varfolomeev³, Sergey Zavyalov²
¹Enikolopov Institute of Synthetic Polymer Materials, Russia; ²Karpov Institute of Physical Chemistry, Russia; ³NRC Kurchatov Institute, Russia
- A4P-E15 In-Line Ultrasonic Melt Flow Measurement of Polypropylene with Different Fillers**
Veronika Putz², Ivana Burzic¹, Bernhard Zagar¹, Jürgen Miethlinger¹
¹JKU, Austria; ²LCM GmbH, Austria

- A4P-E16 High Carbon-High Porous SiOC Glasses for Room Temperature No2 Sensing**
Aylin Karakuscu², Andrea Ponzoni², Dawit Ayana¹, Gian Domenico Soraru¹, Giorgio Sberveglieri²
¹Department of Industrial Engineering, University of Trento, Trento, Italy; ²Department of Information Engineering, Sensor Lab, CNR-INO and University of Brescia, Brescia, Italy
- A4P-E17 Flexible Force Sensor Based on C-Axis Oriented Aluminum Nitride**
Vincenzo Mariano Mastronardi, Francesco Guido, Simona Petroni, Massimo De Vittorio
Istituto Italiano di Tecnologia, Italy
- A4P-E18 Twofold SiOx Films Deposited by HFCVD: its Optical, Compositional and Electrical Properties**
Diana E. Vazquez Valerdi, José Alberto Luna Lopez, Godofredo Garcia Salgado, Jesus Carrillo Lopez, Alfredo Benitez Lara, Nestor D. Espinosa Torres
BUAP, Mexico
- A4P-E19 Gauge Factor of Titanium/Platinum Thin Films Up to 350°C**
Peter Schmid, Christof Zarfl, Gellert Balogh, Ulrich Schmid
TU Wien, Austria
- A4P-E20 Two-Phase Titania Nanotubes for Gas Sensing**
Vardan Galstyan¹, E. Comini¹, C. Baratto¹, M. Ferroni¹, N. Poli¹, G. Faglia¹, E. Bontempi², M. Brisotto², G. Sberveglieri¹
¹SENSOR Lab, University of Brescia and CNR INO, Italy; ²INSTM and Chem. for Tech. Lab., University of Brescia, Italy of Brescia and CNR INO, Italy
- A4P-E21 Thick-Film Load-Sensing Bridges " Effect of Temperature and Mechanical Boundary Conditions**
Thomas Maeder, Caroline Jacq, Peter Ryser
EPFL, Switzerland
- A4P-E22 Thickness Effect on the Solvent Sensing Parameters of Carbon Black-Polymer Composites**
Enrique Viguera Santiago³, Susana Hernandez Lopez³, Claudia Hernandez Escobar¹, Armando Zaragoza Contreras¹, Jose Rurik Farias²
¹Centro de Investigacion en Materiales Avanzados, Mexico; ²Universidad Autonoma del Ciudad Juarez, Mexico; ³universidad Autonoma del Estado de Mexico, Mexico

A4P-F Chemical Sensors and Microsystems

Time: Monday, September 8, 2014, 16:30 - 18:30

Place: Poster Area

Chair(s): Ralf Moos, *University of Bayreuth, Bayreuth (Germany)*
Maria Teresa Gomes, *University of Aveiro, Aveiro (Portugal)*

A4P-F01 Electrolyte Insulator Semiconductor Structure for Pb+ Detecting

Rodrigo Reigota César⁴, Angélica Denardi de Barros¹, Rafaela Oliveira Do Nascimento², Oswaldo Luiz Alves³, Ioshiaki Doi¹, José Alexandre Diniz⁴, Jacobus Willibrordus Swart⁴
¹*Center for Semiconductors Components (CCS-UNICAMP), Brazil;* ²*Laboratory of Solid State Chemistry (LQES-UNICAMP, Brazil);* ³*Laboratory of Solid State Chemistry (LQES-UNICAMP), Brazil;* ⁴*School of Electrical and Computer Engineering (FEEC-UNICAMP), Br*

A4P-F02 Electrochemical Multi-Sensors Device Coupled with Heuristic or Meta-Heuristic Selection Algorithms for Single-Cultivar Olive Oil Classification

António Peres³, Ana Veloso², José Pereira¹, Luís Dias¹
¹*CIMO-ESA-IPB, Portugal;* ²*IPC-ISEC, Portugal;* ³*LSRE-ESA-IPB, Portugal*

A4P-F03 Localized Surface Plasmon Resonance Sensor Based on Hetero-Core Structured Fiber Optic

Atsushi Seki, Kiyooki Yoshikawa, Kazuhiro Watanabe
Soka University, Japan

A4P-F04 Micro-pellistor with Integrated Porous Alumina Catalyst Support

Ferenc Bíró², Andrea Edit Pap¹, István Bársony¹, Csaba Dücső¹
¹*MTA TTK MFA, Hungary;* ²*MTA TTK MFA / Uni. Veszprém, Hungary*

A4P-F05 Enhanced Metrological Performances of Organic Electronic Ammonia Sensors Using Electro Spinning Techniques

Sentia Goursaud, Arnaud Agu, Jean-Luc Wojkiewicz, Nathalie Redon, Lahcen Khouchaf
Ecole des Mines-Douai, France

A4P-F06 Improvement of Explosive Detection by Fluorescence Sensor Using a Heating Device

Damien Rembelski, Geoffrey Gregis, Christelle Barthet, Céline Frenois
CEA Le Ripault, France

A4P-F07 Electrolyte Uptake Kinetics in Doped and undoped Sol-Gel Films Using a High Resolution EQCM Oscillator Sensor

Loreto Rodriguez-Pardo, Carmen Perez, Ana Cao-Paz, Jose Farina, Xose Ramón Novoa
University of Vigo, Spain

A4P-F08 Effect of High Pressure in Starch Viscoelastic Properties Studied with an Acoustic Wave Sensor

Maria Teresa Gomes, Maruro Santos, Jorge Saraiva
University of Aveiro, Portugal

- A4P-F09** **Screen Printed Potentiometric Chloride Sensors**
Andrew Cranny, Nick Harris, Neil White
University of Southampton, United Kingdom
- A4P-F10** **Ambient Temperature Carbon Nanotube Ammonia Sensor on CMOS Platform**
S. Santra³, A. K. Sinha³, S.K. Ray³, S.Z. Ali¹, F. Udrea⁴, J.W. Gardner⁵, P.K. Guha²
¹Cambridge CMOS Sensors Ltd, United Kingdom; ²Indian Institute of Technology, India, India; ³Indian Institute of Technology, Kharagpur, India, India; ⁴University of Cambridge, United Kingdom; ⁵University of Warwick, United Kingdom
- A4P-F11** **Periodically Structured Lamé Resonators As High Sensitivity Resonant Mass Sensors**
Luca Luschi, Francesco Pieri
Università di Pisa, Italy
- A4P-F12** **Graphene-Based Schottky Device Detecting NH₃ at Ppm Level in Environmental Conditions**
Tiziana Polichetti², Filiberto Ricciardella², Filippo Fedi¹, Maria Lucia Miglietta², Riccardo Miscioscia², Ettore Massera², Girolamo Di Francia², Maria Arcangela Nigro³, Giuliana Faggio³
¹CNR, Italy; ²ENEA, Italy; ³University of Reggio Calabria, Italy
- A4P-F13** **Molecular Imprinting on the Nanoscale " Rapid Detection of Ag Nanoparticles by QCM sensors**
Peter Lieberzeit, Christoph Jungmann, Leo Schranzhofer, Munawar Hussain, Gerald Birnbaumer
University of Vienna, Dept. of Analytical Chem., Austria
- A4P-F14** **Raman Spectroscopy for Distinguishing the Composition of Table-Top Artificial Sweeteners**
Anna Grazia Mignani¹, Leonardo Ciaccheri¹, Andrea Azelio Mencaglia¹, Tom Verschooten², Heidi Ottevaere², Hugo Thienpont²
¹CNR Istituto di Fisica Applicata, Italy; ²Vrije Universiteit Brussel, Brussels Photonics Team, Belgium
- A4P-F15** **Determination of the Soot Mass by Conductometric Soot Sensors**
Gunter Hagen, Andreas Müller, Markus Feulner, Andreas Schott, Christian Zöllner, Dieter Brüggemann, Ralf Moos
University of Bayreuth, Germany
- A4P-F16** **Nano-Textured POF Surfaces to Enhance the Sensitivity of Low Concentration HF Sensors**
Maen Ishtaiwi¹, Sabrina Grassini¹, Marco Parvis¹, Alberto Vallan¹, Giovanna Saviano²
¹Politecnico di Torino, Italy; ²Università di Roma La Sapienza, Italy

- A4P-F17 Tailoring and Characterization of Porous Hierarchical Nanostructured P Type Thin Film of Cu-Al-Oxide for the Detection of Pollutant Gases**
Raj Kumar², Camilla Baratto², Guido Faglia², Giorgio Sberveglieri², Katarina Vojisavljev¹, Barbara Malič¹
¹*Electronic Ceramics Department, Jozef Stefan Institute Jamova, Ljubljana, Slovenia;* ²*SENSOR Lab and CNR-INO, University of Brescia, Italy*
- A4P-F18 Biofilm Oxygen Profiling Using an Array of Microelectrodes on a Microfabricated Needle**
Ana Moya⁴, Xavier Guimerà³, Francisco Javier Del Campo⁴, Elisabet Prats-Alfonso⁴, Antonio David Dorado³, Mireia Baeza², Rosa Villa⁴, David Gabriel¹, Xavier Gamisans³, Gemma Gabriel⁴
¹*Dept. of Chemical Engineering (UAB), Spain;* ²*Dept. of Chemistry (UAB), Spain;* ³*EMRN (UPC), Spain;* ⁴*IMB-CNM (CSIC), Spain*
- A4P-F19 The GaN/SiC Heterostructure-Based Hydrogen SAW Sensor Operating in GHz Range**
Ivan Ryger², Gabriel Vanko², Tibor Lalinsky², Pavol Nemeč³, Anna Benčúrová³, Martin Tomáška¹, štefan Haščík²
¹*FEI STU, Slovakia;* ²*IEE SAS, Slovakia;* ³*Inst. of Informatics SAS, Slovakia*
- A4P-F20 Liquid metal/metal oxide reference electrodes for potentiometric oxygen sensor operating in liquid lead bismuth eutectic in a wide temperature range**
Gabriele Manfredi², Jun Lim¹, Joris Van Den Bosch¹, Claudine Buess-Herman³
¹*SCK•CEN, Belgium;* ²*SCK•CEN/ULB, Belgium;* ³*ULB, Belgium*
- A4P-F21 A Tunable Palladium-Based Capacitive MEMS Hydrogen Sensor Performing High Dynamics, High Selectivity and Ultra-Low Power Sensing**
Thomas Walewyns, David Spirito, Laurent A. Francis
Université catholique de Louvain, Belgium
- A4P-F22 Monolithic CMOS ISFET with Built-in Gold Reference Electrode and Readout Circuit with Frequency-Adjustable Pulse Output in Bio Detection**
Hsin-Hao Liao¹, Ruey-Lue Wang², Ying-Zong Jung¹, Hann-Huei Tsai¹, Chi Yu², Wey-De Wu²
¹*CIC, Taiwan;* ²*NKNU, Taiwan*
- A4P-F23 Flexible Polyimide Platform Based on the Integration of Potentiometric Multi-Sensor for Biomedical Applications**
Ana Moya¹, Nadia Zine², Xavier Illa¹, Elisabet Prats-Alfonso¹, Gemma Gabriel¹, Abdelhamid Errachid², Rosa Villa¹
¹*IMB-CNM (CSIC), Spain;* ²*ISA- Université Lyon, France*
- A4P-F24 Oil Analysis by Fast DSC**
Isis van Wetten², Sander van Herwaarden², Rene Splinter², Saskia van Ruth¹
¹*RIKILT/Wageningen University, Netherlands;* ²*Xensor Integration, Netherlands*

A4P-F25 A New Potentiometric Sensors for Determination of Sodium Alkylsulfates

Natalia Makarova, Elena Kulapina
Saratov State University, Russia

A4P-F26 A DDS-Based Multi-Harmonic Frequency Meter for QCM Sensor Applications

Francesco Bertocci, Ada Fort, Marco Mugnaini, Luay Shahin,
Santina Rocchi, Valerio Vignoli
University of Siena, Italy

A4P-G Biological Sensors and Biomedical Devices and Systems

Time: Monday, September 8, 2014, 16:30 - 18:30

Place: Poster Area

Chair(s): Gerald Urban, *University of Freiburg, Freiburg (Germany)*
Francisco J. Arregui, *Public University of Navarre, Pamplona (Spain)*

A4P-G01 Bioconjugation of Heavy Metal-Binding Proteins on Surface: an Optical and Gravimetric Characterization
Jane Politi, Alessandro Calio', Principia Dardano, Mario Iodice, Ilaria Rea, Luca De Stefano
IMM-NA CNR, Italy

A4P-G02 Duplicate Analysis of Cortisol for Stress Check Using QCM with a Self-suction Flow System
Takeshi Ito¹, Nobuyoshi Aoki¹, Wakako Shinobu³, Koji Suzuki²
¹Kanagawa Industrial Technology Center, Japan; ²Keio University, Japan; ³NDK Co., Ltd., Japan

A4P-G03 Glucose Biosensor Based on the Hexacyanoferrate 11-Mercaptoundecyl-N',N'',N'''-trimethylammonium/6-(Ferrocenyl)hexanethiol
Thaïsa Baldo, Patricia Seraphim, Homero Gomes, Marcos F.S. Teixeira
Sao Paulo State University (UNESP), Brazil

A4P-G04 Designing Efficient Localized Surface Plasmon Resonance-Based Sensing Platforms for Direct Detection of Hydrogen Sulfide
Meisam Omid, Gh. Amoabediny, F. Yazdian
University of Tehran, Iran

A4P-G05 Assessment of Burn Depths on Organs by Microwave
Matthieu Brusson¹, Jérôme Rossignol¹, Stéphane Binczak³, Gabriel Laurent³, Brice de Fonseca²
¹GERM Dpt Nanosciences, Laboratoire Interdisciplinaire Carnot de Bourgogne UMR CNRS 6303, France; ²GERM Dpt Nanosciences, Laboratoire Interdisciplinaire Carnot de Bourgogne, UMR CNRS 6303, France; ³Laboratoire Electronique Informatique et Image UMR

A4P-G06 A New Low Power Instrument for Impedance Measurements in Biomedicine Based on FFT, Application to Interleukin-10 Protein Detection
Francisco Palacio¹, Joan Daniel Prades¹, Manel Lopez¹, José María Gómez¹, Abdelhamid Errachid²
¹Univ. Barcelona, Spain; ²Univ. Lyon 1, France

A4P-G07 Development of an Electrochemical Aptasensor for the Detection of Human Osteopontin
Sofia Meirinho¹, Luis Dias², Antonio Peres³, Ligia Rodrigues¹
¹CEB-University of Minho, Portugal; ²CIMO-IPB, Portugal; ³LSRE-IPB, Portugal

- A4P-G08 Chemical Sensors for Prostate Cancer Detection**
Marco Santonico¹, Giorgio Pennazza¹, Anastasios D. Asimakopoulos², Dario Del Fabbro², Roberto Miano², Rosamaria Capuano², Enrico Finazzi²
¹University Campus Bio-Medico of Rome, Italy; ²University of Rome Tor Vergata, Italy
- A4P-G09 Programmable Current Source for Implantable Neural Stimulation Systems**
Jonas Pistor, Nils Heidmann, Janpeter Höffmann, Steffen Paul
University of Bremen, Germany
- A4P-G10 Proof of Principle of a Novel Impedance Microbiology (IM) Method Based on Bacteriophages functionalised Paramagnetic Nano-Beads**
Alessia Mortari¹, Marco Nicolò², Andrea Adami¹, Salvatore Gugliemino², Leandro Lorenzelli¹
¹Fondazione Bruno Kessler, Italy; ²Messina University, Italy
- A4P-G11 Monitoring of Bacterial Growth and Rapid Evaluation of Antibiotic Susceptibility by Headspace Gas Analysis**
Kerstin Wiesner, Marta Jaremek, Roland Pohle, Oliver von Sicard, Evamaria Stuetz
Siemens AG, Germany
- A4P-G12 Plasma Enhanced Hydrophobicity of parylene-C Surfaces for a Blood Contacting Pressure Sensor**
Luigi Brancato, Grim Keulemans, Pieter Gijsenbergh, Robert Puers
ESAT-MICAS, KULeuven, Belgium
- A4P-G13 A CMOS Based Polysilicon Nanowire Biosensor Platform for Different Biological Targets**
Hsin-Huang Lin², I-Shun Wang², Pei-Wen Yen¹, Hua Cheng¹, Hann-Huei Tsai⁵, Hsin-Hao Liao⁵, Shih-Jen Lu⁴, Fu-Chiang Chou⁴, Chih-Ting Lin³
¹Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University, Taiwan; ²Graduate Institute of Electronics Engineering, National Taiwan University, Taiwan; ³Graduate Institute of Electronics Engineering, National Taiwan
- A4P-G14 Miniaturized and Low-Power Blood Pressure Telemetry System with RFID Interface**
Michele Caldarà², Benedetta Nodari², Valerio Re², Barbara Bonandrini¹
¹Mario Negri Institute, Italy; ²University of Bergamo, Italy
- A4P-G15 Wireless Instrumented Crutches for Force and Tilt Monitoring in Lower Limb Rehabilitation**
Mauro Serpelloni², Emilio Sardini¹, Matteo Lancini², Simone Pasinetti²
¹University of Brescia, Italy; ²University of Brescia, Italy

- A4P-G16 Wireless Tissue Palpation: Characterization of the Probe Head to Improve Detection of Tumors in Soft Tissue**
Marco Beccani, Christian Di Natali, Nathan Hall, Claire Benjamin, Charreau Bell, Pietro Valdastrì
vanderbilt university, United States
- A4P-G17 Real-Time Measurement of Single bacterium's Refractive Index Using Optofluidic Immersion Refractometry**
Patricia Yang Liu³, Lip Ket Chin², Wee Ser², Teck Choon Ayi¹, Peng Huat Yap¹, Tarik Bourouina³, Leprince-Wang Yamin³
¹*DSO National Laboratories, Singapore*; ²*Nanyang Technological University, Singapore*; ³*Universite Paris-Est, France*
- A4P-G18 Biosensing of Molecular Behavior of Liposome and Target Protein, and Their Interaction by Dielectric Dispersion Analysis for 100-1000 MHz Range**
Tomoki Yoshikawa, Keisuke Takada, Ziyang Zhang, Kaoru Yamashita, Minoru Noda
Kyoto Institute of Technology, Japan
- A4P-G19 Impedance Spectroscopy for Silica Nanoparticle Detection in Caco-2 Cells**
Stefan Clara², Mohammad Reza Lornejad-Schäfer¹, Christine Schäfer¹, Bernhard Jakoby², Wolfgang Hilber²
¹*BioMed, Austria*; ²*JKU, Austria*
- A4P-G20 Cell Clinic, CMOS Chip Measuring Capacitance As Indication of Cell Adhesion Applied in Evaluating the Cytotoxicity of Nanomaterials**
Niina Halonen⁴, Timir Datta-Chaudhuri³, Antti Hassinen⁴, Somashekar Bangalore Prakash¹, Peter Möller², Pamela Abshire³, Elisabeth Smela³, Sakari Kellokumpu⁴, Anita Lloyd Spetz²
¹*Intel Corporation, United States*; ²*Linköping University, Sweden*; ³*University of Maryland, United States*; ⁴*University of Oulu, Finland*
- A4P-G21 Quartz Tuning Fork As in-situ Sensor of Bacterial biofilm**
Tomasz Piasecki², Grzegorz Guła¹, Karol Waszczuk², Zuzanna Drulis-Kawa¹, Teodor Gotszalk²
¹*University of Wrocław, Institute of Genetics and Microbiology, Poland*; ²*Wrocław University of Technology, Faculty of Microsystem Electronics and Photonics, Poland*
- A4P-G22 On-Chip Monitoring of Ph Change in Agar-Gels During Fungi Growth by Integrating Impedance and Colorimetric Principles**
Poornachandra Papireddy Vinayaka¹, Sander Van Den Driesche¹, Steffen Janssen¹, Mathias Frodl², Roland Blank¹, Filippo Cipriani¹, Walter Lang¹, Michael Vellekoop¹
¹*IMSAS/University of Bremen, Germany*; ²*microFAB Service GmbH, Germany*

- A4P-G23 A Fully Integrated Electrochemical Biomems Fabrication Process for Cytokine Detection: Application for Heart Failure**
Abdoulatif Baraket⁴, Michael Lee⁴, Nadia Zine⁴, Maria Giovanna Trivella³, Miguel Zabala¹, Joan Bausells², Monique Sigaud⁴, Nicole Jaffrezic-Renault⁴, Abdelhamid Errachid⁴
¹Centro Nacional de Microelectrónica, Spain; ²Centro Nacional de Microelectrónica, Spain; ³Consiglio Nazionale Ricerche, Italy; ⁴Université de Lyon1, France
- A4P-G24 A Novel Polyimide " Platinum " SU-8 Microelectrode Array for Various Electrophysiological Applications**
Gergely Márton², Gábor Orbán², Marcell Kiss², Anita Pongrácz², István Ulbert¹
¹Comparative Psychophysiology Dept., Institute of Cognitive Neuroscience and Psychology, RCNS-HAS, Hungary; ²Dept. of Microtechnology, Research Institute for Technical Physics and Materials Science, RCNS-HAS, Hungary
- A4P-G25 The Study of the Inductive Coil to the Acoustic Performance of Electromagnetic Microspeakers**
Chloé Weber¹, Yung-Chang Chen², Yu-Ting Cheng²
¹EPFL, Switzerland; ²NCTU, Taiwan
- A4P-G26 Nanostructured Shape Memory Alloy for Vascular Devices**
Kyoungwan Song¹, Yongsuk Nam¹, Taegee Min²
¹Kyunghee University, Korea, South; ²S&H Corporation, Korea, South
- A4P-G27 Interferometric Near-Field Microwave Microscopy Platform for Electromagnetic Micro-Analysis**
Kamel Haddadi, Jaouad Marzouk, Sijia Gu, Steve Arscott, Gilles Dambrine, Tuami Lasri
IEMN, France
- A4P-G28 Optical Monitoring of Therapeutic Drugs with a Novel Fluorescence-Based POCT Device**
Simone Berneschi¹, Romeo Bernini², Chiara Berrettoni¹, Ambra Giannetti¹, Immacolata Grimaldi², Gianluca Persichetti², Genni Testa², Sara Tombelli¹, Cosimo Trono¹, Francesco Baldini¹
¹IFAC-CNR, Italy; ²IREA-CNR, Italy

A4P-H Theory, Modelling, Design and Simulation

Time: Monday, September 8, 2014, 16:30 - 18:30

Place: Poster Area

Chair(s): David Elata, *Technion - Israel Institute of Technology, Haifa (Israel)*

Vincenzo Guidi, *University of Ferrara, Ferrara (Italy)*

A4P-H01 Design and Electromagnetic Optimization of a Respiration Harvester

Utku Goreke², Kivanc Azgin², Mustafa Beyaz¹

¹*Antalya International University, Turkey;* ²*Middle East Technical University, Turkey*

A4P-H02 An Electrochemical Oxygen Pump Model - a Tool for Sensor Optimisation

Cristian Diaconu², Keith Pratt¹, Mihai Gologanu², Cazimir Bostan², Martin Willett¹

¹*City Technology Ltd, United Kingdom;* ²*Honeywell, Romania*

A4P-H03 Multiple-Level Digital Loudspeaker Array

Sangchai Monkronthong, Neil White, Nick Harris

University of Southampton, United Kingdom

A4P-H04 FEM Modeling of Multilayer Piezo-Magnetic Structure Based Surface Acoustic Wave Devices for Magnetic Sensor

Meriem Elhosni², Omar Elmazria², Abdelkrim Talbi¹, Keltouma Ait Aissa², Laurent Bouvot², Frederic Sarry²

¹*IEMN, France;* ²*Institut Jean Lamour, France*

A4P-H05 FEM-Based Modeling of the Temperature Distribution Influence on Melting Process in Ceramic Differential Micro-Calorimeter

Jaroslav Kita, Annica Brandenburg, Ralf Moos

Dept. of Functional Materials, University of Bayreuth, Germany

A4P-H06 Novel Design Concepts for Piezoelectrically Driven Ohmic Switches

Fabian Stoppel, Thomas Lisek, Bernhard Wagner

Fraunhofer Institute for Silicon Technology ISIT, Germany

A4P-H07 Vibration Energy Generators for Low-Frequency Spectral Excitations

Bianca Leistritz², Michael Katzschmann¹, Hannes Toepfer²

¹*Institut für Mikroelektronik- und Mechatronik-Systeme gemeinnützige GmbH, Germany;* ²*Technische Universität Ilmenau, Germany*

A4P-H08 Neural Modeling of Relative Humidity on IP2C Vibrating Transducer

Viviana De Luca¹, Ehsan Hosseini-Asl², Salvatore Graziani¹, Jacek M. Zurada²

¹*Dipartimento di Ingegneria Elettrica Elettronica ed Informatica (DIEEI), Università di Catania, Italy;* ²*Electrical and Computer Engineering Department, University of Louisville, United States*

- A4P-H09 Design and Simulation of the Comb MWCNT Temperature Sensor for textronics**
Jacek Golebiowski¹, Sylwia Walczak², Szymon Milcarz¹
¹Department of Semiconductor and Optoelectronics Devices, Lodz University of Technology, Poland; ²Research and Innovation Center Pro-Akademia, Lodz, Poland, Poland
- A4P-H10 Lumped Circuit Model for Gyro Sensors Incorporating Coriolis and Centrifugal Force**
Eric Starke, Uwe Marschner
Technische Universität Dresden, Germany
- A4P-H11 Electric Modeling of Charged Particles Trajectories in the Drift Tube of Ion Mobility Spectrometer for Hazardous Industrial Chemicals Detection**
Nikolay Samotaev, Vecheslav Pershenkov, Vladimir Belyakov, Valeriy Vasilyev, Anatoliy Golovin, Igor Ivanov, Evgeniy Malkin, Evgeniy Gromov
National Research Nuclear University MEPhI, Russia
- A4P-H12 Optimization of Passive Air Damping of MOEMS Vibration Sensors**
Andreas Kainz², Wilfried Hortschitz¹, Michael Stifter¹, Johannes Schalko², Franz Keplinger²
¹Danube University Krems, Austria; ²Vienna University of Technology, Austria
- A4P-H13 Telemetric Model for Passive Resistive Sensors in Biomedical Applications**
Mauro Serpelloni, Emilio Sardini, Michele Bona
University of Brescia, Italy
- A4P-H14 Investigation of a Micromachined Electric Field Mill Using Dielectric Shutter**
Yu Zhou, Cyrus Shafai
University of Manitoba, Canada
- A4P-H15 Micromachined Electric Field Mill Employing a Vertical Moving Shutter**
Tao Chen, Cyrus Shafai, Athula Rajapakse, Byoungyoul Park
University of Manitoba, Canada
- A4P-H16 Device Simulation of the Light-Addressable Potentiometric Sensor with a Novel Photoexcitation Method for a Higher Spatial Resolution**
Yuanyuan Guo², Kosuke Seki², Ko-Ichiro Miyamoto², Torsten Wagner¹, Michael Schöning¹, Tatsuo Yoshinobu²
¹Aachen University of Applied Sciences, Germany; ²Tohoku University, Japan
- A4P-H17 Resonant Frequency and Phase Noise of Nanoelectromechanical Oscillators Based on Two-Dimensional Crystal Resonators**
Zoran Djuric², Ivana Jokic¹, Katarina Radulovic¹
¹ICTM – Institute of Microelectronic Technologies, University of Belgrade, Serbia; ²ITN – Institute of Technical Sciences of SASA and Serbian Academy of Sciences and Arts, Serbia

A4P-H18 Systematic Investigation of Fluidic Damping in Mechanical Resonators with Dimensions Ranging from Micro to Nano-Scale

Johannes Manz, Gerhard Wachutka, Gabriele Schrag
Munich University of Technology, Germany

A4P-H19 Enhancement of the Quality Factor of AIN Contour Mode Resonators by Acoustic Reflection: Numerical Design and Experimental Investigation

Massimiliano Cremonesi², Attilio Frangi², Cristian Cassella¹, Gianluca Piazza¹
¹Carnegie Mellon University, United States; ²Politecnico di Milano, Italy

A4P-H20 Optimization of Acoustic Sensor Using Finite Element and Design of Experiment

Rubaiyet Haque¹, Christophe Loussert², Michelle Sergent³, Xavier Boddaert¹, Patrick Benaben¹
¹Centre Microélectronique de Provence, Ecole des Mines de Saint-Etienne, Gardanne, France; ²TAGSYS RFID, La Ciotat, France; ³Université Paul Cézanne Aix-Marseille III, France

A4P-H21 Modeling and Experimental Investigation of Resonant Viscosity and Mass Density Sensors Considering Their Cross-Sensitivity to Temperature

Martin Heinisch¹, Erwin Reichel¹, Isabelle Dufour², Bernhard Jakoby¹
¹JKU, Austria; ²Université Bordeaux I, France

A4P-H22 A 3D FEM Model for Heat Transfer Mechanisms in Membrane Based Thermal Conductivity Sensors Developed Using SOI CMOS MEMS Technology

Sohab Sarfraz², Vasant Kumar², Florin Udrea³, Zeeshan Ali¹
¹Cambridge CMOS Sensors Ltd., United Kingdom; ²University of Cambridge, United Kingdom; ³University of Cambridge, Cambridge CMOS Sensors Ltd., United Kingdom

A4P-H23 Perforated Plates of Inertial Sensors - Modeling by Effective Material Properties

Steffen Michael², Astrid Frank², Gisbert Hölzer³, Gunar Lorenz¹
¹Coventor, France; ²IMMS gGmbH, Germany; ³X-FAB AG, Germany

A4P-J MicroFluidic and MicroAnalytical Devices and Systems

Time: Monday, September 8, 2014, 16:30 - 18:30

Place: Poster Area

Chair(s): Michael Vellekoop, *University of Bremen, Bremen (Germany)*
Joao Pedro Conde, *University of Lisbon, Lisbon (Portugal)*

A4P-J01 In-situ Surface Modification of Microfluidic Channels by Integrated Plasma Source

Tamás Kárpáti, Eszter Holczer, János Ferencz, Andrea Edit Pap, Péter Fürjes
Institute of Technical Physics and Materials Science, RCNS, HAS, Hungary

A4P-J02 Piezoelectric micro-pump with PZT thin film for low consumption microfluidic devices

Pierre-Henri Cazorla, Olivier Fuchs, Martine Cochet, Sandrine Maubert, Gwenael Le-Rhun, Philippe Robert, Yves Fouillet, Emmanuel Defaÿ
CEA-Leti, France

A4P-J03 Effects of micropatterning and Surface Modification of Microfluidic Channels on Capillary Water Transport

Eszter Holczer, Péter Fürjes
MEMS Lab, Research Centre for Natural Sciences – HAS, Hungary

A4P-J04 A Disposable Microfluidic Chip for Rapid and Sensitive Detection of Plasma Biomarkers

Helene Zirath¹, Johannes Peham¹, Guntram Schnetz², Lukas Brandhoff⁶, Andreas Spittler⁴, Herbert Wiesinger-Mayr¹, Michael Vellekoop⁵, Heinz Redl³
¹Austrian Institute of Technology, Austria; ²Biegler GmbH, Austria; ³Ludwig Boltzmann Institute for Experimental and Clinical Traumatology, Austria; ⁴Medical University of Vienna, Austria; ⁵University of Bremen, Germany

A4P-J05 Development of a MEMS preconcentrator for Micro-Gas Chromatography Analyses

Frank James
Ecole Nationale Supérieure des Mines de Saint-Etienne, France

A4P-J06 A Microfluidic Sensor Dedicated to Microwave Dielectric Spectroscopy of Liquids Medium and Flowing Colloidal Suspension

Landoulsi Alaeddine, Leroy Jonathan, Dalmay Claire, Pothier Arnaud, Bessaudou Annie, Blondy Pierre
XLIM, France

A4P-J07 A scalable, minimal contact device for the characterization of elastomer membrane deformation

Paul Scanlan, Steven Hammer, Wenmiao Shu, Robert Reuben
Heriot Watt University, United Kingdom

A4P-J08 Toxicity Sensing by Using Chemotactic Reaction of Microbial Cells Confined in Microfluidic Chip

Kazunari Ozasa², Jeeseo Lee¹, Simon Song¹, Mizuo Maeda²
¹Hanyang University, Korea, South; ²RIKEN, Japan

A4P-J09 Chromatographic Air Analyser Microsystem for the Selective and Sensitive Detection of Explosive-Related Compounds

Jean-Baptiste Sanchez³, Yehya Mohsen¹, Houda Lahlou³,
Franck Berger³, Igor Bezverkhy², Guy Weber², Jean-Pierre
Bellat²

¹*Centre Gabriel Lippmann, Luxembourg;* ²*ICB, France;* ³*LCE,
France*

A4P-K Sensor Systems and Applications and WSN I

Time: Monday, September 8, 2014, 16:30 - 18:30

Place: Poster Area

Chair(s): Udo Weimar, *University of Tübingen, Tübingen (Germany)*
Michele Penza, *ENEA, Brindisi (Italy)*

A4P-K01 Wireless Sensor Node with Ultrasensitive Film Sensors for Emergency Applications

Andrey Somov², Victor Lebedev³, Alexander Baranov¹, Elena Laukhina³, Vladimir Laukhin³, Roberto Passerone⁴, C Rovira³, J Veciana³

¹*MATI'-Russian State Technological University, Russia;*

²*CREATE-NET, Italy;* ³*Institut de Ciencia de Materials de Barcelona, Spain;* ⁴*University of Trento, Italy*

A4P-K02 Wireless Sensor Network for Environmental Monitoring with 3G Connectivity

Thomas Posniecek, Karlheinz Kellner, Martin Brandl
Danube University Krems, Austria

A4P-K03 Air-Based Multi-Hop Sensor Network for the Localization of Persons

Enrico Köppe¹, Daniel Augustin², Matthias Bartholmai¹

¹*BAM, Germany;* ²*FOG GmbH, Germany*

A4P-K04 Combined Molecularly Imprinted Polymer and Surface Plasmon Resonance Transduction in Plastic Optical Fiber for Monitoring Oil-Filled Power Transformers

Nunzio Cennamo², Letizia De Maria¹, Girolamo D'Agostino³, Maria Pesavento³, Luigi Zeni²

¹*RSE, Italy;* ²*Second University of Naples, Italy;* ³*University of Pavia, Italy*

A4P-K05 Detection of "9-Tetrahydrocannabinol, Methamphetamine and Amphetamine in Air at Low ppb Level Using a Field Asymmetric Ion Mobility Spectrometry Microchip Sensor

Yehya Mohsen, Nasser Gharbi, Audrey Lenouvel, Cédric Guignard

Public Research Centre - Gabriel Lippmann, Luxembourg

A4P-K06 Design, Fabrication and Characterization of SAW Pressure Sensors for Extreme Operation Conditions

Felipe Della Lucia, Paulo Zambrozi, Felipe Frazatto, Maria Piazzetta, Angelo Gobbi

CNPEM, Brazil

A4P-K07 A Low Complexity Data Driven Model of Environmental Discharge Dynamics for Wireless Sensor Network Applications

Huma Zia, Nick Harris, Geoff Merrett

University of Southampton, United Kingdom

A4P-K08 Field Trials of Screen-Printed Chloride Sensors for Environmental Sensing "Fluvarium Tests

Nick Harris¹, Andy Cranny¹, Mark Rivers²

¹*University of Southampton, United Kingdom;* ²*University of Western Australia, Australia*

- A4P-K09** **Perceptive Sportswear System with Auditory Feedback Based on Hetero-Core Optical Fiber for Running Motion**
Yuya Koyama, Kazuhiro Watanabe
SOKA University, Japan
- A4P-K10** **Detection of Pollutants in Water Samples with a Wireless Hand-Held E-Nose**
Jesús Lozano², José Pedro Santos¹, José Ignacio Suárez², Patricia Arroyo², José Luis Herrero², Antonio Martín²
¹*Spanish Council on Scientific Research, Spain;* ²*University of Extremadura, Spain*
- A4P-K11** **Improvement of an Antenna Sensor for Occupant Detection in Passenger Transportation**
Marcus Groinig, Hermann Sterner
Carinthia University of Applied Sciences, Austria
- A4P-K12** **Wireless Sensor Network Based on a chemocapacitive Sensor Array for the Real-Time Monitoring of Industrial Pollutants**
Petros Oikonomou², Athanasios Botsialas², Antonis Olziersky², Ioannis Stratakos³, Dimitris Dimas³, George Sotiropoulos¹, Dimitrios Goustouridis⁴, Ioannis Raptis⁴, Merope Sanopoulou²
¹*Alfa Beta Roto S.A., Greece;* ²*Institute of Nanoscience and Nanotechnology, NCSR 'Demokritos', Greece;* ³*Prisma Electronics S.A., Greece;* ⁴*Theta Metrisis S.A., Greece*
- A4P-K13** **Ion-Selective Electrodes Based on organoboron Compounds As Neurotransmitter Receptors**
Martyna Jańczyk, Krzysztof Borys, Andrzej Sporzyński, Wojciech Wróblewski
Warsaw University of Technology, Poland
- A4P-K14** **Classification of Different Roasting Processes by MOX Nanowire**
Veronica Sberveglieri², Estefania Nunez Carmona¹, Dario Zappa³, Elisabetta Comini³, Andrea Pulvirenti⁴
¹*CNR - IBF - Palermo, Italy;* ²*CNR - INO sensor LAB - Brescia, Italy;* ³*University of Brescia, Italy;* ⁴*University of Modena and Reggio Emilia, Italy*
- A4P-K15** **Animals Dedicated, MEMS Sensors Based Mechatronic Movement Assessment System**
Pawel Knapkiewicz², Wojciech Kosek², Piotr Jozwiak¹, Jan Dziuban², Jędrzej Jaskowski¹
¹*University of Life Sciences in Poznan, Poland;* ²*Wrocław University of Technology, Poland*
- A4P-K16** **Electrochemical Sensor Arrays for the Analysis of Wine Production**
Anna Kutyla-Olesiuk, Urszula E. Wawrzyniak, Martyna Jańczyk, Wojciech Wróblewski
Faculty of Chemistry, Warsaw University of Technology, Poland

A4P-K17 Candida milleri Detected by Electronic Nose in Tomato Sauce

Veronica Sberveglieri², Matteo Falasconi², Emanuela Gobbi²,
Estefania Nunez Carmona¹, Giulia Zambotti², Andrea
Pulvirenti²

¹CNR IBF Palermo, Italy; ²CNR-INO Sensor Lab Brescia, Italy

A4P-K18 Influence of Gas Sampling on MOS Response in Real Measurement Conditions

Andrzej Szczurek, Monika Maciejewska, Mateusz Zelek
Wroclaw University of Technology, Poland

A4P-K19 Emission Profile of Multi-Membrane CMUT for in-Air Object Localization

Alessandro Caspani¹, Nicola Errico¹, Federico Giacci¹,
Giacomo Langfelder¹, Antonio Longoni¹, Panu Koppinen²,
Jaakko Saarilahti²

¹Politecnico di Milano, Italy; ²VTT, Finland

A4P-K20 Detection of Colorectal Cancer Biomarkers in the Presence of Interfering Gases

Giulia Zonta, Barbara Fabbri, Alessio Giberti, Vincenzo Guidi,
Nicolò Landini, Cesare Malagù

University of Ferrara, Italy

B1L-A Gas Sensor Technology and Optimization

Time: Tuesday, September 9, 2014, 09:00 - 10:30

Place: 'Aula MAGNA' Hall

Chair(s): Corrado Di Natale, *University of Rome Tor Vergata, Rome (Italy)*
Ralf Moos, *University of Bayreuth, Bayreuth (Germany)*

09:00

B1L-A01 Polymer-Based VOC Sensor Module for Wireless Sensor Network System

Naoki Shiraishi², Mutsumi Kimura³, Hironao Okada¹, Yasuhisa Ando⁴

¹National Institute of Advanced Industrial Science and Technology (AIST), Japan; ²NMEMS Technology Research Organization, Japan; ³Shinshu University, Japan; ⁴Tokyo University of Agriculture and Technology, Japan

09:15

B1L-A02 Discrimination and Quantification of Volatile Organic Compounds in the ppb-Range with Gas Sensitive SiC-Field Effect Transistors

Christian Bur¹, Manuel Bastuck², Donatella Puglisi¹, Andreas Schütze³, Anita Lloyd Spetz¹, Mike Andersson¹

¹Linköping University, Sweden; ²Saarland University, Germany; ³Saarland University, Germany

09:30

B1L-A03 Drift correction in a porphyrin-coated ZnO nanorods gas sensor

Corrado Di Natale, Gabriele Magna, Alice Babbi, Eugenio Martinelli, Roberto Paolesse
University of Rome Tor Vergata, Italy

09:45

B1L-A04 Enhancement of the Spatial Resolution of the Chemical Imaging Sensor by a Hybrid Fiber-Optic Illumination

Ko-Ichiro Miyamoto², Kosuke Seki², Yuanyuan Guo², Torsten Wagner¹, Michael Schoening¹, Tatsuo Yoshinobu²

¹Aachen University of Applied Sciences, Germany; ²Tohoku univ., Japan

10:00

B1L-A05 Thermoelectric Hydrocarbon Sensor in Thick-Film Technology for on-Board-Diagnostics of a Diesel Oxidation Catalyst

Sven Wiegärtner², Gunter Hagen², Jaroslaw Kita², Daniela Schönauer-Kamin², Willibald Reitmeier¹, Markus Hien¹, Phillipe Grass¹, Ralf Moos²

¹Continental Automotive GmbH, Germany; ²Universität Bayreuth, Germany

10:15

B1L-A06

**Detection of No by Pulsed Polarization Technique
Using Pt Interdigital Electrodes on Yttria-Stabilized
Zirconia**

Sabine Fischer², Roland Pohle¹, Erhard Magori¹, Maximilian
Fleischer¹, Ralf Moos²

¹Siemens AG, Germany; ²University of Bayreuth, Germany

B1L-B Theory and Modeling

Time: Tuesday, September 9, 2014, 09:00 - 10:30

Place: 'Sala CONSILIARE' Hall

Chair(s): David Elata, *Technion - Israel Institute of Technology, Haifa (Israel)*

Bernhard Jakoby, *Johannes Kepler University Linz, Linz (Austria)*

09:00

B1L-B01 Are Folded-Beam Suspensions Really Linear?

Shai Shmulevich, Aharon Joffe, Inbar Hotzen, David Elata
Technion - Israel Institute of Technology, Israel

09:15

B1L-B02 3D Multiphysics Modelling of an SOI CMOS MEMS Thermal Wall Shear Stress Sensor

Claudio Falco³, Andrea de Luca³, Sohab Sarfraz³, Ibraheem Hanheef², John Coull³, Zeeshan Ali¹, Florin Udrea³
¹*Cambridge CMOS Sensors Ltd, United Kingdom*; ²*Institute of Avionics & Aeronautics Air University, Pakistan*; ³*University of Cambridge, United Kingdom*

09:30

B1L-B03 Frequency Domain Based Measurement Method for the Thermal Parameters of a Thin-Film Diaphragm Embedded in a MEMS Multi-Parameter Wind Sensor

Roman Beigelbeck¹, Diego Reyes-Romero³, Samir Cerimovic¹, Franz Kohl¹, Thomas Voglhuber-Brunnmaier¹, Bernhard Jakoby², Gerald Urban³
¹*Danube University Krems, Austria*; ²*Johannes Kepler University Linz, Austria*; ³*University of Freiburg, Germany*

09:45

B1L-B04 System-Level Modeling of Silicon Microphones Including Distributed Effects

Thomas Kuenzig², Gabriele Schrag², Mohsin Nawaz¹, Matthias Herrmann¹, Alfons Dehe¹, Gerhard Wachutka²
¹*Infineon Technologies AG, Germany*; ²*Munich University of Technology, Germany*

10:00

B1L-B05 A Differential Resonant Micro Accelerometer for Out-of-plane Measurements

Alessandro Caspani¹, Claudia Comi¹, Alberto Corigliano¹, Giacomo Langfelder¹, Valentina Zega¹, Sarah Zerbini²
¹*Politecnico di Milano, Italy*; ²*STMicroelectronics, Italy*

10:15

B1L-B06 Validity of Describing Resonant Viscosity and Mass Density Sensors by Linear 2nd Order Resonators

Martin Heinisch¹, Thomas Voglhuber-Brunnmaier¹, Isabelle Dufour², Bernhard Jakoby¹
¹*JKU, Austria*; ²*Université Bordeaux I, France*

B1L-C Biosensors and Biomedical Devices

Time: Tuesday, September 9, 2014, 09:00 - 10:30

Place: Room N1

Chair(s): Gerald Urban, *University of Freiburg, Freiburg (Germany)*
Leandro Lorenzelli, *Bruno Kessler Foundation, Trento (Italy)*

09:00

B1L-C01 Silicon-Based Multi-Nanowire Biosensor with High-K Dielectric and Stacked Oxide Sensing Membrane for Cardiac Troponin I Detection

Shih-Hsiang Shen³, Hua Cheng², Tung-Yi Kao¹, Miin-Jang Chen¹, Chih-Ting Lin³

¹*Department of Materials Science and Engineering, National Taiwan University, Taiwan;* ²*Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University, Taiwan;* ³*Graduate Institute of Electronics Engineering, National Taiwan University, Taiwan*

09:15

B1L-C02 Improvement of Infrared Detectors for Tissue Oximetry Using Black Silicon Nanostructures

Søren Dahl Petersen, Rasmus Schmidt Davidsen, Lucia Rosario Alcalá, Michael Stenbæk Schmidt, Anja Boisen, Ole Hansen, Erik Vilain Thomsen
DTU Nanotech, Denmark

09:30

B1L-C03 A Scalable Actuator for the Dynamic Palpation of Soft Tissue for Use in the Assessment of Prostate Tissue Quality

Paul Scanlan², Steven Hammer², Daniel Good³, Will Shu², Robert Reuben², Simon Phipps¹, Grant Stewart¹, Alan McNeill¹
¹*Edinburgh Western General Hospital, United Kingdom;* ²*Heriot Watt University, United Kingdom;* ³*University of Edinburgh, United Kingdom*

09:45

B1L-C04 Measurement of Prostate Specific Antigen Using Self-Sensing Nanomechanical Membrane

Meisam Omid², Mohammadmehdi Choolai², F. Asjodi¹, F. Haghirsadat², F. Yazdian²

¹*Applied scientific university of perspolis, sport nutrition branch, Tehran, Iran, Iran;* ²*university of tehran, Iran*

10:00

B1L-C05 Chemical Sensor Approach to Volatile Phenotyping of Respiratory Diseases

Giorgio Pennazza¹, Marco Santonico¹, Domenica Chiurco¹, Simone Scarlata¹, Chiara Vernile¹, Simone Grasso¹, Raffaele Antonelli Incalzi¹, Arnaldo D'Amico²

¹*University Campus Bio-Medico of Rome, Italy;* ²*University of Rome Tor Vergata, Italy*

10:15

B1L-C06 **Design and Modelling of a Portable Breath Analyser
for Metabolic Rate Measurement**

Timothy Vincent², Adrian Wilson¹, John Hattersley¹, Mike
Chappell², Julian Gardner²

¹*UHCW NHS Trust, United Kingdom;* ²*Warwick University,
United Kingdom*

B1L-D Wireless and RF Sensor Applications

Time: Tuesday, September 9, 2014, 09:00 - 10:30

Place: Room N2

Chair(s): Grigoris Kaltsas, *Technological Educational Institution of Athens, Athens (Greece)*
Michele Penza, *ENEA, Brindisi (Italy)*

09:00 *Invited Talk*

B1L-D01 Wireless Sensor Networking in the Internet of Things and Cloud Computing Era

Alessandra Flammini, Emiliano Sisinni
University of Brescia, Italy

09:30

B1L-D03 Development and Evaluation of a WSN for Real-Time Structural Health Monitoring and Testing

Alessandro Depari, Paolo Ferrari, Alessandra Flammini,
Stefano Rinaldi, Mattia Rizzi, Emiliano Sisinni
University of Brescia, Italy

09:45

B1L-D04 Resonant Piezo-Layer (RPL) Sensors with Contactless Interrogation for Food Monitoring from Outside Sealed Packages

Marco Ferrari, Marco Baù, Vittorio Ferrari
University of Brescia, Italy

10:00

B1L-D05 A Wireless Passive Humidity Threshold Monitoring Solution Based on a Permanent Resistance Change

Sebastian Sauer, Wolf-Joachim Fischer
TU Dresden, Germany

10:15

B1L-D06 Miniaturized Microcantilever-Based RF Microwave Probes Using MEMS Technologies

Jaouad Marzouk, Steve Arscott, Kamel Haddadi, Tuami Lasri,
Christophe Boyaval, Sylvie Lepilliet, Gilles Dambrine
IEMN, France

B2L-A Nanowires and Nanotubes for Chemical Sensing

Time: Tuesday, September 9, 2014, 11:00 - 12:30

Place: 'Aula MAGNA' Hall

Chair(s): Eduard Llobet, *Rovira i Virgili University, Tarragona (Spain)*
Andreas Hierlemann, *ETH Zürich, Basel (Switzerland)*

11:00

B2L-A01 Tungsten Oxide Nanowires Chemical Sensors

Dario Zappa, Angela Bertuna, Elisabetta Comini, Marco Molinari, Nicola Poli, Giorgio Sberveglieri
SENSOR Lab, University of Brescia & CNR-INO, Italy

11:15

B2L-A02 Gas Sensing Properties of Metal-Decorated Tungsten Oxide Nanowires Directly Grown Onto Flexible Polymeric Hotplates

Fatima Ezahra Annanouch², Malick Camara¹, Jose Luis Ramirez², Danick Briand¹, Eduard Llobet²
¹*EPFL-IMT SAMLAB, Switzerland*; ²*Universitat Rovira i Virgili, Spain*

11:30

B2L-A03 Suppression of Cross-Sensitivity to Humidity in Pristine, Suspended Single-Walled Nanotube No2 Sensors

Kiran Chikkadi, Matthias Muoth, Niklas Beckmann, Cosmin Roman, Christofer Hierold
ETH Zurich, Switzerland

11:45

B2L-A04 Use of a CNT-coated piezoelectric cantilever with double transduction as a gas sensor for benzene detection at room temperature

Pierrick Clément², Claude Lucat¹, Hélène Debéda¹, Eduard Llobet²
¹*Institut du Matériau au Système, France*; ²*Universitat Rovira i Virgili, Spain*

12:00

B2L-A05 CNT Wiring for Signal Amplification in Electrochemical magnetosensors

Zorione Herrasti¹, Fernando Martínez¹, Eva Baldrich²
¹*IK4-Ikerlan, Spain*; ²*Vall d'Hebron Institut de Recerca (VHIR), Spain*

12:15

B2L-A06 Environmental Monitoring of Low-ppb Ammonia Concentrations Based on Single-Wall Carbon Nanotube chemiresistor Gas Sensors: Detection Limits, Response Dynamics, and Moisture Effects

Federica Rigoni³, Silvia Tognolini³, Patrizia Borghetti¹, Giovanni Drera³, Stefania Pagliara³, Andrea Goldoni², Luigi Sangaletti³
¹*Centro de Física de Materiales (CSIC/UPV-EHU) – Materials Physics Center, Spain*; ²*Elettra Sincrotrone Trieste S.C.p.A., Italy*; ³*Interdisciplinary Laboratory for Advanced Materials Physics and Dipartimento di Matematica e Fisica, Italy*

B2L-B Physical Sensors

Time: Tuesday, September 9, 2014, 11:00 - 12:30
Place: 'Sala CONSILIARE' Hall
Chair(s): Paddy French, *Delft University of Technology, Delft (The Netherlands)*
Ralf Lucklum, *Otto-von-Guericke University Magdeburg, Magdeburg (Germany)*

11:00

B2L-B01 SOI-Based, High Reliable Pressure Sensor with Floating Concept for High Temperature Applications

Andrea Giuliani¹, Lionello Drera¹, Domenico Arancio¹,
Biswajit Mukhopadhyay², Ha-Duong Ngo²
¹*Gefran SpA, Italy*;
²*Technical University of Berlin, Germany*

11:15

B2L-B02 Resistive Sensors with Smart Textiles for Wearable Technology: from Fabrication Processes to Integration with Electronics

Lorenzo Capineri
Università di Firenze, Italy

11:30

B2L-B03 Characterization of Linear-Mode Avalanche Photodiodes in Standard CMOS

Eva Vilella, Anna Vilà, Francisco Palacio, Manel López, Angel Diéguez
University of Barcelona, Spain

11:45

B2L-B04 Ultra-Low Offset Vertical Hall Sensor in CMOS Technology

Christian Sander², Maria-Cristina Vecchi¹, Martin Cornils¹,
Oliver Paul²
¹*Micronas, Germany*; ²*University of Freiburg, Germany*

12:00

B2L-B05 Low Voltage Acoustic Particle Velocity Sensor with Integrated Low Noise Chopper Pre-Amplifier

Massimo Piotto², Federico Butti³, Alessia Di Pancrazio¹, Paolo Bruschi¹
¹*Dipartimento di Ingegneria dell'Informazione, University of Pisa, Italy*; ²*IEIIT - Pisa, CNR, Italy*; ³*Marvell Semiconductor, Italy*

12:15

B2L-B06 Silicon Nanowire Based Thermal Conductivity Detector

Jérémie Ruellan, Julien Arcamone, Marc Gely, Laurent Duraffourg
CEA-LETI MINATEC CAMPUS, France

B2L-C

Detection Methods in Biosensors

Time: Tuesday, September 9, 2014, 11:00 - 12:30
 Place: Room N1
 Chair(s): Joao Pedro Conde, *University of Lisbon, Lisbon (Portugal)*
 Antonio Arnau, *Polytechnic University of Valencia, Valencia (Spain)*

11:00 *Invited Talk*

B2L-C01 Bio-Inspired Explosive Sensors and Specific Signatures

Denis Spitzer¹, Karine Bonnot¹, Laurent Schlur¹, Nelly Piazzon^{1,2}, David Doblaz^{1,2}, Dimitri Ivanov², Thomas Cottineau³, Valérie Keller³

¹Laboratoire des Nanomatériaux pour les Systèmes Sous Sollicitations Extrêmes, ISL-CNRS-UdS, France; ²Institut de Science des Matériaux de Mulhouse, CNRS-UHA, France; ³Institut de Chimie et Procédés pour l'Énergie, l'Environnement et la Santé, CNRS-UdS, France

11:30

B2L-C03 DNA Intercalation-Based Amperometric Biosensor for Chlorpromazine Detection

Joanna Jankowska-Sliwinska, Marek Dawgul, Dorota Pijanowska
Nalęcz Institute of Biocybernetics and Biomedical Engineering, Poland

11:45

B2L-C04 Complex Nanostructures Based on Oligonucleotide Optical Switches and nanoparticles for Intracellular mRNA Sensing and Silencing

Barbara Adinolfi³, Sara Carpi², Ambra Giannetti³, Paola Nieri², Mario Pellegrino¹, Giovanna Sotgiu⁴, Sara Tombelli³, Cosimo Trono³, Greta Varchi⁴, Francesco Baldini³

¹Dip.Ricerca Traslationale e delle Nuove Tecnologie in Medicina e Chirurgia, Univ. Pisa, Italy; ²Dipartimento di Farmacia, Università di Pisa, Italy; ³IFAC-CNR, Italy; ⁴ISOF-CNR, Italy

12:00

B2L-C05 Label-Free Detection of DNA Hybridization with Light-Addressable Potentiometric Sensors: Comparison of Various DNA-Immobilization Strategies

Thomas Bronder¹, Chunsheng Wu³, Arshak Poghossian¹, Frederik Werner¹, Michael Keusgen², Michael Schöning¹

¹FH Aachen, Germany; ²Philipps University Marburg, Germany; ³Zhejiang University, China

12:15

B2L-C06 Love Mode Surface Acoustic Wave and High Fundamental Frequency Quartz Crystal Microbalance Immunosensors for the Detection of Carbaryl Pesticide

José Vicente García Narbón¹, María Isabel Rocha Gaso¹, Carmen March Iborra¹, Pablo García Mollá¹, Laurent Francis³, ángel Montoya Baidés², Antonio Arnau Vives², Yolanda Jiménez Jiménez²

¹Advanced Wave Sensors S.L., Spain; ²Universitat Politècnica de València, Spain; ³Université catholique de Louvain, Belgium

B2L-D Energy Harvesting

Time: Tuesday, September 9, 2014, 11:00 - 12:30

Place: Room N2

Chair(s): Skandar Basrou, *Laboratoire TIMA, CNRS-UJF-INPG, Grenoble (France)*
Tomasz Zawada, *Meggitt Sensing Systems A/S, Kvistgaard (Denmark)*

11:00

B2L-D01 Multi-Parameter Model Validation of an Energy Harvester Frequency Up-Conversion Mechanism Under Stochastic Excitation

Bryn Edwards, Kean Aw, Aiguo Hu
The University of Auckland, New Zealand

11:15

B2L-D02 FR4 Based Bistable Electromagnetic Vibration Energy Harvester

Pranay Podder¹, Andreas Amann², Saibal Roy¹
¹*Tyndall National Institute, Ireland*; ²*University College Cork, Ireland*

11:30

B2L-D03 An Electrically Tunable Low Frequency Electromagnetic Energy Harvester

Dhiman Mallick, Saibal Roy
Tyndall National Institute, Ireland

11:45

B2L-D04 Energy Harvesting from Von Karman Vortices in Airflow for Autonomous Sensors

Marco Demori, Marco Ferrari, Vittorio Ferrari, Stefano Farisè, Pietro Poesio
University of Brescia, Italy

12:00

B2L-D05 Modeling and Optimization of a Vortex Induced Vibration Fluid Kinetic Energy Harvester

Quan Wen², Robert Schulze¹, Detlef Billep², Thomas Otto², Thomas Gessner²
¹*Chemnitz University of Technology, Germany*; ²*Fraunhofer Institute for Electronic Nano Systems, Germany*

12:15

B2L-D06 Comparisons of Energy Sources for Autonomous in-Car Wireless Tags for Asset Tracking and Parking Applications

Dibin Zhu², Leran Wang², Julien Henaut¹, Steve Beeby²
¹*STERELA, France*; ²*University of Southampton, United Kingdom*

B3L-A Metal Oxides for Chemical Sensing II

Time: Tuesday, September 9, 2014, 14:00 - 16:00
 Place: 'Aula MAGNA' Hall
 Chair(s): Udo Weimar, *University of Tübingen, Tübingen (Germany)*
 Pietro Siciliano, *CNR (National Research Council), Lecce (Italy)*

14:00

B3L-A01 Optimization of CMOS Integrated Nanocrystalline SnO₂ Gas Sensor Devices with Bimetallic Nanoparticles

Giorgio Mutinati¹, Elise Brunet¹, Anton Köck⁴, Stephan Steinhauer⁴, Olena Yurchenko², Elmar Laubender², Gerald Urban², Joerg Siegert³, Karl Rohrer³, Franz Schrank³, Martin Schrems³
¹*AIT Austrian Institute of Technology GmbH, Austria*; ²*Albert-Ludwigs-Universität Freiburg, Germany*; ³*ams AG, Austria*; ⁴*Materials Center Leoben Forschung GmbH, Austria*

14:15

B3L-A02 Ultra-Sensitive H₂S Sensors Based on Hydrothermal/Impregnation-Made Ru-functionalized Wo₃ nanorods

Viruntachar Kruefu³, Anurat Wisitsoraat², Sukon Phanichphant¹
¹*Materials Science Research Center, Faculty of Science, Chiang Mai University, Thailand*; ²*National Electronics and Computer Technology Center, Thailand*; ³*Program in Materials Science, Faculty of Science, Maejo University, Thailand*

14:30 *Invited Talk*

B3L-A03 Semiconductor Metal Oxides As Hydrogen Gas Sensors

Sukon Phanichphan
Chiang Mai University, Thailand

15:00

B3L-A05 Acetone Sensing with TiO₂-Wo₃ Nanocomposites: an Example of Response Enhancement by Inter-Oxide Cooperative Effects

Mauro Epifani¹, Elisabetta Comini², Raul Diaz⁵, Teresa Andreu⁶, Aziz Genç³, Jordi Arbiol⁴, Pietro Siciliano¹, Guido Faglia², Joan Ramon Morante⁷
¹*CNR-IMM, Italy*; ²*CNR-INO and Università di Brescia, Italy*; ³*ICMAB-CSIC, Spain*; ⁴*ICMAB-CSIC and ICREA, Spain*; ⁵*IMDEA Energia, Spain*; ⁶*IREC, Spain*; ⁷*IREC and Universidad de Barcelona, Spain*

15:15

B3L-A06 Niobium Oxide Nanostructures for Chemical Sensing

Angela Bertuna, Elisabetta Comini, Nicola Poli, Dario Zappa, Giorgio Sberveglieri
Università di Brescia, Italy

15:30

B3L-A07 Fast Response Hydrogen Microsensor Based on Semiconductor Niobium-Oxide Nanostructures via Smart Anodizing of Al/Nb Metal Layers

Rosa Maria Vázquez², Alexander Mozalev¹, Eduard Llobet²
¹*Brno University of Technology, Czech Rep.*; ²*Universitat Rovira i Virgili, Spain*

15:45

B3L-A08 **Correlations Phonon Spectrum-Sensitivity in Metal
Oxide-Gas Sensors**

Mihai Mihaila

Honeywell, Romania

B3L-B MEMS-Based Physical Sensors

Time: Tuesday, September 9, 2014, 14:00 - 16:00

Place: 'Sala CONSILIARE' Hall

Chair(s): Franz Keplinger, *Vienna University of Technology, Vienna (Austria)*
Christos Tsamis, *National Center for Scientific Research Demokritos, Athens (Greece)*

14:00

B3L-B01 Off-Resonance Operation of in-Plane Torsional MEMS Magnetometers

Giacomo Laghi¹, Stefano Dellea¹, Giacomo Langfelder¹, Antonio Longoni¹, Paolo Minotti¹, Alessandro Tocchio², Sarah Zerbini²

¹*Politecnico di Milano, Italy;* ²*ST Microelectronics, Italy*

14:15

B3L-B02 Characterization of MEMS Resonators via Feedthrough Deembedding of Pulsed-Mode Response

Alexis Brenes², Jérôme Juillard¹, Alain Bonnoit¹, Filipe Vinci Dos Santos³

¹*SSE Supélec, France;* ²*Thales Avionics, France;* ³*Thales Chair, France*

14:30

B3L-B03 Investigation of the Effects of Hydrodynamic and Parasitic Electrostatic Forces on the Dynamics of a High Aspect Ratio MEMS Accelerometer

Fabrizio Cerini³, Marco Ferrari³, Vittorio Ferrari³, Alfio-Lip Russo², Mikel Azpeitia Urquia², Raffaele Ardito¹, Biagio De Masi¹, Attaallah Almasi⁴, Davide Iannuzzi⁴, René Sedmik⁴

¹*Politecnico di Milano, Italy;* ²*STMicroelectronics, Italy;* ³*University of Brescia, Italy;* ⁴*VU University Amsterdam, Netherlands*

14:45

B3L-B04 Thermal Compensated Pull-in Voltage MEMS Inclinometers

Filipe Serra Alves², Rosana Alves Dias², Jorge Cabral², João Gaspar¹, Luís Alexandre Rocha²

¹*International Iberian Nanotechnology laboratory, Portugal;* ²*University of Minho, Portugal*

15:00

Invited Talk

B3L-B05 Soft Piezoelectric MEMS Technologies for Tactile Sensing and Energy Harvesting

Massimo De Vittorio

Università del Salento, Italy

15:30

B3L-B07 MOEMS Vibration Sensor for Advanced Low-Frequency Applications with pm Resolution

Wilfried Hortschitz¹, Andreas Kainz², Franz Kohl¹, Michael Stifter¹, Harald Steiner¹, Franz Keplinger², Thilo Sauter¹, Johannes Schalko²

¹*CISS/DUK, Austria;* ²*TU-Vienna, Austria*

15:45

B3L-B08 SOI CMOS MEMS Infra-Red Thermal Source with Carbon Nanotubes Coating

Andrea De Luca², Matthew Cole², Richard Hopper¹, Zeeshan Ali¹, Florin Udrea², Julian Gardner³, William Milne²

¹Cambridge CMOS Sensors Ltd, United Kingdom; ²University of Cambridge, United Kingdom; ³University of Warwick, United Kingdom

B3L-C Signal and Data Processing for Chemical Sensing

Time: Tuesday, September 9, 2014, 14:00 - 16:00

Place: Room N1

Chair(s): Eugenio Martinelli, *University of Rome Tor Vergata, Rome (Italy)*

Santiago Marco, *University of Barcelona, Barcelona (Spain)*

14:00

B3L-C01 Continuous Prediction in chemoresistive Gas Sensors Using Reservoir Computing

Sadique Sheik², Santiago Marco¹, Ramon Huerta², Jordi Fonollosa²

¹*IBEC, Spain;* ²*UCSD, United States*

14:15

B3L-C02 Thermally Pulsed Metal Oxide Gas Sensor Combined with a Colorimetric Gas Sensor for the Selective Detection of Trace Gases

Sven Rademacher¹, Carolin Peter¹, Katrin Schmitt¹, Jürgen Wöllenstein²

¹*Fraunhofer IPM, Germany;* ²*IMTEK - University of Freiburg, Germany*

14:30

B3L-C03 Robustness to Sensor Damage of a Highly Redundant Gas Sensor Array

Luis Fernandez, Agustin Gutierrez, Santiago Marco

IBEC, Spain

14:45

B3L-C04 Automatic Fault Identification and on-Line Unsupervised Calibration of Replaced Sensors by Means of Cooperative Classifiers

Eugenio Martinelli¹, Gabriele Magna¹, Alexander Vergara², Corrado Di Natale¹

¹*Dept. Electronic Engineering, University of Rome Tor Vergata, Italy;* ²*Material Measurement Lab., National Institute of Standards Technology, Gaithersburg, USA, Mexico*

15:00

B3L-C05 Combining Real Time Classifiers for Fast and Reliable Electronic Nose Response Analysis for Aerospace NDTs

Saverio De Vito, Maria Salvato, Ettore Massera, Mara Miglietta, Antonio Buonanno, Grazia Fattoruso, Girolamo Di Francia

ENEA, Italy

15:15

B3L-C06 Description and Characterisation of a Large Array of Sensors Mimicking an Artificial Olfactory Epithelium

Mara Bernabei, Simone Pantalei, Krishna Persaud

The University of Manchester, United Kingdom

15:30

Invited Talk

B3L-C07

Trends in Near Infrared Spectroscopy and Multivariate Data Analysis from an Industrial Perspective

Kerstin Wiesner, Karen Fuchs, Alexander Michael Gigler,
Remigiusz Pastusiak
Siemens AG, Germany

B3L-D Micro- and Nano-Fabrication for Sensors and Actuators

Time: Tuesday, September 9, 2014, 14:00 - 16:00

Place: Room N2

Chair(s): Lina Sarro, *Delft University of Technology, Delft (The Netherlands)*
Jan Dziuban, *Wroclaw University of Technology, Wroclaw (Poland)*

14:00 *Invited Talk*

B3L-D01 Membrane Platforms for Sensors

István Bársony, Csaba Dücsó, Peter Fürjes, F. Riesz, Z. Hajnal, G. Battistig
Hungarian Academy of Sciences, Hungary

14:30

B3L-D03 Integrated Investigation Approach for Determining Mechanical Properties of Poly-Silicon Membranes

John Brueckner¹, Alfons Dehé², Ellen Auerswald¹, Rainer Dudek¹, Sven Rzepka¹, Bernd Michel¹
¹*Fraunhofer ENAS, Germany*; ²*Infineon Technologies AG, Germany*

14:45

B3L-D04 Residual Stress in Capacitive Micromachined Ultrasonic Transducers Fabricated with Anodic Bonding Using SOI Wafer

Vincent Walter, Gilles Bourbon, Patrice Le Moal
Femto-ST, France

15:00

B3L-D05 A Method of Fabricating Vacuum Packages with Vertical Feedthroughs in a Wafer Level Anodic Bonding Process

Mustafa Mert Torunbalci¹, Said Emre Alper¹, Tayfun Akin²
¹*METU-MEMS Research and Applications Center, Turkey*;
²*METU-MEMS Research and Applications Center/METU, Department of Electrical and Electronics Eng., Turkey*

15:15

B3L-D06 Miniature Integrated High-Vacuum MEMS

Tomasz Grzebyk², Anna Górecka-Drzazga², Jan Dziuban², Tatjana Dankovic¹, Alan Feinerman¹, Heinz Busta¹
¹*University of Illinois, United States*; ²*Wroclaw University of Technology, Poland*

15:30

B3L-D07 The Use of Polymeric Technologies for Functional 3D microdevices

Cátia Silva², Jong Noh¹, António Pontes², João Gaspar¹, Luis Rocha²
¹*International Iberian Nanotechnology Laboratory, Portugal*;
²*Universidade do Minho, Portugal*

15:45

B3L-D08

**Sers Enhancement and Field Confinement in
Nanosensors Based on Self-Organized Gold Nanowires
Produced by Ion-Beam Sputtering**

Barbara Fazio¹, Cristiano D'Andrea¹, Antonino Foti¹, Elena Messina¹, Pietro Giuseppe Gucciardi¹, Marina Giordano², Christian Martella², Daniele Chiappe², Andrea Toma², Francesco Buatier de Mongeot², Francesco Tantussi³, Priya Vasanthakumar³, Maria Allegrini³
¹CNR IPCF, Italy; ²UniGE, Italy; ³UniPI, Italy

B4P-E Micro- and Nano-Fabrication for Sensors and Actuators

Time: Tuesday, September 9, 2014, 16:30 - 18:30

Place: Poster Area

Chair(s): Christophe Pijolat, *National Graduate School of Engineering, St-Etienne (France)*
Leandro Lorenzelli, *Bruno Kessler Foundation, Trento (Italy)*

B4P-E01 Direct Laser Patterning of a Gas Sensor on Flexible Substrate

Mónica Acuautila¹, Sandrine Bernardini¹, Laurent Gallais², Marc Bendahan¹

¹Aix – Marseille University, CNRS, IM2NP – UMR 7334, France; ²Aix-Marseille Université, Centrale Marseille, CNRS, Institute Fresnel-UMR 7249, France

B4P-E02 Processing of Nanoscale Gaps for Boron-Doped Nanocrystalline Diamond Based MEMS

Dimitre Iankov², Verena Zuerbig², Wilfried Pletschen¹, Christian Giese¹, Robert Iannucci¹, Oliver Ambacher¹, Vadim Lebedev¹

¹Fraunhofer Institute for Applied Solid State Physics IAF, Germany; ²Fraunhofer Institute for Applied Solid State Physics IAF and IMTEK, University of Freiburg, Germany

B4P-E03 Shape Controlled ZnO Nanostructures for Gas Sensing Applications

Justyna Jońca¹, Andrey Ryzhikov¹, Myrtil Kahn¹, Katia Fajerwerg¹, Bruno Chaudret², Audrey Chapelle³, Philippe Menini³, Pierre Fau¹

¹Laboratoire de Chimie de Coordination, France; ²Laboratoire de Physique et de Chimie des Nano-objets, France; ³Laboratoire d'Analyse et d'Architecture des Systèmes, France

B4P-E04 Polysilicon Nanowires FET As Highly-Sensitive Ph-Sensor: Modeling and Measurements

Anne-Claire Salaun, Laurent Pichon, Gertrude Wenga
Université de Rennes1, France

B4P-E05 Electronic Sensor for Ph Measurements in nanoliters

Ismaïl Bouhadda, Olivier De Sagazan, France Le Bihan
IETR, France

B4P-E06 A Through-Hole Array on Optical Fibers Fabricated by 1-Khz/400-nm Femtosecond Laser Pulses for an in-Line/pico-Litter Spectrometer Design

Kenji Goya, Toshiaki Itoh, Atsushi Seki, Kazuhiro Watanabe
Soka University, Japan

B4P-E07 A Novel SnO2 Sensor and its Selectivity Improvement with Catalytic Filters

Justyna Jońca¹, Andrey Ryzhikov¹, Katia Fajerwerg¹, Myrtil Kahn¹, Bruno Chaudret², Audrey Chapelle³, Philippe Menini³, Pierre Fau¹

¹Laboratoire de Chimie de Coordination, France; ²Laboratoire de Physique et de Chimie des Nano-objets, France; ³Laboratoire d'Analyse et d'Architecture des Systèmes, France

- B4P-E08 Fully Integrated Lambda Sensor Based on Micromachined Platforms and Ytria Stabilized Zirconia Thin Membranes for Oxygen Measurement**
 Alex Morata², Iñigo Garbayo², Dolors Pla², Marc Salleras¹, Neus Sabaté¹, Albert Tarancón², Joan Ramón Morante²
¹*Institut de Microelectrònica de Barcelona, CSIC, Bellaterra 08139 SPAIN, Spain;* ²*Institut de Recerca en Energia de Catalunya (IREC), Spain*
- B4P-E09 Carbon Nanotubes As Base Material for Fabrication of Gap Waveguide Components**
 Muhammad Amin Saleem², Sofia Rahiminejad¹, Vincent Desmaris², Peter Enoksson¹
¹*Chalmers University of Technology, Sweden;* ²*Smoltek AB, Sweden*
- B4P-E10 Design and Fabrication of an Acoustic Micromixer for Biological Media Activation**
 Rabah Zeggari², Jean François Manceau¹, Ece Aybeke³, Réda Yahiaoui¹, Eric Lesniewska³, Wilfrid Boireau²
¹*Femto-st, France;* ²*Femto-st, CLIPP, France;* ³*ICB, CLIPP, France*
- B4P-E11 Microshaping of Aluminum-Based Neural Microelectrode Arrays Using Chemical Wet-Etching**
 Beatriz Goncalves, Alexandre Peixoto, José Rodrigues, Alexandre Silva, José Correia
University of Minho, Portugal
- B4P-E12 NEMS Switches Monolithically Fabricated on CMOS Mim Capacitors**
 Jose Luis Muñoz Gamarra, Arantxa Uranga, Nuria Barniol Beumala
, Spain
- B4P-E13 Screen Printed Free-Standing Resonator with Piezoelectric Excitation and Detection on Flexible Substrate**
 Dibin Zhu, Ahmed Almusallam, Russel Torah, Kai Yang, Steve Beeby, John Tudor
University of Southampton, United Kingdom
- B4P-E14 Comparison of Ammonia Sensing Characteristics of Individual SnO2 Nanowire and SnO2 Sol-Gel Nanocomposite**
 Alexey Shaposhnik³, Stanislav Ryabtsev⁴, Feng Shao¹, Francisco Hernández Ramírez¹, Juan Ramón Morante¹, Alexey Zviagin³, Elena Sizask³, Dmitry Shaposhnik²
¹*Catalonia Institute for Energy Research, Spain;* ²*University Rovira i Virgili, Spain;* ³*Voronezh State Agrarian University, Russia;* ⁴*Voronezh State University, Russia*
- B4P-E15 Electromagnetically Actuated Microcantilever for Chemical and Biochemical Sensing in Static Mode**
 Daniel Kopiec², Wojciech Majstrzyk², Piotr Paletko², Piotr Kunicki², Andrzej Sierakowski¹, Teodor Gotszalk²
¹*Institute of Electron Technology, Poland;* ²*Wrocław University of Technology, Poland*

- B4P-E16 Improvement of the Thermal Resistance of Thin Film Heaters on Glass Substrate for Lab-on-Chip Applications**
 Andrea Scorzoni³, Michele Tavernelli³, Pisana Placidi³, Paolo Valigi³, Stefano Zampolli¹, Domenico Caputo², Giulia Petrucci², Augusto Nascetti²
¹CNR-IMM Bologna, Italy; ²Sapienza University of Rome, Italy; ³University of Perugia, Italy
- B4P-E17 CNT-Ni-Pd Nanocomposite Films for Optical Gas Sensor**
 Elzbieta Czerwosz², Wojtek Wlodarski¹
¹RMIT Univ., Australia; ²Tele&RadioResearch Inst., Poland
- B4P-E18 Micro-Newton Detection by Using Graphene-Paper Force Sensor**
 Amir Yadegari, Meisam Omid, Mohammadmehdi Choolai, F. Haghirsadat, F. Yazdyan
 University of Tehran, Iran
- B4P-E19 Neural Cell Response to Nanostructured Biosensor Surfaces**
 Zsófia Bérces², ágoston Horváth², Attila Jády¹, Anita Pongrácz², Emilia Madarász¹, Zoltán Fekete²
¹Institute of Experimental Medicine, HAS, Hungary; ²Research Center for Natural Sciences, HAS, Hungary
- B4P-E20 Design and Development of a 3-Axis Micro Gyroscope with Vibratory Ring Springs**
 Yeonhwa Jeon², Heejun Kwon², Hyeoncheol Kim², Sungwook Kim¹
¹TLI Inc., Korea, South; ²Ulsan university, Korea, South
- B4P-E21 Fabrication of sub-micro silicon waveguide with vertical sidewall and reduced roughness for low loss applications**
 Aron Michael, Peng Wang, Chee Yee Kwok
 UNSWA, Australia
- B4P-E22 High-Sensitivity Indoor-Air-Quality Sensor Through Localized Growth of ZnO Nanostructures**
 Jurgi Gonzalez de Chavarri, Irene Castro Hurtado, Gemma Garcia Mandayo, Enrique Castaño
 Ceit, Spain
- B4P-E23 Luminescent Optical Fiber Oxygen Sensor Following Layer-by-Layer Method**
 Cesar Elosua, Nerea de Acha, Diego Lopez-Torres, Ignacio Matias Maestro, Francisco Javier Arregui
 Universidad Pública de Navarra, Spain
- B4P-E24 Study of the Fabrication Process for a Dual Mass Tuning Fork Gyro**
 Francesco Santoni, Ennio Giovine, Guido Torrioli, Fabio Chiarello, Maria Gabriella Castellano
 IFN-CNR, Italy

B4P-F Gas Sensors

Time: Tuesday, September 9, 2014, 16:30 - 18:30

Place: Poster Area

Chair(s): Andreas Hierlemann, *ETH Zürich, Basel (Switzerland)*
Danick Briand, *EPFL, Lausanne (Switzerland)*

B4P-F01 Infrared Sensor for Monitoring of LEL of Flammable Gases and Vapors of Flammable Liquids

Andrey Makeenkov², Igor Lapitskiy², Oleg Kanischev², Andrey Somov¹

¹*CREATE-NET, Italy*; ²*FSUE SPA ANALITPRIBOR, Russia*

B4P-F02 Graphene-Coated Rayleigh SAW Resonators for NO₂ Detection

Sanju Thomas², Marina Cole², Andrea de Luca¹, Felice Torissi¹, Andrea Ferrari¹, Florin Udrea¹, Julian Gardner²

¹*Cambridge University, United Kingdom*; ²*Warwick University, United Kingdom*

B4P-F03 Ammonia Sensors Based on Suspended Silicon Nanowires

Laurent Pichon, Anne Claire Salaün, Gertrude Wenga, Regis Rogel, Emmanuel Jacques

IETR, France

B4P-F04 A New Approach to Self-Monitoring of Amperometric Oxygen Sensors

Manuel Bastuck, Andreas Schütze, Tilman Sauerwald

Saarland University, Germany

B4P-F05 Effect of Hexagonal WO₃ Morphology on NH₃ Sensing

Máté Takács¹, Csaba Dücső², Zoltán Lábadi², Andrea Edit Pap²

¹*Institute of Hungarian Academy of Sciences and Budapest University of Technology and Economics, Hungary*; ²*Institute of Technical Physics and Materials Science, Hungarian Academy of Sciences, Hungary*

B4P-F06 Hydrogen-Induced Dipoles and Sensing Principles of Pt-Ti-O Gate Si-MISFET Hydrogen Gas Sensors

Kotaro Takeyasu, Katsuyuki Fukutani

The University of Tokyo, Japan

B4P-F07 VOCs Detection by Microwave Transduction Using Zeolites As Sensitive Material

Brice de Fonseca², Jérôme Rossignol², Igor Bezverkhyy¹, Jean Pierre Bellat¹, Didier Stuerger², Pierre Pribetich²

¹*ASP Dpt. OMR, Laboratoire Interdisciplinaire Carnot de Bourgogne UMR CNRS 6303, France*; ²*GERM Dpt. Nanosciences, Laboratoire Interdisciplinaire Carnot de Bourgogne UMR CNRS 6303, France*

B4P-F08 Copper Oxide Nanowires for Surface Ionization Based Gas Sensor

Cristina Cerqui², Andrea Ponzoni¹, Dario Zappa², Elisabetta Comini², Giorgio Sberveglieri²

¹*CNR, Italy*; ²*University of Brescia, Italy*

- B4P-F09 Electrode Spacing Effect on LPCVD Monolayer Graphene for Ammonia and Acetone Gas Sensors**
 Tsung-Cheng Chen¹, Wei-Tse Lin¹, Tzu-Hao Hung¹, Hui-Ling Liu¹, Chin-Pao Cheng², Chun-Hu Cheng², Chung-Hung Chen², Kuan-I Ho¹, Meng-Chin Su¹, Ming-Yang Shih¹, Chia-Ming Yang¹, Chao-Sung Lai¹
¹Chang Gung University, Taiwan; ²National Taiwan Normal University, Taiwan
- B4P-F10 Development and Application of a Fast Solid-State Potentiometric CO₂-Sensor in Thick-Film Technology**
 Sven Wiegärtner³, Jaroslaw Kita³, Gunter Hagen³, Christa Schmaus², André Kießig², Eckard Glaser¹, Armin Bolz¹, Ralf Moos³
¹Corscience GmbH & Co. KG, Germany; ²Siegert electronic GmbH, Germany; ³University Bayreuth, Germany
- B4P-F11 Nanostructured Mixed Phase Vanadium Oxide Thin Films As Highly Sensitive Ammonia Sensor Material**
 Joni Huotari², Robert Bjorklund¹, Jyrki Lappalainen², Anita Lloyd Spetz¹
¹Linköping University, Sweden; ²University of Oulu, Finland
- B4P-F12 The Gas Sensing Properties of Porphyrins-Coated Laterally Grown ZnO nanorods**
 Corrado Di Natale², Yuvaraj Sivalingam², Gabriele Magna², Luca Businaro¹, Annamaria Gerardino¹, Roberto Paolesse², Alexandro Catini², Giuseppe Pomarico², Francesco Basoli²
¹CNR, Italy; ²University of Rome Tor Vergata, Italy
- B4P-F13 Fully Printed Electrochemical NO₂ Sensor**
 Petr Kuberský², Tomáš Syrový¹, Aleš Hamáček², Stanislav Nešpůrek², Lucie Syrová¹
¹University of Pardubice, Czech Rep.; ²University of West Bohemia, Czech Rep.
- B4P-F14 CO₂ Gas Sensor Based on Mis Structure with LaF₃ Layer**
 Andrey Varfolomeev², Alexey Vasiliev², Nikolay Zaretskiy², Werner Moritz¹
¹Humboldt University of Berlin, Germany; ²NRC Kurchatov Institute, Russia
- B4P-F15 Acetone and Ethanol Selective Detection by a Single MOX-Sensor**
 Alexey Shaposhnik³, Alexey Zviagin³, Elena Sizask³, Stanislav Ryabtsev⁴, Alexey Vasiliev¹, Dmitry Shaposhnik²
¹NIC Kurchatov institute, Russia; ²University Rovira i Virgili, Spain; ³Voronezh State Agrarian University, Russia; ⁴Voronezh State University, Russia
- B4P-F16 Optimum Condition for Identification of Alcoholic Gases by Transient Response of Semiconductor Gas Sensor**
 Akira Fujimoto
 Wakayama National College of Technology, Japan

- B4P-F17 Array of Chromium Doped Nanostructured TiO₂ Metal Oxide Gas Sensors**
 Patryk Gwizdz¹, Marta Radecka¹, Katarzyna Zakrzewska¹
AGH University of Science and Technology, Poland
- B4P-F18 Fast Surface Potential Response to Gas in Air at the Room Temperature**
 Sarunas Vaskelis, Virginijus Bukauskas, Audruzis Mironas, Arunas Setkus
Center for Physical Sciences and Technology, Lithuania
- B4P-F19 NO_x Sensing Properties of Barium Titanate Thin Films**
 Savita Sharma¹, Anjali Sharma², Monika Tomar², Nitin K. Puri¹, Vinay Gupta²
¹*Delhi Technological University, India*; ²*University of Delhi, India*
- B4P-F20 Mg-MOF74 and Co-MOF74 As Sensing Layers for CO₂ Detection**
 Olena Yurchenko², Venkateswarlu Pentylala², Polina Davydovskaya¹, Roland Pohle¹, Gerald Urban²
¹*Siemens AG, Germany*; ²*University of Freiburg, Germany*
- B4P-F21 Efficient Detection of SO₂ Gas Using SnO₂ Based Sensor Loaded with Metal Oxide Catalysts**
 Punit Tyagi, Anjali Sharma, Monika Tomar, Vinay Gupta
University of Delhi, India
- B4P-F22 Effect of Ga-Doping and UV Radiation on High Performance CO Sensing of ZnO Nano-Powders**
 Ramzi Dhahri³, Mokhtar Hjiri², Lassaad El Mir¹, Anna Bonavita³, Salvatore Gianluca Leonardi³, Giovanni Neri³
¹*Al Imam Mohammad Ibn Saud Islamic University (IMSIU), Saudi Arabia*; ²*University of Gabes, Tunisia*; ³*University of Messina, Italy*
- B4P-F23 Development of Gas Sensors on Microstrip Disk Resonators**
 Davide Aloisio, Nicola Donato
University of Messina, Italy
- B4P-F24 Microstructural, Electrical and Hydrogen Sensing Properties of F-SnO₂ nanoparticles**
 Nicola Pinna¹, S. Mariotti¹, Gianvito Caputo¹, S.G. Leonardi², Mariangela Latino², N. Donato², S. Trocino², G. Neri²
¹*Humboldt Universität zu Berlin, Germany*; ²*University of Messina, Italy*
- B4P-F25 Gas Sensing Study of ZnO Nanowire heterostructured with NiO for Detection of Pollutant Gases**
 Camilla Baratto, Raj Kumar, Elisabetta Comini, Guido Faglia, Giorgio Sberveglieri
SENSOR Lab, CNR-INO and University of Brescia, Italy

B4P-F26 **An Artificial Olfactory System (AOS) for Detection of Highly Toxic Gases in Air Based on YCoO₃**

Tommaso Addabbo, Francesco Bertocci, Ada Fort, Miguel Gregorkiewitz, Marco Mugnaini, Luay Shahin, Roberto Spinicci, Rocchi Santina, Valerio Vignoli
University of Siena, Italy

B4P-G Physical Sensors and Microsystems

Time: Tuesday, September 9, 2014, 16:30 - 18:30

Place: Poster Area

Chair(s): Philippe Robert, *CEA-LETI/MINATEC, Grenoble (France)*
Franz Keplinger, *Vienna University of Technology, Vienna (Austria)*

B4P-G01 High Pressure Sensor with PZT Transducer in LTCC Package

Arkadiusz Dabrowski, Leszek Golonka
Wroclaw University of Technology, Poland

B4P-G02 CMOS Image Sensor with Tunable Dynamic Range for Catheter Based endoluminal Applications

Monica Vatteroni, Carmela Cavallotti, Michele Silvestri, Hieu T. Tran, Arianna Menciassi
Scuola Superiore Sant'Anna, Italy

B4P-G03 3-D Silicon Hall Device with Subsequent Magnetic-Field Components Measurement

Siya Lozanova, Svetoslav Noykov, Avgust Ivanov, Georgi Velichkov, Chavdar Roumenin
Institute of Systems Engineering and Robotics at Bulgarian Academy of Sciences, Bulgaria

B4P-G04 A Novel Orthogonally Activated Double-Hall Device

Siya Lozanova, Svetoslav Noykov, Georgi Velichkov, Avgust Ivanov, Chavdar Roumenin
Institute of Systems Engineering and Robotics at Bulgarian Academy of Sciences, Bulgaria

B4P-G05 A Novel Coupling of Three-Contact Parallel-Field Hall Devices for Offset Compensation

Siya Lozanova, Svetoslav Noykov, Avgust Ivanov, Georgi Velichkov, Chavdar Roumenin
Institute of Systems Engineering and Robotics at Bulgarian Academy of Sciences, Bulgaria

B4P-G06 Characterization of CMOS MEMS Capacitive Ultrasonic Sensors for Fast Photoacoustic Imaging

Chin-An Kuo, Michael Lu
NTHU, Taiwan

B4P-G07 An Ionic Liquid Based Strain Sensor for Large Displacements

Grim Keulemans, Patrick Pelgrims, Marko Bakula, Frederik Ceyssens, Robert Puers
KU Leuven, Belgium

B4P-G08 A CMOS-MEMS Thermopile with an Integrated Temperature Sensing Diode for Thermometry Applications

Richard Hopper¹, Zeeshan Ali¹, Foysoyl Chowdhury¹, Andrea De Luca², Florin Udrea², Julian Gardner³, Sophie Boual¹
¹Cambridge CMOS Sensors, United Kingdom; ²University of Cambridge, United Kingdom; ³Warwick University, United Kingdom

- B4P-G09 Terahertz Sensor for Integrated Image Detector**
 Volha Varlamava², Fabrizio Palma², Paolo Nenzi¹, Marco Balucani²
¹ENEA, Italy; ²Rome University, Italy
- B4P-G10 Multi-Layer Pressure Sensor Designed for Pressure Ranges Up to 500 Bars: Polycrystalline Organic Molecular Metal Is at Play**
 Vladimir Laukhin², Elena Laukhina¹, Victor Lebedev³, Concepcio Rovira³, Jaume Veciana³
¹CIBER de Bioingeniería, Biomateriales y Nanomedicina (CIBER-BBN), Spain; ²Institució Catalana de Recerca i Estudis Avançats (ICREA), Spain; ³Institut de Ciència de Materials de Barcelona (ICMAB-CSIC), Spain
- B4P-G11 Resonant Steel Tuning Forks for Precise Inline Viscosity and Mass Density Measurements in Harsh Environments**
 Martin Heinisch¹, Ali Abdallah¹, Isabelle Dufour², Bernhard Jakoby¹
¹JKU, Austria; ²Université Bordeaux I, France
- B4P-G12 A Spiral Spring Resonator for Mass Density and Viscosity Measurements**
 Martin Heinisch¹, Stefan Clara¹, Isabelle Dufour², Bernhard Jakoby¹
¹JKU, Austria; ²Université Bordeaux I, France
- B4P-G13 Low Temperature Co-Fired Ceramics Plasma Generator for Atmospheric Pressure Gas Spectroscopy**
 Jan Macioszczyk, Karol Malecha, Henryk Roguszczyk, Sergiusz Patela, Leszek Golonka
 Wrocław University of Technology, Poland
- B4P-G14 Aluminum Nitride SOI Lamb-Wave Resonators Towards Multi-Frequency, Multi-Sensitive Temperature Sensor Platform**
 Margarita Narducci¹, Marco Ferrari², Vittorio Ferrari², Humberto Campanella¹
¹ASTAR IME, Singapore; ²University of Brescia, Italy
- B4P-G15 Contact Mode MEMS Position Sensors with Piezoresistive Detection**
 Vencislav Todorov², Galina Stavreva¹, Vladimir Stavrov¹
¹AMG Technology Ltd, Bulgaria; ²Techproject, Austria
- B4P-G16 Micromechanical High-Doses Radiation Sensor with Bossed Membrane and Interferometry Optical Read-Out**
 Izabela Augustyniak³, Katarzyna Sareło³, Paweł Knapkiewicz³, Jan Dziuban³, Emilie Debourg², Patrick Pons², Michał Olszacki¹
¹National Centre for Nuclear Research, Poland; ²The National Center for Scientific Research, LAAS, France; ³Wrocław University of Technology, Poland

- B4P-G17 Fabrication of a Smart Suspension Structure of Micro Tactile Probing**
Khalid Alblalaih
The University of Nottingham, United Kingdom
- B4P-G18 A Selective, Miniaturized, Low-Cost Detection Element for a Photoacoustic CO₂ Sensor for Room Climate Monitoring**
Jochen Huber¹, Alexander Ambs¹, Sven Rademacher¹, Jürgen Wöllenstein²
¹*Fraunhofer IPM, Germany;* ²*IMTEK, University of Freiburg, Germany*
- B4P-G19 Ultraviolet Radiation Detection by Barium Titanate Thin Films Grown by Sol-Gel Hydrothermal Method**
Savita Sharma¹, Monika Tomar², Nitin K. Puri¹, Vinay Gupta²
¹*Delhi Technological university, India;* ²*University of Delhi, India*
- B4P-G20 Electroplated multiring Core Planar Fluxgate**
Mattia Butta, Michal Janosek, Pavel Ripka
Faculty of Electrical Engineering, Czech Technical University in Prague, Czech Rep.
- B4P-G21 Sensitivity of Long-Period Gratings Modified by Their Bending**
Magdalena Szymanska², Krzysztof Krogulski², Predrag Mikulic¹, Wojtek Bock¹, Mateusz Smietana²
¹*Universite du Quebec en Outaouais, Canada;* ²*Warsaw University of Technology, Poland*
- B4P-G22 New Nanostructured Schottky Diode Gamma-Ray Radiation Sensor**
Abdelhameed Sharaf, Asmaa Gamal, Mohamed Serry
The American University in Cairo, Egypt
- B4P-G23 Design and Characterization of PiezoMUMPs Microsensors with Applications to Environmental Monitoring of Aromatic Compounds via Selective Supramolecular Receptors**
Carlo Trigona, Antonino Algozino, Felice Maiorca, Bruno Andò, Salvatore Baglio
University of Catania, Italy
- B4P-G24 Investigation of Polymer Thick-Film Piezoresistors for Medical Wrist Rehabilitation and Artificial Knee Load Sensors**
Caroline Jacq, Thomas Maeder, Simon Emery, Matteo Simoncini, Eric Meurville, Peter Ryser
EPFL, Switzerland
- B4P-G25 Concept Studies of Torsional Resonators for Viscosity and Mass Density Sensing Applications**
Martin Heinisch¹, Alexander Niedermayer¹, Isabelle Dufour², Bernhard Jakoby¹
¹*JKU, Austria;* ²*Université Bordeaux I, France*

B4P-G26 High Sensitive and Linear Pressure Sensor for Ultra-Low Pressure Measurement

Xian Huang, Dacheng Zhang
Peking University, China

B4P-H **MicroPower Generation and Autonomous Microsystems**

Time: Tuesday, September 9, 2014, 16:30 - 18:30

Place: Poster Area

Chair(s): Christos Tsamis, *National Center for Scientific Research Demokritos, Athens (Greece)*

Tomasz Zawada, *Meggitt Sensing Systems A/S, Kvistgaard (Denmark)*

B4P-H01 **Reliability Improvement of Vibration Energy Harvester with Shock Absorbing Structures**

Takayuki Fujita², Michael Renaud¹, Martijn Goedbloed¹, Christine de Nooijer¹, Rene Elfrink¹, Geert Altena¹, Rob van Schaijk¹

¹Holst Centre / imec, Netherlands; ²University of Hyogo, Japan

B4P-H02 **Increasing Durability of Piezoelectric Impact Based Micro Wind Generator for Real Application**

Hyun Jun Jung, Yooseob Song, Seong Kwang Hong Hong, Chan Ho Yang, Sung Joo Hwang, Tae Hyun Sung
Hanyang university, Korea, South

B4P-H03 **Improving the Efficiency of PV Low-Power Processing Circuits by Selecting an Optimal Inductor Current of the DC/DC Converter**

Ferran Reverter, Manel Gasulla

Universitat Politècnica de Catalunya, Spain

B4P-H04 **Human Motion Spectrum-Based 2-DOF Energy Harvesting Device: Design Methodology and Experimental Validation**

Mahmoud Elsharkawy, Nader Mansour, Ahmed Fath El-Bab, Samy Assal

Egypt-Japan University of Science and Technology, Egypt

B4P-H05 **An Electrostatic MEMS Frequency Up-Converter for Efficient Energy Harvesting**

Samer Hourri², Denis Aubry¹, Philippe Gaucher¹, Elie Lefeuvre²

¹ECP, France; ²IEF, France

B4P-H06 **Autonomous Wireless Sensor with a Low Cost Teg for Application in Automobile Vehicles**

Aléxis Costa, Diogo Costa, Joel Morgado, Hélder Santos, Carlos Ferreira

Instituto Politécnico de Leiria, Portugal

B4P-H07 **Portable Energy-Logger Circuit for the Experimental Evaluation of Energy Harvesting Solutions from Motion for Wearable Autonomous Sensors**

Gabriele Pellegrinelli, Marco Baù, Fabrizio Cerini, Simone Dalola, Marco Ferrari, Vittorio Ferrari

University of Brescia, Italy

B4P-J **Sensor Electronics and Signal Processing**
Time: Tuesday, September 9, 2014, 16:30 - 18:30
Place: Poster Area
Chair(s): Grigoris Kaltsas, *Technological Educational Institution of Athens, Athens (Greece)*
 Giovanni Breglio, *University of Naples 'Federico II', Naples, (Italy)*

B4P-J01 **Simple, Cost Effective and Network Compatible Readout for Capacitive and Resistive (Chemical) Sensors**
Giuseppe A. M. Nastasi³, Antonino Scuderi², Hanns-Erik Endres¹, Waltraud Hell¹, Karlheinz Bock¹
¹*Fraunhofer Research Institution for Modular Solid State Technologies EMFT, Germany;* ²*Qualcomm, United States;* ³*STMicroelectronics, Italy*

B4P-J02 **A Modular Analog Front-End for the Recording of Neural Spikes and Local Field Potentials Within a Neural Measurement System**
Nils Heidmann, Nico Hellwege, Jonas Pistor, Dagmar Peters-Drolshagen, Steffen Paul
Institute of Electrodynamics and Microelectronics, Germany

B4P-J03 **A Real-Time Electronic System for Automated Impact Detection on Aircraft Structures Using Piezoelectric Transducers**
Lorenzo Capineri², Andrea Bulletti², Marco Calzolari², Daniele Francesconi¹
¹*Thales Alenia Space Italia S.p.A, Italy;* ²*University of Florence, Italy*

B4P-J04 **All-Digital Linearity Enhancement Technique for Time-Domain Smart Temperature Sensors**
Chun-Chi Chen, Chao-Lieh Chen, Yi Lin
National Kaohsiung First University of Science and Technology, Taiwan

B4P-J05 **Microcontroller-Based Interface Circuit for Inductive Sensors**
Zivko Kokolanski¹, Josep Jordana², Manel Gasulla², Vladimir Dimcev¹, Ferran Reverter²
¹*Ss. Cyril and Methodius State University, Macedonia;* ²*Universitat Politècnica de Catalunya, Spain*

B4P-J06 **Attitude-Independent 3-Axis Accelerometer Calibration Based on Adaptive Neural Network**
Katarína Draganová, Miroslav Laššák, Dušan Praslička, Viktor Kán
Faculty of Aeronautics, Technical University of Košice, Slovakia

- B4P-J07 Low-Frequency Measurements Using Piezoresistive Cantilever MEMS Devices " the Problem of Thermal Drift**
Grzegorz Jozwiak³, Daniel Kopiec³, Teodor Gotszalk³, Piotr Grabiec², Ivo W. Rangelov¹
¹Ilmenau University of Technology, Germany; ²Institute of Electron Technology, Poland; ³Wroclaw University of Technology, Poland
- B4P-J08 Position Estimation of RFID Based Sensors Using Passive SAW Compressive Receivers**
Martin Brandl, Karlheinz Kellner
Danube University Krems, Austria
- B4P-J09 Arrays of Conformable Ultrasonic Lamb Wave Transducers for Structural Health Monitoring with Real-Time Electronics**
Lorenzo Capineri², Andrea Bulletti², Marco Calzolari², Pietro Giannelli², Daniele Francesconi¹
¹Thales Alenia Space Italia SpA, Italy; ²University of Florence, Italy
- B4P-J10 Cross-Talk Characterization of Single-Photon Avalanche Diode (SPAD) Arrays in CMOS 150nm Technology**
Hesong Xu¹, Lucio Pancheri², Leo Huf Campos Braga¹, Gian-Fanco Dalla Betta², David Stoppa¹
¹Fondazione Bruno Kessler, Italy; ²University of Trento, Italy
- B4P-J11 A Low Power bioimpedance Module for Wearable Systems**
Stefano Rossi, Marco Pessione, Luigi Della Torre
STMicroelectronics, Italy
- B4P-J12 Development of a Novel Gas Sensing Algorithm Based on Impedance Spectroscopy**
Fei Li¹, Wojtek Wlodarski², Uwe Marschner³, Sebastian Sauer³, Eric Starke³, Wolf-Joachim Fischer³
¹Infineon AG, Germany; ²RMIT University, Australia; ³Technische Universitaet Dresden, Germany
- B4P-J13 A Low Cost Multi-Sensor Strategy for Early Warning in Structural Monitoring Exploiting a Wavelet Multiresolution Paradigm**
Bruno Andò, Salvatore Baglio, Antonio Pistorio
D.I.E.E.I. - University of Catania, Italy
- B4P-J14 Trigger Circuits in Battery-Less Multi-Source Power Management Electronics for Piezoelectric Energy Harvesters**
Davide Alghisi, Marco Ferrari, Vittorio Ferrari
University of Brescia, Italy

B4P-K Sensor Systems and Applications and WSN II

Time: Tuesday, September 9, 2014, 16:30 - 18:30

Place: Poster Area

Chair(s): Corrado Di Natale, *University of Rome Tor Vergata, Rome (Italy)*

Rafał Walczak, *Wroclaw University of Technology, Wroclaw (Poland)*

B4P-K01 WLAN-Enabled Sensor Nodes for Cloud-Based Machine Condition Monitoring

Paolo Bellagente, Chiara Maria De Dominicis, Alessandro Depari, Alessandra Flammini, Stefano Rinaldi, Emiliano Sisinni, Angelo Vezzoli
University of Brescia, Italy

B4P-K02 Wi-Fi Wireless Digital Sensor Matrix for Environmental Gas Monitoring

Nikolay Samotaev¹, Anastasia Ivanova¹, Konstantin Oblov¹, Sergey Soloviev¹, Alexey Vasiliev²
¹*National Research Nuclear University MEPhI, Russia; ²NRC Kurchatov Institute, Russia*

B4P-K03 Design of Wireless Sensor Nodes for Structural Health Monitoring Applications

Fabio Federici, Roberto Alesii, Andrea Colarieti, Marco Faccio, Fabio Graziosi, Vincenzo Gattulli, Francesco Potenza
University of L'Aquila, Italy

B4P-K04 Fast Identification of Microbiological Contamination in Vegetable Soup by Electronic Nose

Giulia Zambotti¹, Veronica Sberveglieri⁴, Emanuela Gobbi², Matteo Falasconi¹, Estefania Nunez³, Andrea Pulvirenti⁴
¹*University of Brescia & CNR INO, Italy; ²University of Brescia & CNR-INO, Italy; ³University of Modena and Reggio Emilia & CNR IBF, Italy; ⁴University of Modena and Reggio Emilia & CNR INO, Italy*

B4P-K05 An Integrated Optical Measurement System for Water Quality Monitoring

Karlheinz Kellner, Martin Brandl
Danube University Krems, Austria

B4P-K06 Design, Fabrication and Characterization of a Tactile Display Based on AIN Transducers

François Bernard³, Marie Gorisse³, Fabrice Casset¹, Cédric Chappaz², Skandar Basrour³
¹*CEA LETI laboratory, France; ²STMicroelectronics, France; ³TIMA laboratory, France*

B4P-K07 Enzymatically Catalyzed Degradation of Biodegradable Polymers Investigated by Means of a Semiconductor-Based Field-Effect Sensor

Sebastian Schusser¹, Matthias Bäcker¹, Maximilian Krischer¹, Laura Wenzel¹, Marcel Leinhos¹, Arshak Poghossian¹, Manfred Biselli¹, Patrick Wagner², Michael Schöning¹
¹*FH Aachen, Institute of Nano- and Biotechnologies (INB), Germany; ²Hasselt University, Institute for Materials Research (IMO), Belgium*

- B4P-K08 Low Cost, Mobile Sensor System for Measurement of Carbon Dioxide in Permafrost Areas**
 Andre Eberhardt⁴, Louisa Scholz⁴, Sebastian Westermann⁵, Torsten Sachs³, Moritz Langer¹, Jürgen Wöllenstein², Stefan Palzer⁴
¹Alfred Wegener Institute, Helmholtz Centre for Polar and Marine Research, Germany; ²Fraunhofer Institute for Physical Measurement Techniques, University of Freiburg, Germany; ³GFZ German Research Centre for Geosciences, Germany; ⁴University of Fr
- B4P-K09 Detection of Smokeless Pyrolysis of Organic Materials by Metal Oxide Gas Sensor**
 Nikolay Samotaev¹, Alexey Vasiliev², Alexander Pislakov², Andrey Sokolov²
¹National Research Nuclear University MEPhI, Russia; ²RRC Kurchatov Institute, Russia
- B4P-K10 Innovative IAQ Organic Sensor**
 Alessandro Zompanti¹, Simone Grasso¹, Marco Santonico¹, Giorgio Pennazza¹, Mariano Bizzarri², Arnaldo D'Amico³
¹University Campus Bio-Medico di Roma, Italy; ²University La Sapienza, Rome, Italy; ³University of Rome Tor Vergata, Italy
- B4P-K11 An Investigation Into the Accuracy of Calculating Upper Body Joint Angles Using MARG Sensors**
 Evangelos Mazomenos, Dwaipayan Biswas, Andrew Cranny, Nick Harris, Koushick Maharatna
 University of Southampton, United Kingdom
- B4P-K12 Sensor System for Dynamic Detection of the Concentration Gradient of Volatile Compounds in the Air**
 Piotr Batog², Andrzej Wołczowski¹
¹Faculty of Electronics, Wrocław University of Technology, Poland; ²Faculty of Environmental Engineering, Wrocław University of Technology, Poland
- B4P-K13 An Improved Ultrasound System for Biometric Recognition Based on Hand Geometry and Palmprint**
 Antonio Iula¹, Gabriel Hine¹, Alessandro Ramalli², Francesco Guidi²
¹University of Basilicata, Italy; ²University of Firenze, Italy
- B4P-K14 Thermal Flow Sensor Based on Printed Circuit Board Technology for Ventilation and Air Conditioning Systems**
 Thomas Glatzl¹, Harald Steiner¹, Franz Kohl¹, Franz Keplinger², Thilo Sauter¹
¹Danube University Krems, Austria; ²Vienna University of Technology, Austria
- B4P-K15 Fully RF Powered UHF-RFID Sensors Platform**
 Francesco Giuseppe Della Corte², Corrado Felini², Massimo Merenda¹
¹mediterranea university, Italy; ²mediterranea university of reggio c, Italy

- B4P-K16 A Framework for Calibration of Barometric MEMS Pressure Sensors**
Andreas Dickow, Gregor Feiertag
Munich University of Applied Sciences, Germany
- B4P-K17 DEMOCHEM: Integrated System for Mycotoxins Detection**
Domenico Caputo², Giampiero de Cesare², Augusto Nascetti², Riccardo Scipinotti², Fabrizio Pavanello¹, Roberto Arrigoni¹
¹*Automation srl, Italy;* ²*Sapienza, University of Rome, Italy*
- B4P-K18 E-Tongue for Ecological Monitoring Purposes: the Case of microcystins Detection**
Larisa Lvova², Carla Guanais Branchini², Konstantinos Petropoulos², Laura Micheli², Giulia Volpe², Giuseppe Palleschi², Emanuela Viaggiù², Roberta Congestri², Licia Guzzella¹, Fiorenzo Pozzoni¹, Corrado Di Natale², Roberto Paolesse²
¹*CNR-IRSA, Brughiero, Italy;* ²*“Tor Vergata” University, Italy*
- B4P-K19 High Sensitivity Micro-Machined Piezoresistive Strain Sensor**
David Caseiro, Sérgio Santos, Carlos Ferreira, Carlos Neves
Instituto Politécnico de Leiria, Portugal
- B4P-K20 Thermal Flow Measurements by a Flexible Sensor, Implemented on the External Surface of the Flow Channel**
Anastasios Moschos, Anastasios Petropoulos, Evangelos Zervas, Spyros Athinaios, Grigoris Kaltsas
TEI of Athens, Greece
- B4P-K21 Cost Action TD1105: Overview of Sensor-Systems for Air-Quality Monitoring**
Michele Penza
ENEA, Italy

- B4P-L** **Optical MEMS, Actuators and Packaging**
 Time: Tuesday, September 9, 2014, 16:30 - 18:30
 Place: Poster Area
 Chair(s): Lina Sarro, *Delft University of Technology, Delft (The Netherlands)*
 Leszek Golonka, *Wroclaw University of Technology, Wroclaw (Poland)*
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- B4P-L01** **Characterization of a New SMA Actuator**
 Alberto Borboni, Rodolfo Faglia
Università degli Studi di Brescia, Italy
- B4P-L02** **Thermal tuning of MEMS buckled membrane actuator stiffness**
 Robert Lake, Kyle Ziegler, Ronald Coutu Jr.
Air Force Institute of Technology, United States
- B4P-L03** **Full-Gap Tracking System for Parallel-Plate Electrostatic microactuators**
 Eurico Esteves Moreira², Filipe Serra Alves², Rosana Alves Dias², Jorge Cabral², João Gaspar¹, Luis Alexandre Rocha²
¹*International Iberian Nanotechnology Laboratory, Portugal;*
²*University of Minho, Portugal*
- B4P-L04** **Development of a Pneumatically Actuated Cantilever Based Micro-Tweezer**
 Ageel Alogla, Farid Amalou, Paul Scanlan, Wenmiao Shu, Robert Reuben
Heriot-Watt University, United Kingdom
- B4P-L05** **Interdigitated Piezoelectric Actuation Mechanism for Micro-Optics Application**
 Aron Michael, Chee Yee Kwok
UNSWA, Australia
- B4P-L06** **Parylene-C As High Performance Encapsulation Material for Implantable Sensors**
 Dani Zeniieh, Loic Ledernez, Gerald Urban
University of Freiburg, Germany
- B4P-L07** **Development of a Reliable Packaging for CMOS-Based Microelectrode Arrays by Using an Automated Setup**
 Alexander Stettler, Peter Buchmann, Jörg Rothe, Milos Radivojevic, Andreas Hierlemann
ETH Zurich, Switzerland
- B4P-L08** **A MEMS Filter Based on Ring Resonator with Electrothermal Actuation and Piezoelectric Sensing**
 Boris Svilicic², Enrico Mastropaolo¹, Rebecca Cheung¹
¹*University of Edinburgh, Scottish Microelectronics Centre, United Kingdom;* ²*University of Rijeka, Faculty of Maritime Studies Rijeka, Croatia*
- B4P-L09** **A Lossy Fabry-Perot Based Optical Filter for Natural Gas Analysis**
 N. Pelin Ayerden, Mohammad Amir Ghaderi, Ger de Graaf, Reinoud F. Wolffenbuttel
TU Delft, Netherlands

B4P-L10 Optical Filter for Providing the Required Illumination to Enable Narrowband Imaging in Endoscopy

Manuel Silva², Jose Rodrigues², Maria Oliveira², Ana Fernandes², Sergio Pereira², Catarina Costa², Mohammad Amir Ghaderi¹, Pelin Ayerden¹, Luis Goncalves², Ger de Graaf¹, Reinoud Wolffenbuttel¹, Jose Correia¹

¹Delft University of Technology, Netherlands; ²University of Minho, Portugal

B4P-L11 Low Temperature Sub-Micron Gap Thin-Film Silicon Resonators on Glass Substrate

João Mouro, Alexandra Gualdino, Laura Teagno, Virginia Chu, João Conde

INESC-MN, Portugal

C1L-A Chemical Sensor Development and Applications

Time: Wednesday, September 10, 2014, 09:00 - 10:30

Place: 'Aula MAGNA' Hall

Chair(s): Wojtek Wlodarski, *RMIT University, Melbourne (Australia)*

Maria Teresa Gomes, *University of Aveiro, Aveiro (Portugal)*

09:00 *Invited Talk*

C1L-A01 Gas Dependent Changes in the Electrical Behavior of Selective Metal-Oxide Layers

Janosch Kneer², André Eberhardt², Jürgen Wöllenstein¹, Stefan Palzer²

¹*Fraunhofer Institute for Physical Measurement Techniques, Germany;* ²*University of Freiburg - IMTEK, Germany*

09:30

C1L-A03 Miniature Multisensor Probe for Soil Nutrient Monitoring

Ulrike Lehmann, Alain Grisel

MICROSENS SA, Switzerland

09:45

C1L-A04 Selective and Sensitive Detection of C3 Molecules with Cu-BTC Metal-Organic Framework by Means of Mass Sensitive and Work Function Based Read-Out

Polina Davydovskaya³, Annekathrin Ranft¹, Bettina V. Lotsch², Roland Pohle³

¹*Max Planck Institute for Solid State Research, Germany;* ²*Max Planck Institute for Solid State Research, Germany;* ³*Siemens AG, Germany*

10:00

C1L-A05 Activated Carbon As a Pseudo-Reference Electrode for Potentiometric Sensing Inside Concrete

Yawar Abbas¹, Farhad Pargar², Wouter Olthuis¹, Albert van Den Berg¹

¹*BIOS-Lab on a Chip Group, MESAplus Institute of Nanotechnology, University of Twente, Netherlands;* ²*Delft University of Technology, Netherlands*

10:15

C1L-A06 Detection of Soluble Organic and Inorganic Compounds with an Array of Pure and Blended Optical Reporters

Corrado Di Natale², Carla Guanais Branchini², Francesca Dini², Ingemar Lundstrom¹, Roberto Paolesse²

¹*University of Linköping, Sweden;* ²*University of Rome Tor Vergata, Italy*

C1L-B Sensor Systems and Applications

Time: Wednesday, September 10, 2014, 09:00 - 10:30

Place: 'Sala CONSILIARE' Hall

Chair(s): Pietro Siciliano, *CNR (National Research Council), Lecce (Italy)*

Rafał Walczak, *Wroclaw University of Technology, Wroclaw (Poland)*

09:00

C1L-B01 Gas Sensor System for the Determination of Methane in Water

Alexey Vasiliev⁴, Alexandr Pisliakov⁴, Andrey Sokolov⁴, Nikolay Samotaev², Wojciech Kujawski³, Anna Rozicka³, Vittorio Guarnieri¹, Leandro Lorenzelli¹

¹Fondazione Bruno Kessler, Italy; ²National Research Nuclear University MEPhI, Russia; ³Nicolaus Copernicus University, Poland; ⁴NRC Kurchatov Institute, Russia

09:15

C1L-B02 Selective Detection of Hazardous Indoor VOCs Using Metal Oxide Gas Sensors

Martin Leidinger³, Tilman Sauerwald³, Thorsten Conrad¹, Wolfhard Reimringer¹, Gabriela Ventura², Andreas Schütze³
¹3S - Sensors, Signal processing, Systems GmbH, Germany; ²IDMEC – Institute of Mechanical Engineering, Portugal; ³Saarland University / Lab for Measurement Technology, Germany

09:30

C1L-B03 Nanowire Technology for the Detection of Microorganism in Potable Water

Estefania Núñez Carmona¹, Veronica Sberveglieri², Elisabetta Comini², Dario Zappa², Andrea Pulvirenti²
¹CNR- IBF, Italy; ²CNR-INO, Italy

09:45

C1L-B04 A MEMS Silicon-Based Piezoelectric AC Current Sensor

Oskar Zbigniew Olszewski², Ruth Houlihan², Rosemary O'keeffe², Mike O'neill¹, Alan Mathewson², Finbarr Waldron², Nathan Jackson²
¹Analog Device, Ireland; ²Tyndall National Institute, UCC, Ireland

10:00

C1L-B05 An Optoelectrical, Standard-CMOS-Based Active Catheter Tracking System for MRI

Berk Camli², Baykal Sarioglu¹, Arda Deniz Yalcinkaya²
¹Bilgi University, Istanbul, Turkey; ²Bogazici University, Istanbul, Turkey

10:15

C1L-B06 Monitoring of plantar pressure in gait based on hetero-core optical fiber sensor

Yudai Otsuka, Yuya Koyama, Kazuhiro Watanabe
Soka university, Japan

C1L-C Mechanical Microdevices

Time: Wednesday, September 10, 2014, 09:00 - 10:30
Place: Room N1
Chair(s): Robert Puers, *KU Leuven, Leuven (Belgium)*
Ralf Lucklum, *Otto-von-Guericke University Magdeburg, Magdeburg (Germany)*

09:00

C1L-C01 Linearity of Piezoresistive Nano-Gauges for MEMS Sensors

Stefano Dellea, Nicola Aresi, Giacomo Langfelder, Antonio Longoni
Politecnico di Milano, Italy

09:15

C1L-C02 Sensor and Instrumentation for Cable Tension Quantification

Patrick Pelgrims, Michel De Cooman, Robert Puers
KU Leuven, Belgium

09:30

C1L-C03 Piezoresistive Polymer Accelerometer

Luis Martins, Cátia Silva, Bruno Mendes, Marco Azevedo, António Pontes, Luis Rocha
Universidade do Minho, Portugal

09:45

C1L-C04 An Ideal MEMS Parametric Resonator Using a Tapered Comb-Drive

Shai Shmulevich, Inbar Hotzen, David Elata
Technion - Israel Institute of Technology, Israel

10:00

C1L-C05 Selective Coating Deposition on High-Q Single-Crystal Silicon Resonators for the Investigation of Thermal Noise Statistical Properties

Antonio Lorenzo Borrielli³, Michele Bonaldi³, Livia Conti², Gregory Pandraud¹, P.M. Lina Sarro¹
¹*Department of Microelectronics /ECTM/DIMES Technology Centre, Feldmanweg 17, 2628 CT Delft, P.O. Bo, Netherlands;*
²*INFN, Sezione di Padova, via Marzolo 8, I-35131 Padova, Italy, Italy;* ³*Institute of Materials for Electronics and Magnetism, Nanoscience*

10:15

C1L-C06 MEMS Micro-Glassblowing Paradigm for Wafer-Level Fabrication of Fused Silica Wineglass Gyroscopes

Doruk Senkal, Mohammed Ahamed, Sina Askari, Andrei Shkel
University of California, Irvine, United States

C2L-A Materials and Technology

Time: Wednesday, September 10, 2014, 11:00 - 12:30

Place: 'Aula MAGNA' Hall

Chair(s): Istvan Barsony, *Hungarian Academy of Sciences, Budapest (Hungary)*
Ulrich Schmid, *Vienna University of Technology, Vienna (Austria)*

11:00

C2L-A01 Impact of C-Axis Orientation of Aluminium Nitride Thin Films on the Long-Term Stability and Mechanical Properties of Resonantly Excited MEMS Cantilevers

Michael Schneider, Achim Bittner, Peter Schmid, Ulrich Schmid
Vienna University of Technology, Austria

11:15

C2L-A02 Artificial Dielectric Layer Based on PECVD Silicon Carbide for Terahertz Sensing Applications

Giuseppe Fiorentino¹, Waqas Syed³, Aurele Adam², Andrea Neto³, Pasqualina Sarro¹
¹*ECTM - TU Delft, Netherlands;* ²*TNW - TU Delft, Netherlands;* ³*TU - Delft, Netherlands*

11:30

C2L-A03 High Quality Wafer-Scale CVD graphene on Molybdenum Thin Film for Sensing Application

Yelena Grachova³, Sten Vollebregt², Andrea Leonardo Lacaita¹, Pasqualina M. Sarro²
¹*Politecnico di Milano, Italy;* ²*TU Delft, Netherlands;* ³*TU Delft, Politecnico di Milano, Italy*

11:45

C2L-A04 Ceramic Alumina Substrates for High-Temperature Gas Sensors " Implications for Applicability

Jaroslav Kita, Franz Schubert, Frank Rettig, Andreas Engelbrecht, Andrea Gross, Ralf Moos
Dept. of Functional Materials, University of Bayreuth, Germany

12:00

C2L-A05 Flexible Piezoelectric Transducer Based on electrospun PVDF Nanofibers for Sensing Applications

Emiliano Zampetti, Andrea Bearzotti, Antonella Macagnano
CNR - Institute of atmospheric pollution research, Italy

12:15

C2L-A06 Functional Electronic Screen-Printing - Electroluminescent Lamps on Fabric

Marc de Vos, Russel Torah, Steve Beeby, John Tudor
University of Southampton, United Kingdom

C2L-B Piezoelectric Technologies for MicroPower Generation

Time: Wednesday, September 10, 2014, 11:00 - 12:30

Place: 'Sala CONSILIARE' Hall

Chair(s): Danick Briand, *EPFL, Lausanne (Switzerland)*

Leszek Golonka, *Wroclaw University of Technology, Wroclaw (Poland)*

11:00 *Invited Talk*

C2L-B01 Flexible Piezoelectric Nanogenerators for Energy Autonomy

Christos Tsamis

Institute of Nanoscience and Nanotechnology, Greece

11:30

C2L-B03 Frequency Up-Converting Vibration Energy Harvester with Multiple Impacting Beams for Enhanced Wideband Operation at Low Frequencies

Rolanas Dauksevicius², Danick Briand¹, Robert Lockhart¹,
Andres Vásquez Quintero¹, Nico de Rooij¹, Rimvydas Gaidys²,
Vytautas Ostasevicius²

¹*École Polytechnique Fédérale de Lausanne, Switzerland;*

²*Kaunas University of Technology, Lithuania*

11:45

C2L-B04 Piezoelectric Transformers for Ultra-Low Voltage Energy Harvesting Applications

Antonio Camarda, Aldo Romani, Marco Tartagni

University of Bologna, Italy

12:00

C2L-B05 Quasi-Synchronous Charge Extraction for Improved Energy Harvesting from Highly Coupled Piezoelectric Transducers

Aldo Romani, Matteo Filippi

University of Bologna, Italy

12:15

C2L-B06 Ball-Impact Piezoelectric Converter for Multi-Degree-of-Freedom Energy Harvesting from Broadband Low-Frequency Vibrations in Autonomous Sensors

Davide Alghisi, Simone Dalola, Marco Ferrari, Vittorio Ferrari

University of Brescia, Italy

C2L-C Optical MEMS and Optical Sensors

Time: Wednesday, September 10, 2014, 11:00 - 12:30

Place: Room N1

Chair(s): Francisco J. Arregui, *Public University of Navarre, Pamplona (Spain)*

Marco Sampietro, *Politecnico di Milano, Milan (Italy)*

11:00

C2L-C01 Surface-Micromachined Bragg Reflectors Based on Multiple Airgap/SiO₂ Layers, for CMOS-Compatible Fabry-Perot Filters in the UV-Visible Spectral Range

Mohammad Amir Ghaderi, Pelin Ayerden, Ger de Graaf, Reinoud Wolffenbuttel
TU Delft, Netherlands

11:15

C2L-C02 Optrode for multimodal deep-brain infrared stimulation

Marcell Kiss, Péter Földesy, Zoltán Fekete
Institute for Technical Physics and Material Science, RCNS HAS, Hungary

11:30

C2L-C03 Laser Light Module with Integrated MEMS Mirror for Autostereoscopic Outdoor Displays

Jörg Reitterer¹, Franz Fidler¹, Gerhard Schmid¹, Thomas Riel¹, Christian Hambeck¹, Ferdinand Saint Julien-Wallsee¹, Walter Leeb², Ulrich Schmid²
¹*TriLite Technologies GmbH, Austria*; ²*Vienna University of Technology, Austria*

11:45

C2L-C04 Impedance-Based Transparent Monitoring of Light for Local Control of Integrated Photonic Circuits

Marco Carminati, Stefano Grillanda, Pietro Ciccarella, Francesco Morichetti, Giovanni Bellotti, Davide Bianchi, Giorgio Ferrari, Andrea Melloni, Marco Sampietro
Politecnico di Milano, Italy

12:00

C2L-C05 Distinctive Optofluidic Parallel Waveguides

Lip Ket Chin, Yi Yang, Lei Lei, Ai Qun Liu
Nanyang Technological University, Singapore

12:15

C2L-C06 Design and Fabrication of a Tunable Two-Fluid Micro-Lens Device with a Large Deflection Polymer Actuator

Florenta Costache, Christian Schirrmann, Kirstin Bornhorst, Boscij Pawlik, Andreas Rieck, Harald Schenk
Fraunhofer Institute for Photonic Microsystems, Germany

C3L-A New Technologies in Sensors and Systems

Time: Wednesday, September 10, 2014, 14:00 - 15:00

Place: 'Aula MAGNA' Hall

Chair(s): Eduard Llobet, *Rovira i Virgili University, Tarragona (Spain)*
Vincenzo Guidi, *University of Ferrara, Ferrara (Italy)*

14:00

C3L-A01 Design and Fabrication of a 29 μ H Bondwire Micro-Transformer with LTCC Magnetic Core on Silicon for Energy Harvesting Applications

Enrico Macrelli³, Aldo Romani³, Ningning Wang², Saibal Roy², Michael Hayes², Rudi Paolo Paganelli¹, Marco Tartagni³
¹*National Research Council, Italy*; ²*Tyndall National Institute, Ireland*; ³*University of Bologna, Italy*

14:15

C3L-A02 Stress-Unsusceptible Pressure Sensors Embedded in Fiber Composite

Martin Schwerter², Christian Behr², Monika Leester-Schädel², Peter Wierach¹, Michael Sinapius², Stephanus Büttgenbach², Andreas Dietzel²
¹*DLR, Germany*; ²*TU Braunschweig, Germany*

14:30

C3L-A03 Water Based PVA Sacrificial Material for Low Temperature MEMS Fabrication and Applications on E-Textiles

Kai Yang, Russel Torah, Yang Wei, Steve Beeby, John Tudor
University of Southampton, United Kingdom

14:45

C3L-A04 Energy Harvesting from Piezoelectric Textile Fibers

Erik Nilsson², Loreto Mateu¹, Peter Spies¹, Bengt Hagstrom²
¹*Fraunhofer IIS, Germany*; ²*Swerea IVF, Sweden*

C3L-B Sensor Electronics and Signal Processing

Time: Wednesday, September 10, 2014, 14:00 - 15:00

Place: 'Sala CONSILIARE' Hall

Chair(s): Giovanni Breglio, *University of Naples 'Federico II', Naples, (Italy)*

Marco Ferrari, *University of Brescia, Brescia (Italy)*

14:00

C3L-B01 A Novel Architecture for Differential Resonant Sensing

Jérôme Juillard¹, Alain Bonnoit¹, Nuria Barniol², Arantxa Uranga², Gabriel Vidal-Alvarez²

¹SUPELEC, France; ²UAB, Spain

14:15

C3L-B02 Multi-Channel Very-Low-Noise Current Acquisition System with on-Board Voltage Supply for Sensor Biasing and Readout

Augusto Nascetti¹, Germano Colonia¹, Domenico Caputo¹, Michele Tavernelli², Pisana Placidi², Andrea Scorzoni², Giampiero de Cesare¹

¹Sapienza University of Rome, Italy; ²University of Perugia, Italy

14:30

C3L-B03 Optimal Parameter Estimation Method for Different Types of Resonant Liquid Sensors

Thomas Voglhuber-Brunnmaier¹, Martin Heinisch¹, Alexander O. Niedermayer¹, Ali Abdallah¹, Roman Beigelbeck², Bernhard Jakoby¹

¹Johannes Kepler University Linz, Austria; ²Vienna University of Technology, Austria

14:45

C3L-B04 Advances in Signal Acquisition and Signal Processing of Coriolis Flow Meters

Jürgen Ruoff¹, Wolfgang Gauchel¹, Heinz Kück²

¹Festo AG & Co. KG, Germany; ²Institute of Microintegration, University of Stuttgart, Germany

C3L-C Actuators, Micromechanisms and Micromachines

Time: Wednesday, September 10, 2014, 14:00 - 15:00

Place: Room N1

Chair(s): David Elata, *Technion - Israel Institute of Technology, Haifa (Israel)*

Leszek Golonka, *Wroclaw University of Technology, Wroclaw (Poland)*

14:00

C3L-C01 Selective Stiffening for Producing Motion Conversion Mechanisms

Inbar Hotzen, Orna Ternyak, Shai Shmulevich, David Elata
Technion - Israel Institute of Technology, Israel

14:15

C3L-C02 High Frequency 1D Piezoelectric Resonant MICROSCANNERS with Large Displacements

Shanshan Gu-Stoppel, Joachim Janes, Hans-Joachim Quenzer, Christian Eisermann, Felix Heinrich, Wolfgang Benecke
Fraunhofer ISIT, Germany

14:30

C3L-C03 Piezoelectrically Actuated Linear Resonators on Ring-Shaped Suspensions for Application in MEMS Phase-Sensitive Gyroscope

Sergey Gorelick, James Dekker, Bin Guo, Henry Rimminen
VTT Technical Research Centre of Finland, Finland

14:45

C3L-C04 Strain-Enhanced Nanocomposites of Electrostrictive Polymers and High-K Nanofillers for Micro-Actuation Applications

Florenta Costache, Boscij Pawlik, Christian Schirrmann, Kirstin Bornhorst
Fraunhofer Institute for Photonic Microsystems, Germany

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