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welcome message

Dear SENSORS Participant and Member of the SENSORS Community,

On behalf of the Organising Committee of the 10th IEEE SENSORS Conference 2011, it is a great honour and pleasure to welcome you to the University of Limerick (UL) located on the outskirts of the historic City of Limerick as well as the beautiful surrounding Shannon region, Ireland.

This annual International Conference was established (in 2002) and is sponsored by the IEEE SENSORS Council for the presentation, discussion and exchange of information regarding the latest research and developments in the area of SENSORS and related fields. The inaugural conference was held in Orlando (Florida, USA) in May 2002 and has since been held in the Autumn in Toronto (Canada, 2003), Vienna (Austria, 2004), Irvine (California, USA, 2005), Daegu (South Korea, 2006), Atlanta (Georgia, USA, 2007), Lecce (Italy, 2008), Christchurch (New Zealand, 2009) and most recently in Hawaii (Big Island) 2010. Next year's event will take us to the exotic setting of Taipei, Taiwan.

IEEE SENSORS brings together researchers, developers and practitioners from diverse fields and thus provides a unique opportunity to meet friends and colleagues both old and new. This year we are happy to report that the attendance will be in excess of 600 delegates from 50 different countries representing a balanced mix of participants from the three main regions namely the Americas, Europe, the Middle East and Africa as well as Asia and Oceania. The conference attracted 890 submissions from 50 countries, from which 547 abstracts (299 Oral and 248 Posters), 23 Late News papers and 20 Open Posters were accepted for presentation. We sincerely thank all authors for submitting their latest work, thus contributing to the excellent technical programme of the Conference. In order to accommodate the broad range of topics, the Conference sessions have been organised into six parallel oral sessions which will run between Saturday 29th October through Monday 31st October and will be held entirely on site at the Greenfield campus of University of Limerick. In addition to the oral sessions there are two dedicated poster sessions on Saturday and Sunday of the conference.

The opening plenary talk will be given by Professor Julian D.C. Jones (OBE) of Herriot Watt University, Edinburgh. We are also delighted to have Prof Evgeni Gousev of Qualcomm, USA and Prof Aaron Ho, Electronic Engineering, Chinese Univ. of Hong Kong, China as the Keynote speakers for Sunday and Monday respectively. There will be a welcome reception for all arriving guests at the University on Friday Evening and the Conference Gala dinner will take place on Sunday evening and is located at the highly impressive Thomond Park stadium, Limerick, which is the spiritual home of Munster Rugby (European Champions 2006 and 2008). There are also additional cultural evenings on the Saturday evening which will take place at Bunratty Castle, Knappogue Castle and the Stables Club of UL.

The success of this year's Conference is largely due to volunteer commitment from all members of the Organising Committee. The regional technical programme chairs, Anna Mignani, Perry Shum Ping and Reza Gohdssi and the 137 members of the Technical Programme Committee must be commended for their rigorous reviews of all submitted abstracts. The Local Organising Committee as coordinated by Thomas Newe have worked tirelessly in securing national support and participation. As Special Sessions Chair, Tong Sun has set up a unique and engaging set of 20 Special Focus Sessions comprising invited speakers who are internationally recognised leaders in their field. The Tutorial Chair, Gerald Farrell has identified and selected a topical set of Tutorial Speakers for Friday 28th October.

This year there has been an unprecedented level of financial support and external promotion for this conference and in these challenging financial times we greatly appreciate the generous support from national organisations (SFI, EI, Failte Ireland) as well as national and international industrial organisations including Silicon Labs Inc, Analog Devices and Intel. This level of support has been augmented by active participation by several exhibitors who will participate in a vibrant exhibition comprising display stands and tables in the main conference area within the Atrium of the University Concert Hall throughout the duration of the conference. Finally, we wish to thank the Conference Management team, Conference Catalysts LLC, under the leadership of Chris Dyer who have been a pleasure to work with in making this conference an all round success.

In summary, we look forward to welcoming you again next year at IEEE SENSORS 2012 in Taipei, Taiwan to be held during October 28-31, 2012.

Elfed Lewis
Conference Chair

Thomas Kenny,
Technical Programme Chair

Conference at a Glance

Fr OCT 28	07:00 - 18:00	CONFERENCE REGISTRATION & CHECK-IN | FOUNDATION BUILDING - ATRIUM					
	07:00 - 17:00	TUTORIAL REGISTRATION & CHECK-IN | FOUNDATION BUILDING - ATRIUM					
	09:00 - 18:30	TUTORIALS - MAIN BUILDING					
	19:00 - 21:00	WINE & CHEESE WELCOME RECEPTION					
Sa OCT 29	07:00 - 16:00	REGISTRATION | FOUNDATION BUILDING - ATRIUM					
	08:00 - 08:25	OPENING & INTRODUCTIONS | FOUNDATION BUILDING - ATRIUM					
	08:25 - 09:10	KEYNOTE PRESENTATION 1 | FOUNDATION BUILDING - CONCERT HALL "Optical Fibre Interferometry: from Physics Laboratory to Engineering Reality" *Professor Julian Jones, OBE FRSE FOSA*					
		CONCERT HALL	JEAN MONET	JOHN HOLLAND	CHARLES PARSONS	FB028	FG042
	09:30 - 11:00	A1L-A GAS SENSORS I	A1L-B DYNAMIC SYSTEMS	A1L-C SPECIAL SESSION: THZ SENSING: MATERIALS, DEVICES & SYSTEMS I	A1L-D SPECIAL SESSION: SENSOR & NETWORK DESIGN	A1L-E STRESS SENSORS	A1L-F FIBER-BASED PHYSICAL SENSORS
	11:00 - 11:30	BREAK | FOUNDATION BUILDING - ATRIUM					
	11:30 - 13:00	A2L-A GAS SENSORS II	A2L-B INERTIAL SENSORS	A2L-C SPECIAL SESSION: THZ SENSING: MATERIALS, DEVICES & SYSTEMS II	A2L-D SPECIAL SESSION: FROM SENSOR TO WEB	A2L-E STRAIN-BASED SENSORS	A2L-F FIBER-BASED CHEMICAL SENSORS
	13:00 - 14:00	LUNCH | MAIN BUILDING - EDEN, RED RAISON RESTAURANT					
	14:15 - 16:00	POSTER SESSION #1 | EGO 10					
	16:00 - 17:30	A4L-A CHEMICAL SENSORS	A4L-B SPECIAL SESSION: ACOUSTIC SENSORS FOR EXTREME ENVIRONMENTS I	A4L-C SPECIAL SESSION: SMART SKINS AND ANTENNAS	A4L-D SPECIAL SESSION: AMBIENT INTELLIGENCE TECHNOLOGIES & APPLICATIONS	A4L-E FLEXIBLE SENSORS	A4L-F OPTICAL BIOSENSORS
	20:45 - 22:15	OPTIONAL ENTERTAINMENT & DINNER					
Su OCT 30	07:00 - 16:00	REGISTRATION | FOUNDATION BUILDING - ATRIUM					
	08:00 - 08:45	KEYNOTE PRESENTATION 2 | FOUNDATION BUILDING - CONCERT HALL "MEMS and Sensing going Mobile" Evgeni Gousev, Qualcomm, USA.					
	09:00 - 10:30	B1L-A SPECIAL SESSION: NANOTECHNOLOGY AND BIOSENSING	B1L-B MECHANICAL PARTICLE SENSORS	B1L-C INTEGRATED SENSOR NTERFACES	B1L-D SPECIAL SESSION: TOWARDS AUTONOMY IN SENSOR NETWORKS...	B1L-E BIOCHEMICAL SENSORS & SYSTEMS	B1L-F SPECIAL SESSION: BIOMIMETICS: LEARNING FROM NATURE
	10:30 - 11:00	BREAK | FOUNDATION BUILDING - ATRIUM					
	11:00 - 12:30	B2L-A SPECIAL SESSION: ULTRASOUND MOLECULAR IMAGING AND NANOSYSTEMS	B2L-B THERMAL MICROSYSTEMS	B2L-C INFORMATION PROCESSING	B2L-D SENSOR NETWORK TECHNOLOGIES I	B2L-E BIOCHEMICAL SENSOR TECHNOLOGIES	B2L-F SPECIAL SESSION: SENSOR RELIABILITY
	12:30- 13:30	LUNCH | MAIN BUILDING - EDEN, RED RAISON RESTAURANT					
	13:30 - 15:15	POSTER SESSION #2 | EGO 10					
	15:15 - 16:45	B4L-A NANOMATERIALS FOR SENSORS	B4L-B THERMAL SENSORS	B4L-C MACROSCOPIC SENSOR APPLICATIONS	B4L-D WIRELESS INTERFACES	B4L-E BIOSENSORS I	B4L-F SPECIAL SESSION: OPTICAL METROLOGY FOR STRUCTURAL HEALTH MONITORING
	19:00 - 22:00	BANQUET | THOMAND PARK					
Mo OCT 31	07:00 - 16:00	REGISTRATION | FOUNDATION BUILDING - ATRIUM					
	08:00 - 08:45	KEYNOTE PRESENTATION 3 | FOUNDATION BUILDING - CONCERT HALL "Plasmonic Sensing Techniques" Prof Aaron Ho, Electronic Engineering, Chinese Univ. of Hong Kong, China.					
	09:00 - 10:30	C1L-A NANOSENSORS	C1L-B SPECIAL SESSION: SELF-MIXING LASER SENSORS	C1L-C FLUIDS AND FLOW	C1L-D SPECIAL SESSION: INTELLIGENT WEARABLE WIRELESS INERTIAL MEASUREMENT	C1L-E MULTI-AXIS SENSORS	C1L-F OPTICAL SENSORS & SYSTEMS I
	10:30 - 11:00	BREAK | FOUNDATION BUILDING - ATRIUM					
	11:00 - 12:30	C2L-A BIOMEDICAL MONITORS	C2L-B INTEGRATED SENSORS	C2L-C FLUID PROPERTY SENSORS	C2L-D SPECIAL SESSION: SENSOR TECHNOLOGIES FOR...	C2L-E SPECIAL SESSION: ORGANIC BIOSENSORS	C2L-F OPTICAL SENSORS & SYSTEMS II
	12:30 - 13:30	LUNCH | MAIN BUILDING - EDEN, RED RAISON RESTAURANT					
	14:00 - 15:15	POSTER SESSION #3 | EGO 10					
	15:45 - 17:15	C4L-A LATE NEWS BIO/CHEM SENSORS & SYSTEMS	C4L-B IMAGE SENSORS	C4L-C CAPACITIVE SENSING TECHNOLOGIES	C4L-D SENSOR NETWORK TECHNOLOGIES II	C4L-E ELECTROMAGNETIC SENSORS	C4L-F OPTICAL SENSORS & SYSTEMS III
	17:15	CONFERENCE ADJOURNS					

Registration & Information Desk
The Registration and Information Desk will be open during the following times:

Friday, October 28	07:00 - 20:00
Saturday, October 29	07:00 - 16:15
Sunday, October 30	07:30 - 17:00
Monday, October 31	07:30 - 17:00

Meeting Room Locations

Concurrent Sessions A	Concert Hall – FOUNDATION BUILDING
Concurrent Sessions B	Jean Monet – MAIN BUILDING
Concurrent Sessions C	John Holland – MAIN BUILDING
Concurrent Sessions D	Charles Parsons – MAIN BUILDING
Concurrent Sessions E	FB028 – FOUNDATION BUILDING
Concurrent Sessions F	FG042 – FOUNDATION BUILDING
Poster Sessions	EGO 10 – FOUNDATION BUILDING
Exhibitors	Atrium – MAIN BUILDING

Name Badges
All attendees must wear their name badges at all times to gain admission to all Conference events.

Electronic Proceedings
One copy of the Electronic Proceedings is included in your bag. Additional copies may be purchased at the Conference Registration Desk. The purchase price of the Electronic Proceedings will increase after the Conference, so be sure to order your additional copies in advance.

Additional Electronic Proceedings	$85 IEEE Member
Additional Electronic Proceedings	$100 IEEE Non-Member

Message and Job Market Board
The Message and Job Market Board will be located near the Conference Registration Desk.

Conference Attire
Attire during the duration of the Conference is business casual.

Currency Exchange
EUROs and US dollars are acceptable at regular stores and restaurants. The exchange rate fluctuates daily. For current exchange rates, please visit: www.exchangerate.com.

Traveler's Checks and Credit Cards
Credit cards, including MasterCard®, Visa® and American Express®, and traveler's checks are accepted at most hotels, restaurants, and souvenir shops.

Tipping Standards
10% is standard for meals. For skycaps, doormen, porters and bellman, $1.00 USD/EURO per bag is standard and $1.00 USD/EURO per night for housekeeping.

Smoking
All meeting rooms and seated functions are smoke free. Please adhere to the smoking policy of the University of Limerick.

Cellular Phones
As a courtesy to our speakers and other attendees, please turn off any cellular phones during sessions

Friday, October 28th

Event: Tutorial Lunch
Time: 12:45 p.m. – 1:45 p.m.
Location: Eden Restaurant (University of Limerick)

Event: Welcome Reception (Wine and Hot Buffet)
Time: 6:30 p.m. – 8:30 p.m.
Location: Atrium (University of Limerick)

An Informal Wine and Cheese Welcome Reception will be held in conjunction with registration from 19:00 - 21:30**.**

Saturday, October 29th

Event: Conference Lunch
Time: 12:45 p.m. – 1:45 p.m.
Location: Eden, Red Raison Restaurant (University of Limerick)

Optional Event: Knappogue Castle Banquet
Time: 7:45 p.m. – 10:45 p.m.
Location: Knappogue Castle
***Transportation will be provided to those who registered**

Optional Event: Bunratty Castle Banquet
Time: 7:45 p.m. – 10:45 p.m.
Location: Bunratty Castle
***Transportation will be provided to those who registered**

Optional Event: "Evening at the Stables"
Time: 6:00 p.m. – 9:00 p.m.
Location: The Stables Club – on UL Campus
***Transportation will be provided back to hotels to those who registered**

Sunday, October 30th

Event: Conference Lunch
Time: 12:30 p.m. – 1:30 p.m.
Location: Eden, Red Raison Restaurant (University of Limerick)

Event: Conference Banquet – 6:30 p.m. – 9:30 p.m.
Time: 12:45 p.m. – 1:45 p.m**.**
Location: Thomond Park Rugby Stadium
***Transportation will be provided**

Join us for the conference banquet dinner on Sunday, October 30, 19:00 - 22:00. The Student Paper and Best Poster Awards will be announced. The banquet will be held at the Thomond Park Rugby Stadium. Enjoy traditional Irish song and dance as you overlook the beautiful Rugby pitch. A limited number of optional stadium tours are available prior to the dinner.

Your paid registration fee includes one banquet ticket. Guest tickets can be purchased for $85.00 each at the Conference Registration Desk.

Monday, October 31st

Event: Conference Lunch
Time: 12:30 p.m. – 1:30 p.m.
Location: Eden, Red Raison Restaurant (University of Limerick)

****Lunch will be provided to all registrants.**

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MCCI DREAM Circuits

Exhibits are located in the Atrium. Please refer to the floorplan on page 14.

Set-up: Friday, October 28.....13:00 - 15:30

Exhibit Hours

Saturday, October 29.....7:30 - 16:45
Sunday, October 30.....7:30 - 17:00
Monday, October 31.....7:30 - 17:00

Tear-down: Monday, October 31.....17:00 - 18:30

COMPANY **BOOTH**

CST UK Ltd. 10

CST develops and markets high performance software for the simulation of electromagnetic fields in all frequency bands. CST's success is based on the implementation of unique, leading edge technology in a user-friendly interface. Its customers operate in industries as diverse as Telecommunications, Defense, Automotive, Electronics and Medical Equipment. Classical low frequency applications comprise motors and generators, switches and valves, sensors and actuators. Here, not only the electromagnetic fields, but also force, torque and temperature are relevant. CST products allow you to design, optimize and characterize low frequency devices and components helping to save substantial costs, reduce design risk, and improve overall performance and profitability.

IEEE GOLD.....12

IEEE Graduates of the Last Decade (GOLD) is a vibrant community of engineers, scientists, and technical experts with member representation across the globe and throughout IEEE societies. It is a membership program to help students transition to young professionals within the larger IEEE community. IEEE young professionals are automatically added to the GOLD member community as they graduate.

IEEE SENSORS COUNCIL 11

The IEEE Sensors Council's purpose is to advance and coordinate work in the field of sensors carried out throughout the IEEE. The Council sponsors the annual IEEE Sensors Conference is responsible for the publication of the IEEE Sensors Journal. The Council's official field of interest is the theory, design, fabrication, manufacturing and application of devices for sensing and transducing physical, chemical, and biological phenomena, with emphasis on the electronics, physics and reliability aspects of sensors and integrated sensor-actuators. More information about the Sensors Council is available at www.ieee.org/sensors.

Failte Ireland.....6

Fáilte Ireland provides strategic and practical support to develop and sustain Ireland as a high-quality and competitive tourist destination. We work with the tourism industry in areas including business support, enterprise development, training and education, research, marketing and regional development.

MCCI.....3

The MCCI vision is to increase export revenue and employment of microelectronics companies located in Ireland. MCCI will enable this vision by carrying out world-class industry-relevant circuit research developing a pool of IP and Skills relevant to these companies, thus giving them a competitive advantage.

MIDAS Ireland.....3

MIDAS Ireland (Microelectronic Industry Design Association) is a joint Industry and Academic organisation that defines and develops the future direction of Research and Development for the Micro/Nano Electronics Industry in Ireland. It has active participation from Irish based Multi-Nationals and Indigenous Companies as well as the Universities active in research and the education of graduates for the industry. It works closely with State bodies to ensure the infrastructure and supports are in place to enable the sector to grow through new start-ups, more multi-nationals locating in Ireland and existing companies expanding, ultimately benefiting the Irish economy through increased jobs and exports.

Oz Optics.....7

OZ Optics Limited is the leading company in developing fiber optic sensors. 2009 Frost & Sullivan Award Winning sensor generates and measures stimulated brillouin scattering in optical fibers to provide high-resolution simultaneous measurements of both strain and temperature along the entire length of the fiber. By wrapping or embedding a standard telecom singlemode fiber inside a structure such as an oil pipeline, power lines or dam, users can detect when and where the structure is being strained or heated and correct the problem before failure occurs. It is ideal for monitoring large structures including oil & gas pipelines, bridges, power lines, dams, and security fences. The sensor could also be used in detecting fire and corrosion/erosion.

Science Foundation Ireland.....2

Science Foundation Ireland (SFI) invests in academic researchers and research teams who are most likely to generate new knowledge, leading edge technologies and competitive enterprises in the fields of science and engineering underpinning three broad areas:

* Biotechnology
* Information and communications technology
* Sustainable energy and energy-efficient technologies

SFI makes grants based upon the merit review of distinguished scientists.

SFI also advances co-operative efforts among education, government, and industry that support its fields of emphasis and promotes Ireland's ensuing achievements around the world.

Shimmer Research.....5

Used in over 50 countries, Shimmer is an extremely extensible platform that enables researchers to be at the leading edge of sensing technology. Shimmer is a small wireless sensor platform that can record and transmit physiological and kinematic data in real-time. Designed as a wearable sensor, Shimmer incorporates wireless ECG, EMG, GSR, Accelerometer, Gyro, PIR, Tilt and Vibration sensors.

Silicon Laboratories.....1

Silicon Laboratories (NASDAQ: SLAB) is an industry leader in the innovation of high-performance, analog-intensive, mixed-signal ICs. Mixed-signal ICs enable the analog world we live in to interact with the digital world of computing in customer products like set-top boxes, televisions, and cell phones. Developed by a world-class engineering team, Silicon Labs' diverse portfolio of highly-integrated, easy-to-use solutions are designed in CMOS, the most widely available process technology, enabling significant integration advantages without sacrificing performance.

Headquartered in Austin, TX, Silicon Labs is a global enterprise with operations, sales and design activities worldwide. Founded in 1996 on the principles of constant innovation and solid execution, Silicon Labs' strong business fundamentals and proven track record have resulted in sustained growth throughout the company's history.

Wiley-Blackwell.....9

Wiley-Blackwell are a leading international publisher of print and electronic products, specialising in scientific and technical books and journals. Visit our stand at SENSOR to view our new and bestselling books in the area. All books on display are available at a special conference discount. Alternatively you can find out about all of our publications online: www.wiley.com

1) Main University Entrance
2) East Gate Entrance
3) Carlton Castletroy Park Hotel
4) Plassey Student Village
5) International Science Centre
6) Robert Schuman Building
7) International Business Centre
8) Computer Science Building
9) Silver Apples Créche
10) Glucksman Library and Information Services Building
11) Foundation Building and University Concert Hall
12) Engineering Research Building and Millstream Courtyard
13) Main University Building
14) Plassey House and University Close
15) Visitors Information Centre
16) Students Centre, Shops, Banks, Bars
17) Kathleen Lonsdale Building
18) Materials and Surface Science Institute
19) Sports Building and National Coaching and Training Centre
21) Grounds/Maintenance Compound
22) University Arena including 50 metre Pool
23) The Sports Club
24) Kilmurry Student Village
25) Horticultural Unit
26) Dromroe Student Village
27) Boathouse
28) Kemmy Business School
29) Tierney Centre
30) Languages Building
31) The Living Bridge
32) Health Sciences Building
33) Irish World Academy Building
34) Medical School Building
35) Medical School Residences
36) Sports Pavilion
37) Irish Chamber Orchestra Building
38) Cappavilla Student Village
39) Thomond Student Village

The technical program consists of three Keynote Sessions, six parallel Lecture/Special Sessions of contributed papers, and three Poster Sessions that include Late News and Open Posters.

Guide to Understanding Session Numbering

Each session in the technical program is assigned a unique number, which clearly indicates when and where the session is presented. The number of each session is shown before the session title. A typical number is shown below:

Typical Session Number: B2L-A

The first character (i.e., B) indicates the day of the Conference:

A = Saturday B = Sunday C = Monday

The second character (i.e., 2) indicates the time of the day the session is held:

1 = morning 2 = mid-morning 3 = afternoon 4 = late-afternoon

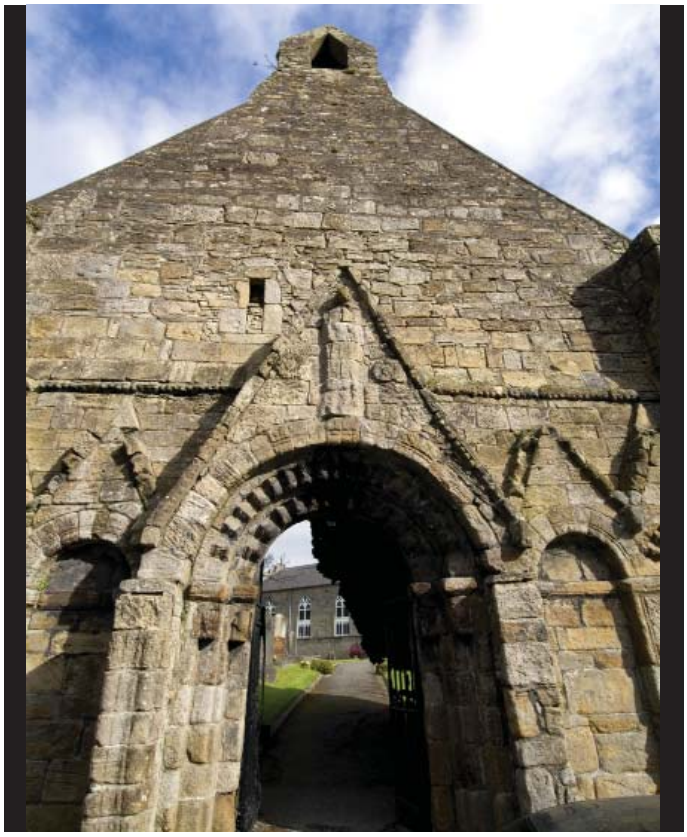
The third character (i.e., L) indicates what type of paper the session is:

K = Keynote Session L = Lecture Session P = Poster Session

The fourth character (i.e., A) indicates which room the session is held in:

A= Concert Hall **B**= Jean Monet **C**= John Holland **D**= Charles Parsons **E**= FB028 **F**= FG042 **G-N**= Poster Area

Poster Sessions
Three poster sessions will be held in EGO10 in the Main Building, from 14:15 - 16:00 on Saturday, 13:30 - 15:15 on Sunday, and 14:00 - 15:45 on Monday. Posters will be on display and authors will be available for questions during their appointed time. All poster papers are listed in this program on the day that they are on display.



Guide to Understanding Poster Numbering

Each poster in the technical program is assigned a unique number, which clearly indicates when and where the poster is presented. The number of each poster is shown on the left-hand side, before the title. A typical number is shown below:

Typical Poster Number: B3P-K

The first character (i.e., B) indicates the day of the Conference that the poster will be on display:

A = Saturday B = Sunday C = Monday

The second character (i.e., 3) indicates the time of the day the session is held:

3 = afternoon

The third character (i.e., P) indicates that the paper is a poster.

The fourth character (i.e. E) indicates the category of the poster for that day.

Saturday Session A3P

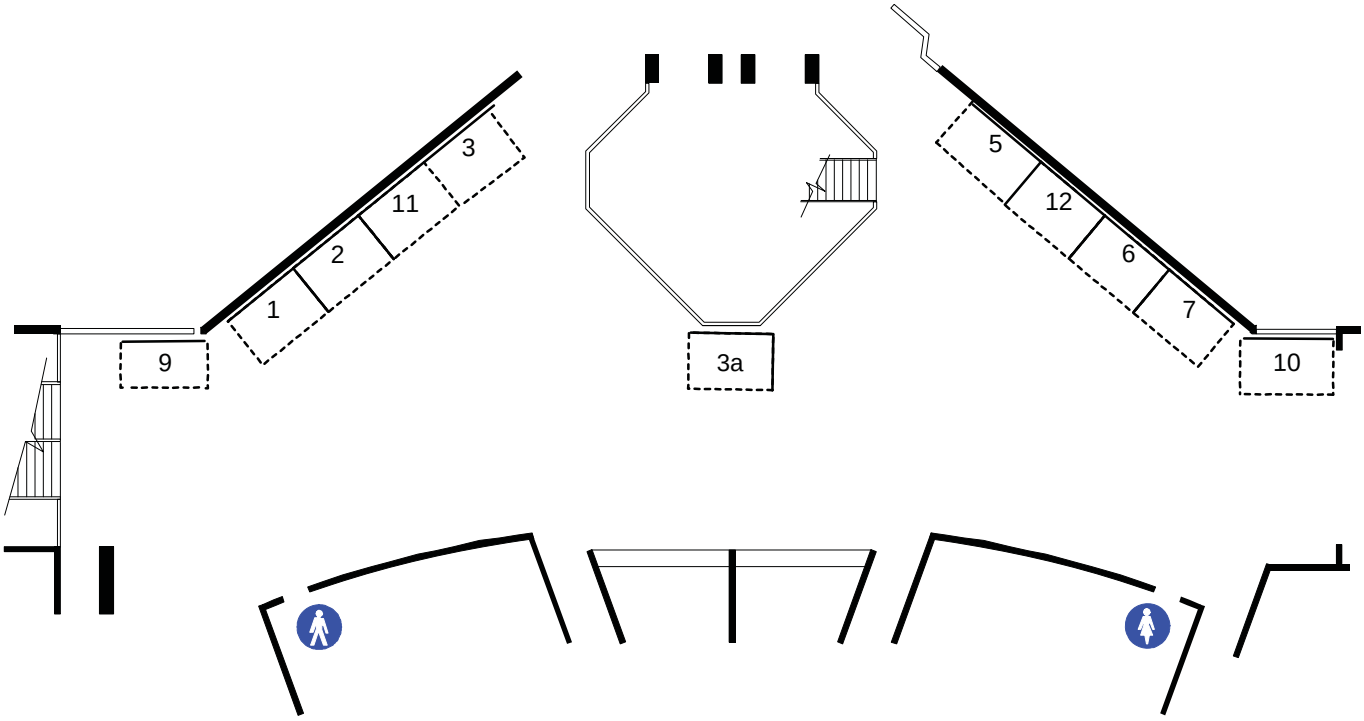
G= SPECIAL SESSION: Sensor Technologies for Environmental Monitoring of Clean and Secure Water Supplies
H= SPECIAL SESSION: Intelligent Wearable Wireless Inertial Measurement II
J= SPECIAL SESSION: Ultrasound Molecular Imaging and Nanosystems II
K= Biosensors II
L= Optical Sensors
M= Mechanical & Physical Sensors

Sunday Session B3P

G= SPECIAL SESSION: Biomimetics: Learning from Nature II
H= SPECIAL SESSION: Nanotechnology and Biosensing II
J= SPECIAL SESSION: Towards Autonomy in Sensor Networks
K= Chemical & Gas Sensors
L= Sensor/Actuator Systems
M= Sensor Networks
N= Open Posters

Monday Session C3P

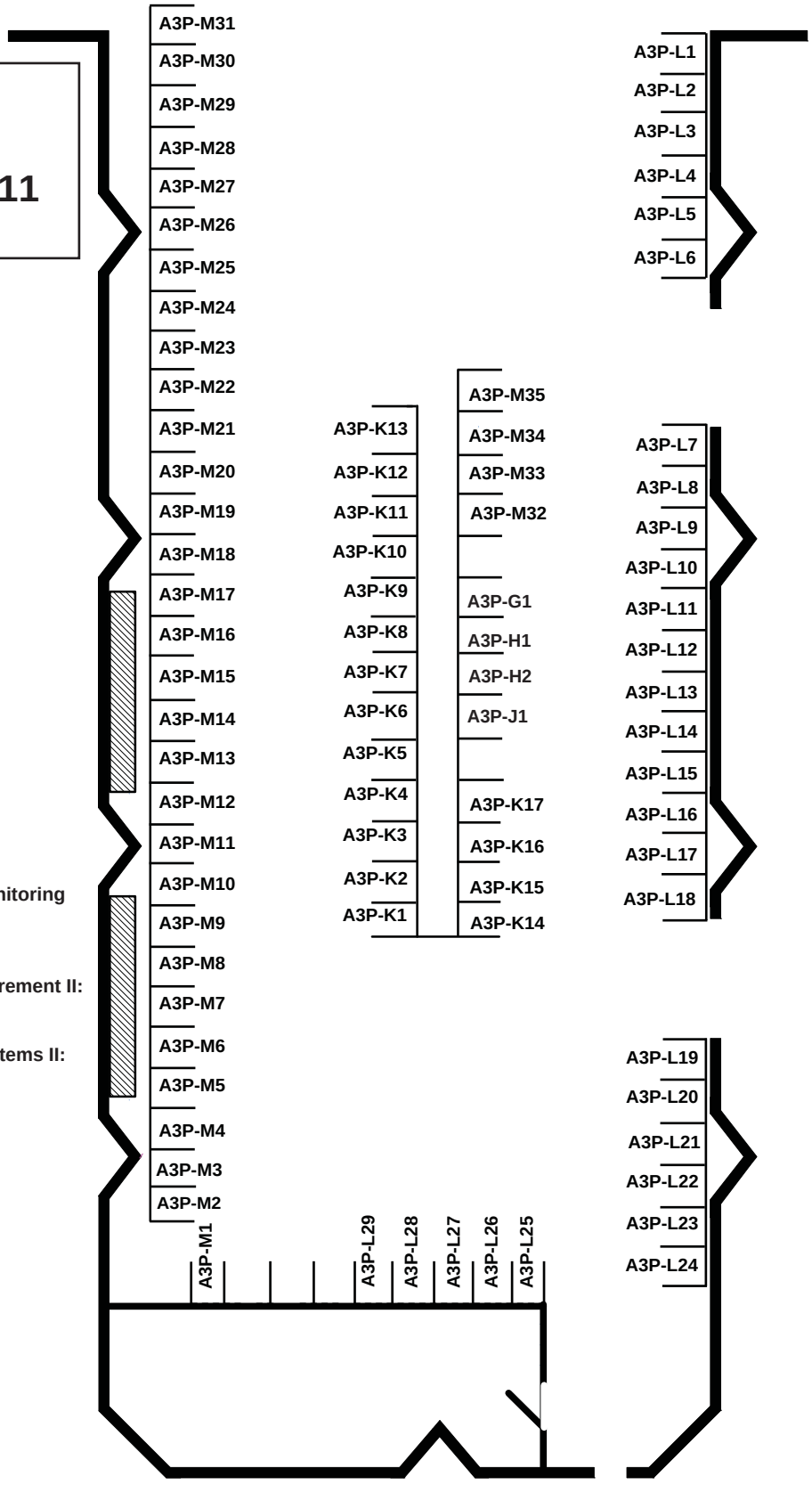
G= SPECIAL SESSION: From Sensor to Web II
H= SPECIAL SESSION: Acoustic Sensors for Extreme Environments II
J= SPECIAL SESSION: Self-mixing Laser Sensors II
K= SPECIAL SESSION: Self-mixing Laser Sensors II
L= Phenomena, Modeling & Evaluation
M= Applications



ATRIUM
Foundation Building
IEEE SENSORS 2011

1 - Silicon Labs
2 - Science Foundation of Ireland
3 - MCCI/MIDAS
3a - IEEE SENSORS 2012
5 - Shimmer Research
6 - Failte Ireland
7- OzOptics Limited
9 - Wiley
10 - CST
11 - IEEE SENSORS Council
12 - IEEE Gold

EGO 10
Main Building
IEEE SENSORS 2011



POSTER SESSIONS:

Biosensors II:
A3P-K1 through A3P-K17

Optical Sensors:
A3P-L1 through A3P-L32

Mechanical & Physical Sensors:
A3P-M1 through A3P-M35

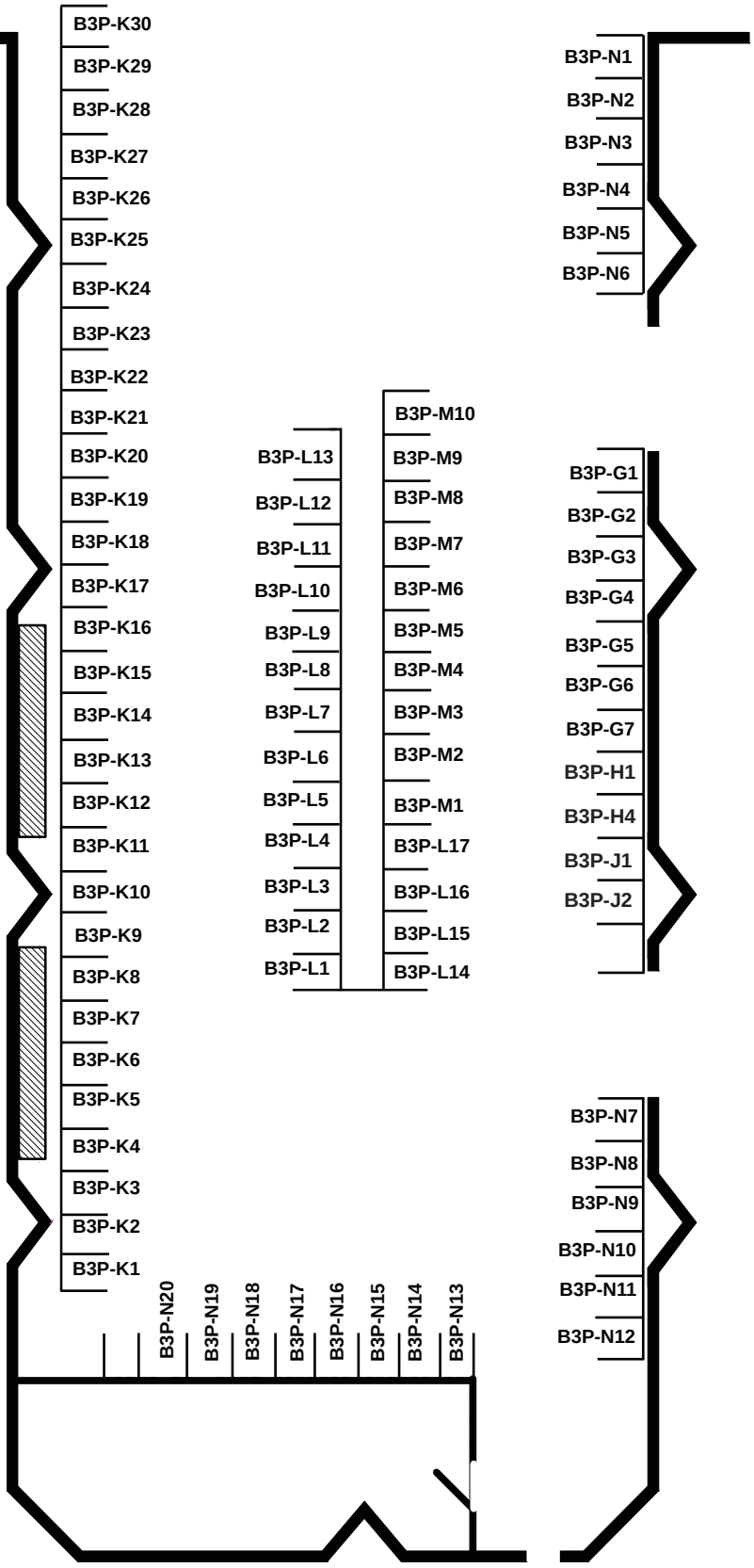
SPECIAL SESSIONS:

Sensor Technologies for Environmental Monitoring of Clean and Secure Water Supplies:
A3P-G1

Intelligent Wearable Wireless Inertial Measurement II:
A3P-H1 through A3P-H2

Ultrasound Molecular Imaging and Nanosystems II:
A3P-J1

EGO 10
Main Building
IEEE SENSORS 2011



POSTER SESSIONS:

Chemical & Gas Sensors:
B3P-K1 through B3P-K30

Sensor/Actuator Systems:
B3P-L1 through B3P-L17

Sensor Networks:
B3P-M1 through B3P-M10

OPEN POSTERS:
B3P-N1 through B3P-N20

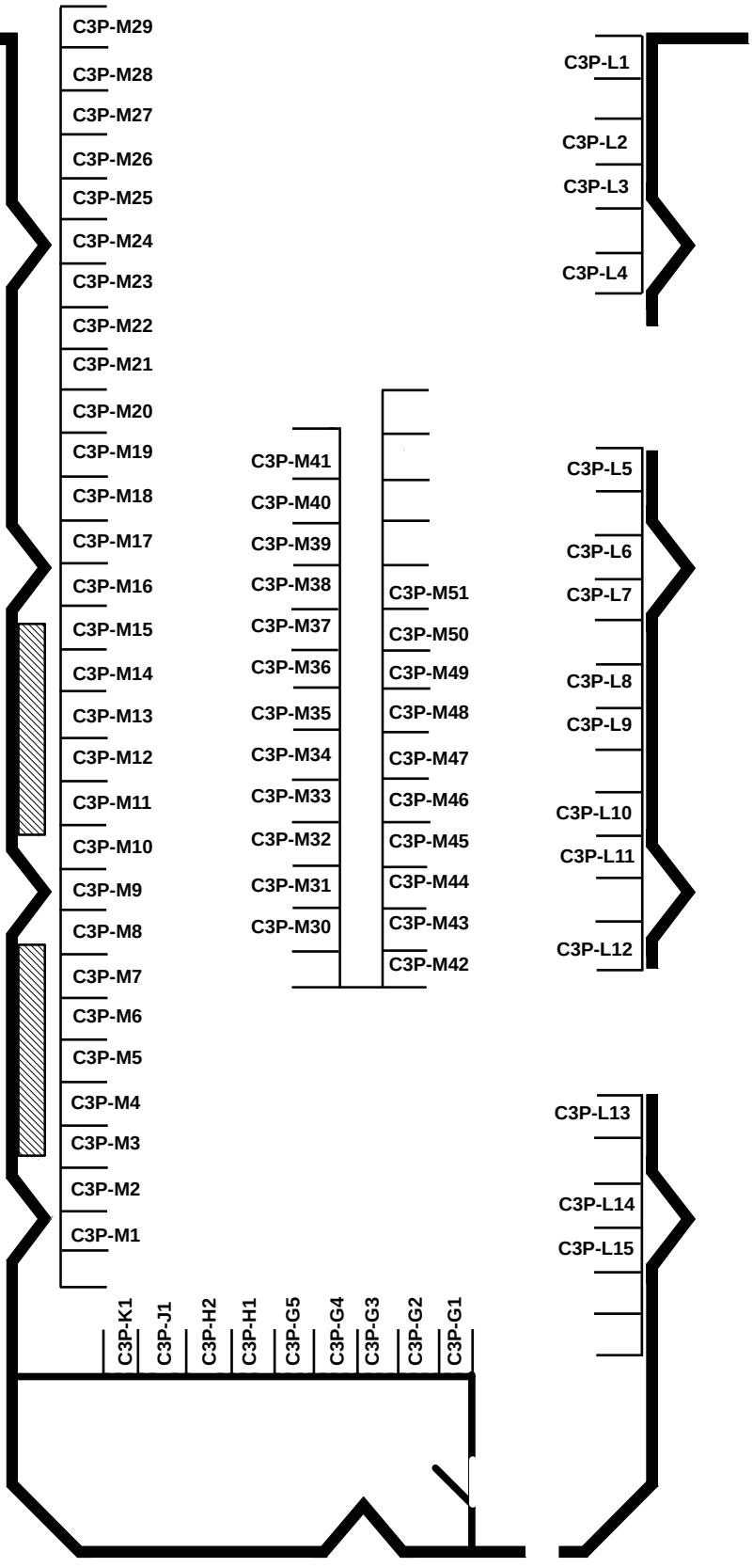
SPECIAL SESSIONS:

Biomimetics: Learning from Nature II:
B3P-G1 through B3P-G7

Nanotechnology and Biosensing II:
B3P-H1 through B3P-H4

Towards Autonomy in Sensor Networks:
B3P-J1 through B3P-J2

EGO 10
Main Building
IEEE SENSORS 2011



POSTER SESSIONS:

Phenomena, Modeling & Evaluation:
C3P-L1 through C3P-L36

Applications:
C3P-M1 through C3P-51

SPECIAL SESSIONS:

From Sensor to Web II:
P-G1 through C3P-G5

Acoustic Sensors for Extreme Environments II:
C3P-H1 through C3P-H2

Self-mixing Laser Sensors II:
C3P-J1

Ambient Intelligence Technologies and Applications:
C3P-K1

TIME	JOHN HOLLAND SENSOR SYSTEMS	CHARLES PARSONS STRAND-2: SENSOR APPLICATIONS
9:00 - 10:30	**1a** ROV LATIS – A next generation smart underwater robot: Motivation, challenges, sensor integration, problems and solutions. **Presenter:** Edin Omerdic, *University of Limerick*	**2a** Optical Sensors for Distance and Displacement Measurement **Presenter:** Garry Berkovic , *Soreq NRC, Israel*
10:30 - 10:45	**BREAK**	
10:45 - 12:15	**1b** Radio Frequency ID Workshop **Presenter:** Joe Dowling, *Georgia Tech*.	**2b** Smart composite structures with embedded fiber optic sensors **Presenter:** Ginu Rajan, *Photonics Research Centre, DIT*
12:15 - 13:30	**LUNCH**	
13:30 - 15:00	**1c** Instrumentation Amplifiers: Basics and Recent Developments **Presenter:** Michiel Pertijs, *Delft University of Technology*	**2c** Polymer Optical Fibres in Sensing - Applications & Future Demands. **Presenter:** Katerina Krebber, *BAM Federal Institute for Materials Research and Testing, Berlin*
15:00 - 15:15	**BREAK**	
15:15 - 16:45	**1d** IC-sensor design for non-IC engineers **Presenter:** Tim Cummins, *Silicon Labs, Limerick*	**2d** MEMs Devices in Healthcare **Presenter:** Tom O'Dwyer, *Analog Devices, Limeric***k**
16:45- 17:00	**BREAK**	
17:00 - 18:30	**1e** Emerging Body Worn Sensor Applications to enable new Community and Home Based Risk Assessments and Therapeutic Interventions **Presenter:** Michael J. McGrath, *Intel Labs*	

OPENING & INTRODUCTIONS | 08:00 - 08:25 | FOUNDATION BUILDING - CONCERT HALL

KEYNOTE PRESENTATION 1 | 08:25 - 09:10 | FOUNDATION BUILDING - CONCERT HALL
"Optical Fibre Interferometry: from Physics Laboratory to Engineering Reality"
Professor Julian Jones, OBE FRSE FOSA

SESSION A1L-A: GAS SENSORS I

Chairs:
Bassam Alfeeli, ***Kuwait Institute for Scienfic Reserach***
Ioannis Raptis, ***NCSR IMEL, Athens***

CONCERT HALL

9:30

A1L-A1
OPTICAL SENSOR SYSTEM DETECTING PPM CONCENTRATIONS OF HYDROGEN AND HYDROCARBON GASES AT LOW TEMPERATURE USING GAN/INGAN NANOWIRES
Sumit Paul[1], Andreas Helwig[1], Gerhard Müller[1], Pascal Becker[2], Florian Furtmayr[3], Jørg Teubert[2], Martin Eickhoff[2]
{1}EADS Innovation Works, Germany; {2}Justus-Liebig-Universit ät Gieáen, Germany; {3}Technische Universität Munchen, Germany

9:45

A1L-A2
ULTRA-SENSITIVE HYDROGEN GAS SENSING USING DNA-TEMPLATED PALLADIUM NANOWIRES
Mariam Al Hinai, Nicholas Wright, Alton Horsfall, Reda Hassanien, Benjamin Horrocks, Andrew Houlton
Newcastle University, United Kingdom

10:00

A1L-A3
HYDROGEN SENSOR BASED ON MWNTS/WO3
Azam Iraji Zad[2], Rogheyeh Ghasempour[1]
{1}Sharif University of Technolgy, Iran; {2}Sharif University of Technology, Iran

10:15

A1L-A4
HYDROGEN GAS SENSORS BASED ON THERMALLY EVAPORATED NANOSTRUCTURED MOO3 SCHOTTKY DIODE: A COMPARATIVE STUDY
Mahnaz Shafiei[3], Jerry Yu[4], Michael Breedon[1], Nunzio Motta[3], Qinag Wu[2], Zheng Hu[2], Liu Qian[2], Kourosh Kalantar-Zadeh[4], Wojtek Wlodarski[4]
{1}Kyushu University, Japan; {2}Nanjing University, China; {3}Queensland University of Technology, Australia; {4}RMIT University, Australia

10:30

A1L-A5
HYDROGEN DETECTION USING THERMALLY ACTUATED MEMS RESONATORS
Babak Tousifar, Amir Rahafrooz, Siavash Pourkamali
University of Denver, United States

SESSION A1L-B: DYNAMIC SYSTEMS

Chairs:
Libor Rufer, ***TIMA Lab - Grenoble***
Huikai Xie, University of Florida

JEAN MONET

9:30

A1L-B1
PRECISION MODE MATCHING OF MEMS GYROSCOPE BY FEEDBACK CONTROL
Zhongxu Hu[2], Barry Gallacher[2], James Burdess[2], C.P. Fell[1], K. Townsend[1]
{1}Atlantic Inertial Systems LTD, United Kingdom; {2}University of Newcastle upon Tyne, United Kingdom

9:45

A1L-B2
ELECTROSTATIC REGULATION OF QUALITY FACTOR IN NON-IDEAL TUNING FORK MEMS
Alexander Trusov, Sergei Zotov, Andrei Shkel
University of California, Irvine, United States

10:00

A1L-B3
DEVELOPMENT OF KINETIC ENERGY HARVESTING SYSTEMS FOR VEHICLE APPLICATIONS
Alex Phipps[1], Dung Phung[1], Maxwell Kerber[1], Brian Dick[1], Alicia Powers[1], Richard Waters[2]
{1}Space and Naval Warfare Systems Center - Pacific, United States; {2}SSC Pacific, United States

10:15

A1L-B4
IMPROVED PIEZOELECTRIC MULTIFREQUENCY ENERGY HARVESTING BY MAGNETIC COUPLING
Jin Yang, Yumei Wen, Ping Li, Xiaoling Bai, Ming Li
Chongqing University, China

10:30

A1L-B5
AN ENERGY HARVESTING SYSTEM WITH A NOVEL RECTIFIER CHARGE PUMP
Tzu-Chia Huang, Fu-Ming Hsu, Paul C.-P. Chao
National Chiao Tung University, Taiwan

SPECIAL SESSION A1L-C: THz SENSING: MATERIALS, DEVICES & SYSTEMS I

Chairs:
Krikor Ozanyan, ***The University of Manchester***
Gregory Pandraud, ***TU Delft***

JOHN HOLLAND

9:30

A1L-C1
INVITED: TERAHERTZ ELECTRONICS FOR SENSING APPLICATIONS
Michael Shur
Rensselaer Polytechnic Institute, United States

9:45

A1L-C2
NEW SEMICONDUCTOR MATERIALS AND DEVICES FOR TERAHERTZ IMAGING AND SENSING
Taiichi Otsuji[2], T. Watanabe[2], K. Akagawa[2], Y. Tanimoto[2], S. Boubanga Tombet[2], T. Suemitsu[2], S. Chan[1], Dominique Coquillat[3], W. Knap[3], V. Ryzhii[4]
{1}Nano-Japan Rice University, Tohoku University, University of Pennsylvania, United States; {2}Tohoku University, Japan; {3} Universite Montpellier 2, France; {4}University of Aizu, Japan

10:15

A1L-C4
A VERSATILE MILLIMETRE WAVE SCANNER FOR GOODS INSPECTION
Christian Wagner, Helmut Essen, Alexander Hommes, Dirk Nüßler, Paul Warok, Sven Heinen
Fraunhofer Institute for High Frequency Physics and Radar Techniques, Germany

10:30

A1L-C5
TERAHERTZ SENSING AND IMAGING USING A QUANTUM CASCADE LASER
Paul Dean[1], Alex Valavanis[1], Suraj P. Khanna[1], Mohammad Lachab[1], Dragan Indjin[1], Zoran Ikonic[1], Paul Harrison[1], Edmund Linfield[1], A. Giles Davies[1], Yah Leng Lim[2], Russell Kliese[2], Milan Nikolic[2], Stephen J. Wilson[2], Aleksander Rakic[2]
{1}University of Leeds, United Kingdom; {2}University of Queensland, Australia

SESSION A2L-A: GAS SENSORS II (CONT'D)	SESSION A2L-B: INERTIAL SENSORS (CONT'D)	SPECIAL SESSION A1L-C: THz SENSING: MATERIALS, DEVICES & SSYSTEMS II (CONT'D)
CONCERT HALL	JEAN MONET	JOHN HOLLAND
	10:45	
	A1L-B6 **JOINT MODELING OF PIEZOELECTRIC TRANSDUCERS AND POWER CONVERSION CIRCUITS FOR ENERGY HARVESTING APPLICATIONS** Aldo Romani[2], Enrico Sangiorgi[2], Marco Tartagni[2], Rudi Paolo Paganelli[1] *{1}National Research Council, IEIIT, Italy; {2}Università di Bologna, Italy*	A1L-C6 **SILICON CMOS-BASED THZ DETECTION** Alvydas Lisauskas, Sebastian Boppel, Viktor Krozer, Hartmut Roskos *Goethe-University, Germany*

BREAK | 11:00- 11:30 | FOUNDATION BUILDING - ATRIUM

SPECIAL SESSION A1L-D: SENSOR & NETWORK DESIGN

Chairs:
Elena Gaura, *Coventry University*
Youn-Tae Kim, *Chosun University*

CHARLES PARSONS

SESSION A1L-E: STRESS SENSORS

Chairs:
Luc Hebrard, *InESS Strasbourg*
Walter Lang*, *Universität Bremen

FB028

SESSION A1L-F: FIBER-BASED PHYSICAL SENSORS

Chairs:
Wolfgang Habel, *BAM - Berlin*
Rosalind Wynne, *Villanova University*

FG042

9:30

A1L-D1
INVITED: CHALLENGES AND RESULTS IN CITY-SCALE SENSING
Lisa Amini, Eric Bouillet, Francesco Calabrese, Luca Gasparini, Olivier Verscheure
IBM Research, Ireland

A1L-E1
MICROFABRICATED SILICON-ON-PYREX PASSIVE WIRELESS WALL SHEAR STRESS SENSOR
Jeremy Sells, Vijay Chandrasekharan, Jessica Meloy, Mark Sheplak, Henry Zmuda, David Arnold
University of Florida, United States

A1L-F1
HIGH-SENSITIVITY MICROFLUIDIC PRESSURE SENSOR USING A MEMBRANE-EMBEDDED RESONANT OPTICAL GRATING
Steven Foland, Ke Liu, Duncan Macfarlane, Jeong-Bong Lee
University of Texas at Dallas, United States

9:45

A1L-E2
SOFT ARTIFICIAL SKIN WITH MULTI-MODAL SENSING CAPABILITY USING EMBEDDED LIQUID CONDUCTORS
Yong-Lae Park, Bor-Rong Chen, Robert J. Wood
Harvard University, United States

A1L-F2
TEMPERATURE COMPENSATED MINIATURE ALL-GLASS FIBRE OPTIC PRESSURE SENSOR
Kort Bremer[2], Elfed Lewis[2], Gabriel Leen[2], Brian Moss[2], Steffen Lochmann[1], Ingo Mueller[1]
{1}Hochschule Wismar, Germany; {2}University of Limerick, Ireland

10:00

A1L-D3
BARE NECESSITIES-KNOWLEDGE-DRIVEN WSN DESIGN
Elena Gaura, James Brusey, Ross Wilkins
Coventry University, United Kingdom

A1L-E3
ON THE INFLUENCE OF THERMAL TREATMENT ON STRAIN SENSORS BASED ON THE FERROMAGNETIC SHAPE MEMORY ALLOY NIMNGA
Jochen Matthias Stephan, Kyle Retan, Patrick Ruther, Oliver Paul
IMTEK, University of Freiburg, Germany

A1L-F3
TOWARDS MICRO-STRUCTURED OPTICAL FIBER SENSORS FOR TRANSVERSE STRAIN SENSING IN SMART COMPOSITE MATERIALS
Sanne Sulejmani[5], Camille Sonnenfeld[5], Thomas Geernaert[5], Francis Berghmans[5], Hugo Thienpont[5], Sophie Eve[1], Nicolas Lammens[4], Geert Luyckx[4], Eli Voet[4], Joris Degrieck[4], Waclaw Urbanczyk[6], Pawel Mergo[3], Martin Becker[2], Hartmut Bartelt[2]
{1}CRISMAT CNRT-Mat´eriaux/ENSICAEN, France; {2} Institute of Photonic Technology, Germany; {3}Marie Curie-Sklodowska University, Poland; {4}Universiteit Gent, Belgium; {5}Vrije Universiteit Brussel, Belgium; {6}Wroclaw University of Technology, Poland

10:15

A1L-E4
A NOVEL IN VIVO SENSOR FOR LOOSENING DIAGNOSTICS IN TOTAL HIP REPLACEMENT
Hartmut Ewald, Catherine Ruther, Wolfram Mittelmeier, Rainer Bader, Daniel Kluess
Universität Rostock, Germany

A1L-F4
150-KM LONG DISTANCE FIBER SENSOR SYSTEM BASED ON RAMAN AMPLIFICATION
Junhao Hu[2], Changyuan Yu[2], Zhihao Chen[1]
*{1}A*STAR Institute of High Performance Computing, I2R, Singapore; {2}National University of Singapore, Singapore*

10:30

A1L-D5
WSN DEPLOYMENTS: DESIGNING WITH PATTERNS
James Brusey[1], Elena Gaura[1], Roger Hazelden[2]
{1}Coventry University, United Kingdom; {2}TRW Conekt, United Kingdom

A1L-E5
CMOS-BASED PIEZO-FET STRESS SENSORS IN WHEATSTONE BRIDGE CONFIGURATION
Pascal Gieschke, Bjoern Sbierski, Oliver Paul
IMTEK, University of Freiburg, Germany

A1L-E5
REFLECTOMETRIC FIBER OPTIC SENSOR FOR DISTRIBUTED MEASUREMENT OF INTENSE MAGNETO-STATIC FIELDS
Luca Palmieri, Andrea Galtarossa
Università degli Studi di Padova, Italy

10:45

A1L-B6
OPTICALLY INTERROGATED, MICROFABRICATED WALL SHEAR STRESS SENSOR
Daniel Sullivan[2], John Kline[2], Maria Salamon[2], Sohail Zaidi[1], Richard Miles[1]
{1}Princeton University, United States; {2}Research Support Instruments, United States

A1L-E5
OPTICAL FIBRE X-RAY RADIATION DOSIMETER SENSOR FOR LOW DOSE APPLICATIONS
Denis McCarthy[2], Sinead O'Keeffe[2], Elfed Lewis[2], Dan Sporea[1], Adelina Sporea[1], Ion Tiseanu[1]
{1}National Institute for Laser, Plasma and Radiation Physics, Romania; {2}University of Limerick, Ireland

BREAK | 11:00- 11:30 | FOUNDATION BUILDING - ATRIUM

SESSION A2L-A: GAS SENSORS II

Chairs:
Mona Zaghloul, *George Washington University*
Marco Petrovich, *University of Southampton*

CONCERT HALL

11:30

A2L-A1

ELECTRONIC NOSE BASED ON GRAPHENE, NANOTUBE AND NANOWIRE CHEMIRESISTOR ARRAYS ON SILICON

Samuel MacNaughton[1], Sameer Sonkusale[1], Sumedh Surwade[2], Srikanth Ammu[2], Sanjeev Manohar[2]

{1}Tufts University, United States; {2}University of Massachusetts - Lowell, United States

11:45

A2L-A2

HUMIDITY SENSING PROPERTIES OF THE SENSOR BASED ON GRAPHENE OXIDE FILMS WITH DIFFERENT DISPERSION CONCENTRATIONS

Cheng-Long Zhao, Ming Qin, Qing-An Huang

Southeast University, China

12:00

A2L-A3

THE INFLUENCE OF GATE BIAS AND STRUCTURE ON THE CO SENSING PERFORMANCE OF SIC BASED FIELD EFFECT SENSORS

Zhafira Darmastuti, Ruth Pearce, Anita Lloyd Spetz, Mike Andersson

Linköping University, Sweden

12:15

A2L-A4

HIERARCICAL STRATEGY FOR QUANTIFICATION OF NOX IN A VARYING BACKGROUND OF TYPICAL EXHAUST GASES

Christian Bur[2], Andreas Schütze[2], Mike Andersson[1], Anita Lloyd Spetz[1]

{1}Link"ping University, Sweden; {2}Saarland University, Germany

12:30

A2L-A5

PHYSICAL-BASED CHARACTERIZATION OF LOW FREQUENCY RESPONSES IN METAL-OXIDE GAS SENSORS

Thierry Contaret, Jean-Luc Seguin, Khalifa Aguir

Aix-Marseille Universit,, IM2NP, CNRS, France

SESSION A2L-B: INERTIAL SENSORS

Chairs:
Libor Rufor, *Tima Lab - Grenoble*
Siavash Pourkamali, *University of Denver*

JEAN MONET

11:30

A2L-B1

IMPROVEMENT OF CMOS-MEMS ACCELEROMETER USING THE SYMMETRIC LAYERS STACKING DESIGN

Ting-Han Yen[2], Ming-Han Tsai[2], Chun-I Chang[2], Yu-Chia Liu[2], Sheng-Shian Li[2], Rongshun Chen[2], Jin-Chern Chiou[1], WeiLeun Fang[2]

{1}National Chiao Tung University, Taiwan; {2}National Tsing Hua University, Taiwan

11:45

A2L-B2

DEMONSTRATION OF A WIDE DYNAMIC RANGE ANGULAR RATE SENSOR BASED ON FREQUENCY MODULATION

Sergei Zotov, Alexander Trusov, Andrei Shkel

University of California, Irvine, United States

12:00

A2L-B3

TWO-MASS MEMS VELOCITY SENSOR FEEDBACK CONTROL LOOP DESIGN

Ali Alshehri[2], Michael Kraft[2], Paolo Gardonio[1], Stephen Elliott[2], Michele Zilletti[2]

{1}Università degli Studi di Udine, Italy; {2}University of Southampton, United Kingdom

12:15

A2L-B4

A NEW BASEBAND EQUIVALENT MODEL FOR SENSE MODE DYNAMICS AND ITS EFFECTS ON FORCE-FEEDBACK CONTROLLER DESIGN FOR MEMS GYROSCOPES

Burak Eminoglu, Said Alper, Tayfun Akin

Middle East Technical University, Turkey

12:30

A2L-B5

RESOLUTION AND START-UP DYNAMICS OF MEMS RESONANT ACCELEROMETERS

Alessandro Tocchio[1], Alessandro Caspani[1], Giacomo Langfelder[1], Antonio Longoni[1], Ernesto Lasalandra[2]

{1}Politecnico di Milano, Italy; {2}STMicroelectronics, Italy

12:45

A2L-B6

A NOVEL MICROMACHINED DIFFERENTIAL RESONANT ACCELEROMETER WITH FLEXURAL MECHANISMS FABRICATED BY SOI-MEMS TECHNOLOGY

Yanlong Shang, Junbo Wang, Sheng Tu, Deyong Chen

Insititute of Electronics, Chinese Academy of Sciences, China

SPECIAL SESSION A2L- C: THz SENSING: MATERIALS, DEVICES & SSYSTEMS II

Chairs:
Krikor Ozanyan, *The University of Manchester*
Martin Kraft, *Carinthian Tech Research*

JOHN HOLLAND

11:30

A2L-C1

THE USE OF TERAHERTZ SENSORS IN INDUSTRY

Philip Francis Taday

TeraView Limited, United Kingdom

11:45

A2L-C2

OPTIMIZATION OF THZ ABSORPTION IN THIN FILMS

Dragoslav Grbovic, Fabio Alves, Brian Kearney, Karamitros Apostolos, Gamani Karunasiri

Naval Postgraduate School, United States

12:00

A2L-C3

OPTIMIZING MOM DIODE PERFORMANCE VIA THE OXIDATION TECHNIQUE

Linzi Dodd, David Wood, Andrew Gallant

Durham University, United Kingdom

12:15

A2L-C4

FREQUENCY METROLOGY OF A CW-THZ PHOTOMIXING SOURCE

Francis Hindle, Gael Mouret, Arnaud Cuisset, Robin Bocquet

Universit, du Littoral Côte d'Opale, France

12:30

A2L-C5

ADVANCED MBE LOW TEMPERATURE GROWN MATERIALS FOR CW THZ GENERATION AND DETECTION

Mohamed Missous

University of Manchester, United Kingdom

LUNCH | 13:00- 14:00 | MAIN BUILDING - EDEN, RED RAISON RESTAURANT

SPECIAL SESSION A2L-D: FROM SENSOR TO WEB Chairs: John Tyndall, *Tyndall National Institute* Manfred Hauswirth, *National University of Ireland - Galway*	SESSION A2L-E: STRAIN-BASED SENSORS Chairs: Patrick Pons, *CNRS LAAS* Yunqi Liu, *Shanghai University*	SESSION A2L-F: FIBER-BASED CHEMICAL SENSORS Chairs: Bassam Alfeeli, *Kuwait Institute for Scienfic Reserach* Shin-Won Kang, *Kyungpook National University*
CHARLES PARSONS	**FB028**	**FG042**
11:30		
A2L-D1 **INVITED: EXPLOITING CORRELATIONS FOR EFFICIENT CONTENT-BASED SENSOR SEARCH** Richard Mietz, Kay Römer *Universität zu Lübeck, Germany*	**A2L-E1** **A WIRELESS PASSIVE STRAIN SENSOR** Christian Mandel, Martin Schäler, Rolf Jakoby *Technische Universiät Darmstadt, Germany*	**A2L-F1** **LAB ON FIBER TECHNOLOGY FOR SENSING APPLICATIONS** Emanuela Esposito[1], Carmine Granata[1], Alessio Crescitelli[2], Marco Consales[2], Armando Ricciardi[2], Antonello Cutolo[2], Andrea Cusano[2] *{1}National Research Council, Cibernetic Institute, Italy; {2} Università degli Studi del Sannio, Italy*
11:45		
	A2L-E2 **A NEWLY DEVELOPED RADIO FREQUENCY WIRELESS PASSIVE HIGHLY SENSITIVE STRAIN TRANSDUCER** Trang Thai[2], Herve Aubert[1], Patrick Pons[4], Robert Plana[4], Trang T. Thai[2], Manos Tentzeris[2], Gerald DeJean[3] *{1}CNRS-LAAS University of Toulouse, France; {2}Georgia Institute of Technology, United States; {3}Microsoft Research, United States; {4}Université de Toulouse, CNRS, LAAS, France*	**A2L-F2** **LOSSY MODE RESONANCE-BASED OPTICAL FIBER HUMIDITY SENSOR** Carlos Ruiz Zamarre¤o, Miguel Hernaez, Ignacio Del Villar, Ignacio Raul Matias, Francisco Javier Arregui *Universidad P£blica de Navarra, Spain*
12:00		
A2L-D3 **DEPLOYMENT ALTERNATIVES FOR PERFORMANCE DEBUGGING IN WIRELESS SENSOR NETWORKS** Tony O'Donovan, Cormac Sreenan *University College Cork, Ireland*	**A2L-E3** **ALL INKJET PRINTED SYSTEM FOR STRAIN MEASUREMENT** Bruno Andò, Salvatore Baglio, Salvatore La Malfa, Gaetano L'Episcopo *Università degli Studi di Catania, Italy*	**A2L-F3** **LOSSY MODE RESONACE-BASED PH SENSOR USING A TAPERED SINGLE MODE OPTICAL FIBER COATED WITH A POLYMERIC NANOSTRUCTURE** Abian Socorro, Ignacio Del Villar, Jesus Corres, Francisco Javier Arregui, Ignacio Raul Matias *Universidad P£blica de Navarra, Spain*
12:15		
A2L-D4 **ULP SYSTEMS IN WS&AN : COMBINE THE NJ/BIT TARGET WITH HIGHLY EFFICIENT CONNECTIVITY** Eric Mercier[1], Mickaël Maman[1], Elyes Ben Hamida[1], Dimitri Kténas[1], Laurent Ouvry[1], Atsushi Honda[2] *{1}CEA-Léti, France; {2}Fujitsu Labs, Japan*	**A2L-B4** **A MEMS PRESSURE SENSOR BASED ON HALL EFFECT** Hui-Yang Yu, Ming Qin, Meng Nie, Qing-An Huang *Southeast University, China*	**A2L-F4** **IN-SITU LOW CONCENTRATION MONITORING OF AMMONIA USING AN OPTICAL FIBRE SENSOR** Gerard Dooly, Hadi Manap, Sinead O'Keeffe, Elfed Lewis *University of Limerick, Ireland*
12:30		
A2L-D5 **CAPTURING AND ADDRESSING END-USER REQUIREMENTS FOR WIRELESS SENSOR NETWORKS - MATCHING EXPECTATIONS WITH REALITY** Roger Hazelden, Robert Pinnock *TRW Conekt, United Kingdom*	**A2L-E5** **PIEZORESISTIVE N-TYPE 4H-SIC PRESSURE SENSOR WITH MEMBRANE FORMED BY MECHANICAL MILLING** Terunobu Akiyama, Danick Briand, Nicolass de Rooij *École Polytechnique Fédérale de Lausanne, Switzerland*	**A2L-F5** **APPLICATIONS OF OPTICAL FIBER SENSORS IN THE OIL REFINING AND PETROCHEMICAL INDUSTRIES** Yibing Zhang, Geoff Keiser, Cary Marzinsky, Alan Schilowitz, Limin Song, Amy Herhold *ExxonMobil Research and Engineering, United States*
12:45		
A2L-D6 **ROBUST WIRELESS SENSOR NETWORK PERFORMANCE ANALYSIS** Kirk Martinez, Philip Basford *University of Southampton, United Kingdom*	**A2L-E6** **PROCESS FOR LOW TEMPERATURE DEPOSITION OF STRAIN GAUGE MATERIALS BASED ON CHROMIUM NITRIDE THIN FILMS** Henk Mol[3], P. M. Sarro[2], Hugo Schellevis[2], Yunlong Hou[1] *{1}ASML, Netherlands; {2}Delft University of Technology, Netherlands; {3}SKF Engineering and Research Centre, Netherlands*	**A2L-F6** **ALKANES NEAR-INFRARED SPECTRUM ANALYSIS BASED ON HOLLOW-CORE PHOTONIC BANDGAP FIBER** Xuefeng Li[2], S. Lin[2], Yury Zimin[2], Yupeng Zhang[2], Toshitsugu Ueda[2], Jinxing Liang[1] *{1}Southeast University, China; {2}Waseda University, Japan*

LUNCH | 13:00- 14:00 | MAIN BUILDING - EDEN, RED RAISON RESTAURANT

POSTER SESSION 1 | 14:15 - 16:00 | EGO 10
Chairs : Yunqi Liu,*Shanghai University*
Ken Grattan, *City University London*

SPECIAL SESSION: SENSOR TECHNOLOGIES FOR ENVIRONMENTAL MONITORING OF CLEAN AND SECURE WATER SUPPLIES

A3P-G3 DEVELOPMENT AND EVALUATION OF SIMULTANEOUS WIRELESS TRANSMISSION OF POWER AND DATA FOR OCEANOGRAPHIC DEVICES
Gino Virgilio Tibajia[1], Marc Caesar Reyes Talampas[2]
{1}Instrumentation, Robotics and Control Laboratory, Philippines; {2} University of the Philippines Diliman, Philippines

SPECIAL SESSION: INTELLIGENT WEARABLE WIRELESS INERTIAL MEASUREMENT II

A3P-H1 LOW-COST SHORT - RANGE WIRELESS OPTICAL FSK MODEM FOR SWIMMERS FEEDBACK
Rabee Hagem[1], David Thiel[1], Steven O'Keefe[1], Andrew Wixted[1], Thomas Fickenscher[2]
{1}Griffith University, Australia; {2}Helmut Schmidt University, Germany

A3P-H3 AN AUTOMATED CALIBRATION TOOL FOR HIGH PERFORMANCE WIRELESS INERTIAL MEASUREMENT IN PROFESSIONAL SPORTS
Mark Gaffney[2], Michael Walsh[1], Brendan O'Flynn[1], Cian O'Mathuna[1]
{1}Clarity Centre for Sensor Web Technologies / Tyndall National Institute, Ireland; {2}Tyndall National Institute, Ireland

SPECIAL SESSION: ULTRASOUND MOLECULAR IMAGING AND NANOSYSTEMS II

A3P-J1 CYTOTOXICITY ASSESSMENT OF SILICA-BASED NANOSIZED CONTRAST AGENTS FOR ULTRASOUND MOLECULAR IMAGING
Lucia Dipaola[2], Fernanda Chiriacò[2], Enzo Antonio Sbenaglia[2], Francesco Conversano[2], Sergio Casciaro[2], Andrea Ragusa[1]
{1}National Nanotechnology Laboratory, CNR-NANO, Italy; {2}National Research Council, IFC, Italy

BIOSENSORS II

A3P-K1 PHOTONIC CRYSTAL FIBER MODAL INTERFEROMETER FOR BIOSENSING APPLICATIONS
Dora Juan Juan Hu[1], Jun Long Lim[1], Yixin Wang[1], Mi Kyoung Park[2], Linus Tzu-Hsiang Kao[2]
*{1}A*STAR Institute of High Performance Computing, I2R, Singapore; {2} A*STAR Institute of High Performance Computing, IME, Singapore*

A3P-K2 2D SENSOR ARRAY BASED ON SPLIT RING RESONATORS FOR MONITORING OF ORGANIC TISSUE
Margarita Puentes, Martin Schüßler, Rolf Jakoby
Technische Universität Darmstadt, Germany

A3P-K3 NON-INVASIVE SENSOR FOR AN IN VIVO HEMOGLOBIN MEASUREMENT
Jens Kraitl[2], Ulrich Timm[2], Hartmut Ewald[2], Elfed Lewis[1]
{1}University of Limerick, Ireland; {2}Universität Rostock, Germany

A3P-K4 A LABEL-FREE SENSOR SYSTEM FOR CHEMOTHERAPEUTIC DRUG SCREENING
Sander van den Driesche[3], Michael Vellekoop[3], Filippo Iuliano[2], Heimo Breiteneder[1], Christine Hafner[1]
{1}Medical University of Vienna, Austria; {2}Slovak Academy of Sciences, Slovakia; {3}Vienna University of Technology, Austria

A3P-K5 OPTOFLUIDIC GLUCOSE SENSOR UTILIZING AN EPOXY-BASED, TRANSPARENT DRY FILM RESIST
Zhan Gao[1], Sijia Gong[1], Chang-Soo Kim[1], David Henthorn[2]
{1}Missouri University of Science and Technology, United States; {2}Saint Louis University, United States

A3P-K6 NANOPOROUS ALUMINUM ANODIC OXIDE BASED OPTICAL BIOSENSOR FOR REAL-TIME DETECTION OF TROPONIN T
Se-Hyuk Yeom[2], Byoung-Ho Kang[2], Ok-Geun Kim[2], Heng Yuan[2], Ok-Geun Kim[2], Ma-Eum Han[2], Dae-Hyuk Kwon[1], Shin-Won Kang[2]
{1}Kyungil University, Korea, South; {2}Kyungpook National University, Korea, South

A3P-K8 NONCONTACT HUMAN ELECTROPHYSIOLOGICAL MEASUREMENTS USING A NEW DISPLACEMENT CURRENT SENSOR
Lorenzo Faggion[1], Abdulhussain Mahdi[2]
{1}Joint Research Centre of the European Commission, Italy; {2}University of Limerick, Ireland

A3P-K7 SOLID-STATE POTENTIOMETRIC BIOSENSORS FOR PH QUANTIFICATION IN BIOLOGICAL SAMPLES
Marius Ivan, Sjoukje Wiegersma, Jorgen Sweelssen, Milan Saalmink, Arjen Boersma
TNO, Netherlands

A3P-K9 CV CHARACTERISATION OF DNA SENSING IN MICRO-PCR CHIP
Cangran Guo[2], Tao Deng[2], Zewen Liu[2], Jian Qin[1]
{1}Hunan University, China; {2}Tsinghua University, China

A3P-K10 A MICROFLUIDIC DEVICE FOR HIGH DENSITY HYDRODYNAMIC CELL TRAPPING, GROWTH AND SUPER-RESOLUTION IMAGING
Laurence Bell, Ashwin Seshia, Ernest Laue, David Lando
University of Cambridge, United Kingdom

A3P-K11 PMMA/64° YX-LINBO3 GUIDED SH-SAW BASED IMMUNOSENSING SYSTEM
Chen-Tung Feng, Chi-Jung Cheng, Massood Zandi Atashbar
Western Michigan University, United States

A3P-K12 NON-LITHOGRAPHICALLY MICROMACHINED CAPACITIVE PRESSURE SENSOR BASED ON STAINLESS STEEL FOR BIOMEDICAL APPLICATIONS
Daniel Brox, Abdolreza Rashidi Mohammadi, Kenichi Takahata
University of British Columbia, Canada

A3P-K13 MAGNETICALLY-ACTUATED BLOOD FILTER FOR A CMOS-BASED NANOWIRE BIOSENSOR
Kwang Hyo Chung, Chang-Geun Ahn, Yo Han Choi, Jong-Heon Yang, Chan Woo Park, Wan-Joong Kim, Chil Seong Ah, Gun Yong Sung
Electronics and Telecommunications Research Institute, Korea, South

A3P-K14 MULTI-PARAMETER ON-LINE CELL HEALTH MONITORING SYSTEM
Eric Moore[1], Anna Paschero[2], Walter Messina[2], Eve McLoughlin[2]
{1}Tyndall National Institute, Lee Maltings, University College Cork, Ireland; {2}University College Cork, Ireland

A3P-K15 FUNCTIONALISED SILICON MICROCHANNEL IMMUNOSENSOR WITH PORTABLE ELECTRONIC READOUT FOR BACTERIA DETECTION IN BLOOD
Chirasree Roychaudhuri[1], Ramkrishna Das[1], Shubhodip Dey[1], Sumantra Das[2]
{1}Bengal Engineering and Science University, Shibpur, India; {2}Indian Institute of Chemical Biology, India

A3P-K16 A NOVEL FRONT-END FOR IMPEDANCE SPECTROSCOPY
Panagiotis Kassanos, Iasonas Triantis, Andreas Demosthenous
University College London, United Kingdom

A3P-K17 SENSITIVITY ENHANCED TECHNIQUE AND ITS APPLICATION ON DETECTION OF TUMOR BIOMARKERS
Xiaoqun Zhou[1], Wei Hua Hu[2], Chang Ming Li[2]
*{1}A*STAR Institute of High Performance Computing, I2R, Singapore; {2} Nanyang Technological University, Singapore*

OPTICAL SENSORS

A3P-L1 **LONG PERIOD GRATING IN HOLLOW CORE FIBERS: FABRICATION AND CHARACTERIZATION**
Agostino Iadicicco[2], Stefania Campopiano[2], Antonello Cutolo[1], Andrea Cusano[1]
{1}Università degli Studi del Sannio, Italy; {2}Università degli Studi di Napoli 'Parthenope', Italy

A3P-L2 **SAW UV SENSORS USING ZNO NANORODS GROWN ON ALN/SI STRUCTURES**
Duy-Thach Phan, Gwiy-Sang Chung
University of Ulsan, Korea, South

A3P-L4 **INVESTIGATION OF OPTICAL PROPERTIES OF TISSUE USING AN OPTICAL FIBRE SENSOR**
Dennis Warncke[3], Elfed Lewis[3], Martin Leahy[2], Steffen Lochmann[1]
{1}Hochschule Wismar, Germany; {2}National University of Ireland, Galway, Ireland; {3}University of Limerick, Ireland

A3P-L5 **NEW INTERROGATION TECHNIQUE FOR MULTIPLEXING LPG-FIBER LOOP MIRRORS BASED DISPLACEMENT SENSORS USING AN OTDR**
Mikel Bravo[4], M. Lòpez-Amo[4], Orlando Frazão[1], J. M. Baptista[3], J. L. Santos[2]
{1}INESC Porto, Portugal; {2}INESC Porto & Faculdade de Ciências da Universidade do Porto, Portugal; {3}INESC Porto & Universidade da Madeira, Portugal; {4}Universidad Pública de Navarra, Spain

A3P-L6 **ENVELOPE EXTRACTION TECHNIQUE FOR A SELF-MIXING CENTIMETRIC DISPLACEMENT LASER SENSOR**
Usman Zabit, Thierry Bosch
Université de Toulouse, CNRS, LAAS, France

A3P-L7 **FOREIGN OBJECT IMPACT MONITORING ON WIND TURBINE BLADE USING FBGS**
Chow-Shing Shin[1], Bo-Lian Chen[1], Shien-Kuei Liaw[2]
{1}National Taiwan University, Taiwan; {2}National Taiwan University of Science and Technology, Taiwan

A3P-L10 **PERFORMANCE ANALYSIS AND COMPARISON OF COMPOSITE MATERIALS EMBEDDED WITH DIFFERENT OPTICAL FIBER SENSOR TYPES**
Ginu Rajan[1], Manjusha Ramakrishnan[1], Yuliya Semenova[1], Gerald Farrell[1], Andrzej Domanski[2], Anna Boczkowska[2], Tomasz Wolinski[2]
{1}Dublin Institute of Technology, Ireland; {2}Warsaw University of Technology, Poland

A3P-L11 **QUASI-DISTRIBUTED MEASUREMENT OF SURROUNDING REFRACTIVE INDEX USING PHOTON-COUNTING TIME DOMAIN REFLECTOMETRY**
Damien Kinet, Christophe Caucheteur, Marc Wuilpart, Patrice Mégret
Université de Mons, Belgium

A3P-L12 **HIGH DYNAMIC RANGE BACKGROUND LIGHT SUPPRESSION FOR A TOF DISTANCE MEASUREMENT SENSOR IN 180NM CMOS**
Milos Davidovic, Michael Hofbauer, Kerstin Schneider-Hornstein, Horst Zimmermann
Vienna University of Technology, Austria

A3P-L13 **NOISE CONSIDERATIONS ON HYBRID OPTICAL MEMS DISPLACEMENT SENSORS**
Wilfried Hortschitz[1], Franz Kohl[2], Matthias Sachse[2], Michael Stifter[2], Thilo Sauter[2], Harald Steiner[3], Johannes Schalko[3], Artur Jachimowicz[3], Franz Keplinger[3]
{1}Austrian Academy of Sciences, Austria; {2}Institute for Integrated Sensor Systems, Austrian Academy of Sciences, Austria; {3}Vienna University of Technology, Austria

A3P-L14 **PECVD SIC PHOTONIC CRYSTAL SENSOR**
Gregory Pandraud, Yujian Huang, P. M. Sarro, Felipe Bernal Arango
Delft University of Technology, Netherlands

A3P-L15 **SIZE EFFECT OF GOLD NANOPARTICLES ON OPTICAL MICROFIBER REFRACTIVE INDEX SENSORS**
Ying Cui[1], Perry Ping Shum[1], Guanghui Wang[2], Hong Chang[2], Xuan Quyen Dinh[1], Meng Jiang[2], Georges Humbert[3]
{1}CINTRA, Nanyang Technological University / CNRS/THALES, Singapore; {2}Nanyang Technological University, Singapore; {3}Xlim - University of Limoges/CNRS, France

A3P-L16 **FABRICATION OF LONG-PERIOD GRATINGS IN MICRO-STRUCTURE SPECIALTY FIBER WITH RANDOM HOLES IN CLADDING**
Yunqi Liu, Dan Yang, Tingyun Wang
Shanghai University, China

A3P-L17 **HIGH PERFORMANCE OPTICAL ANGULAR POSITION SENSING AT LOW-COST: A BIO-INSPIRED APPROACH**
Raphaël Juston[1], Stéphane Viollet[1], Lubin Kerhuel[2], Nicolas Franceschini[1]
{1}Institute of Movement Sciences, CNRS / University of the Mediterranean, France; {2}Movea, France

A3P-L18 **LONG-RANGE BOTDA SENSING USING OPTICAL PULSE CODING AND SINGLE SOURCE BI-DIRECTIONAL DISTRIBUTED RAMAN AMPLIFICATION**
Mohammad Taki, Marcelo Soto, Fabrizio Di Pasquale, Gabriele Bolognini
Scuola Superiore Sant'Anna, Italy

A3P-L19 **INTRINSIC FIBER OPTIC ULTRASOUND SENSOR FOR OIL IMMERSED DETECTION OF PARTIAL DISCHARGES**
Julio E. Posada-Roman, Jose A. Garcia-Souto, Jesus Rubio-Serrano
Universidad Carlos III de Madrid, Spain

A3P-L20 **MULTI-PURPUSE OPTOELECTRONIC INSTRUMENT FOR MONITORING THE ALCOHOLIC FERMENTATION OF WINE**
Francisco Jiménez, Javier Vàzquez, José Luis Sànchez-Rojas, Nuria Barrajòn, Juan Bautista Úbeda
Universidad de Castilla-La Mancha, Spain

A3P-L21 **A PRESSURE MAPPING DEVICE WITH BRAGG GRATING SENSORS INSCRIBED IN BOW-TIE FIBRES**
Chunxiao Yan, Eleonora Ferraris, Dominiek Reynaerts
Katholieke Universiteit Leuven, Belgium

A3P-L22 **DEVELOPMENT OF GRAPHENE-BASED OPTICAL DETECTORS FOR INFRARED SENSING APPLICATIONS**
King Wai Chiu Lai, Ning Xi, Hongzhi Chen, Carmen Kar Man Fung, Liangliang Chen
Michigan State University, United States

A3P-L23 **SINGLEMODE HETERO-CORE FIBER BASED REFRACTOMETER DEMODULATED IN A RATIOMETRIC SYSTEM**
Qiang Wu, Youqiao Ma, Lin Bo, Pengfei Wang, Yuliya Semenova, Gerald Farrell
Dublin Institute of Technology, Ireland

A3P-L24 **PARTICLE CHARACTERIZATION WITH THE TIME-SHIFT-TECHNIQUE**
Arno Kretschmer, Stephan Höhne, Nils Damaschke
Universität Rostock, Germany

A3P-L25 **PRELIMINARY EVALUATION OF A HIGH PRESSURE, HIGH-TEMPERATURE DOWNHOLE OPTICAL SENSOR**
Grzegorz Fusiek, Pawel Niewczas, Graeme Burt
University of Strathclyde, United Kingdom

OPTICAL SENSORS

A3P-L26 **FIBER-OPTIC SENSOR FOR MONITORING RESPIRATION AND CARDIAC ACTIVITY**
Lukasz Dziuda, Franciszek Skibniewski, Krzysztof Rozanowski, Mariusz Krej, Jaroslaw Lewandowski
Military Institute of Aviation Medicine, Poland

A3P-L27 **THEORETICAL STUDY OF CROSS-WAVEGUIDE RESONATOR BASED SILICON ELECTRO-OPTIC SENSOR**
Ching Eng Png[1], Vivek Dixit[1], Maoqing Xin[2], Soon Thor Lim[1], Aaron Danner[2]
*{1}A*STAR Institute of High Performance Computing, IHPC, Singapore; {2} National University of Singapore, Singapore*

A3P-L28 **SPECTRAL MEASUREMENT WITH A UV LINEAR VARIABLE OPTICAL FILTER MICROSPECTROMETER**
Arvin Emadi
Delft University of Technology, Netherlands

A3P-L29 **NEAR- AND MID-IR MICROSPECTROMETERS BASED ON LINEAR-VARIABLE OPTICAL FILTERS**
Arvin Emadi
Delft University of Technology, Netherlands

A3P-L30 **MULTICORE PHOTONIC CRYSTAL FIBER ANEMOMETERS WITH LARGE CORE SPACING**
Mark Reimlinger, Emily Battinelli, Gang Feng, Alfonso Ortega, Rosalind Wynne
Villanova University, United States

A3P-L31 **OPTIMIZED IMAGE CALIBRATION FOR SPECTROSCOPIC SYSTEMS**
Olga Conde, Julian de la Cruz, Luis Rodriguez-Cobo, Jesus Mirapeix, Adolfo Cobo, Jose Lòpez-Higuera
Universidad de Cantabria, Spain

MECHANICAL & PHYSICAL SENSORS

A3P-M1 **PIEZO-HALL EFFECT IN CMOS-BASED VERTICAL HALL DEVICES**
Timo Kaufmann, Daniel Kopp, Manuel Kunzelmann, Patrick Ruther, Oliver Paul
IMTEK, University of Freiburg, Germany

A3P-M2 **THREE-AXIS MEMS INERTIAL SENSOR FOR AUTOMOBILE APPLICATIONS**
Heewon Jeong[2], Kiyoko Yamanaka[2], Yasushi Goto[2], Takanori Aono[2], Masahide Hayashi[1]
{1}Hitachi Automotive Systems Ltd., Japan; {2}Hitachi Ltd., Japan

A3P-M3 **TUNABLE MINIATURIZED VISCOSITY SENSORS OPERATING IN THE KHZ-RANGE**
Martin Heinisch[1], Bernhard Jakoby[1], Erwin K. Reichel[2], Isabelle Dufour[3]
{1}Johannes Kepler Universität, Austria; {2}Katholieke Universiteit Leuven, Belgium; {3}Université de Bordeaux, France

A3P-M4 **STAINLESS STEEL CAPACITIVE PRESSURE SENSOR FOR HOSTILE ENVIRONMENTS: SAMPLE-TO-SAMPLE VARIABILITY AND RELIABILITY CHARACTERIZATION**
Shih-Shian Ho, Srihari Rajgopal, Mehran Mehregany
Case Western Reserve University, United States

A3P-M5 **EFFECT OF THE ANISOTROPIC MAGNETOSTRICTION ON TERFENOL-D BASED FIBER BRAGG GRATING MAGNETIC SENSORS**
Giuseppe Lanza[4], Andrea Cusano[4], Giovanni Breglio[5], Michele Giordano[3], Andrea Gaddi[1], Salvatore Buontempo[2]
{1}European Organization for Nuclear Research, Switzerland; {2}Istituto Nazionale di Fisica Nucleare, Italy; {3}National Research Council, IMCB, Italy; {4}Università degli Studi del Sannio, Italy; {5}Università degli Studi di Napoli Federico II, Italy

A3P-M6 **MEMS RELATIVE PRESSURE SENSOR ON FLEXIBLE SUBSTRATE**
Moinuddin Ahmed, Donald Butler, Zeynep Celik-Butler
University of Texas at Arlington, United States

A3P-M7 **A HOT FILM WIND SENSOR WITH FOUR CONSTANT TEMPERATURE DIFFERENCE ELEMENTS FABRICATED ON CERAMIC SUBSTRATE**
Ziqiang Dong, Jingjing Chen, Yukun Qin, Ming Qin, Qing-An Huang
Southeast University, China

A3P-M8 **SENSITIVITY ENHANCEMENT OF LC SENSORS WITH NOVEL INDUCTOR DESIGN**
Sung-Yueh Wu, Wensyang Hsu
National Chiao Tung University, Taiwan

A3P-M9 **MATCHING OF MAXIMUM GAUGE FACTOR AND TCR ZERO CROSSING OF ME-DLC**
Ulrike Heckmann[1], Ralf Bandorf[1], Mirjana Petersen[2], Virginia Gwozdz[1], Günter Bräuer[1]
{1}Fraunhofer Institute for Surface Engineering and Thin Films IST, Germany; {2}Technische Universität Braunschweig, Germany

A3P-M10 **LOW DRIFT IN POLYSILICON-OXIDE MICROMACHINED ULTRASONIC TRANSDUCERS**
Christophe Antoine, Sushil Bharatan, Erik Tarvin, Urvi Shah, Michael Judy
Analog Devices Inc, United States

A3P-M11 **EXPERIMENTAL AND ANALYTICAL STUDY ON HYSTERESIS ERROR OF CAPACITIVE LIQUID-LEVEL SENSOR**
Yongqing Peng, Qingsong Chen, Jiangbo Zou
Beijing Research Institute of Telemetry, China

A3P-M12 **PIEZOELECTRIC VIBRATORY-CANTILEVER FORCE SENSORS AND AXIAL SENSITIVITY ANALYSIS FOR INDIVIDUAL TRIAXIAL TACTILE SENSING**
Kaoru Yamashita, Yi Yang, Takanori Nishimoto, Kazuya Furukawa, Minoru Noda
Kyoto Institute of Technology, Japan

A3P-M13 **A FLEXURAL PLATE WAVE (FPW) DEVICE WITH LOW INSERTION LOSS AND HIGH ELECTROMECHANICAL COUPLING COEFFICIENT**
I-Yu Huang, Chang-Yu Lin, Chian-Hao Sun
National Sun Yat-sen University, Taiwan

A3P-M14 **ALN/ZNO/SI STRUCTURE - A PACKAGELESS SOLUTION FOR ACOUSTIC WAVE SENSORS**
Ouarda Legrani[1], Omar Elmazria[1], Philippe Pigeat[1], Ausrine Bartasyte[1], Frederic Sarry[1], Sergei Zhgoon[2]
{1}Institut Jean Lamour, CNRS-Nancy-Université, France; {2}Moscow Power Engineering Institute, Russia

A3P-M15 **A NOVEL MICROMACHINED VISCOSITY AND DENSITY SENSOR BASED ON RESONANT TORSIONAL PADDLE**
Hao Li, Junbo Wang, Xiang Li, Deyong Chen
Insititute of Electronics, Chinese Academy of Sciences, China

A3P-M16 **THE LOW POWER 3D-MAGNETOTRANSISTOR BASED ON CMOS TECHNOLOGY**
Chana Leepattarapongpan[2], Toempong Phetchakul[1], Naritchaphan Penpondee[2], Puttapon Pengpad[2], Arckom Srihapat[2], Ekalak Chaowicharat[2], Charndet Hruanun[2], Amporn Poyai[2]
{1}King Mongkut's Institute of Technology, Thailand; {2}National Electronics and Computer Technology Center, Thailand

A3P-M17 **IMPROVEMENT OF TACTILE CAPACITIVE SENSORS OF THE HUMANOID ROBOT ICUB'S FINGERTIPS**
Alberto Ascia, Maurizio Biso, Alberto Ansaldo, Alexander Schmitz, Davide Ricci, Lorenzo Natale, Giorgio Metta, Giulio Sandini
Italian Institute of Technology, Italy

MECHANICAL & PHYSICAL SENSORS

A3P-M18 **A LOW POWER COMPACT CMOS PROGRAMMABLE TEMPERATURE SWITCH WITH PROCESS COMPENSATION**
Zhiqing Geng, Wenfeng Lou, Nanjian Wu
Chinese Academy of Sciences, China

A3P-M19 **WIDE-RANGE AC / DC EARTH LEAKAGE CURRENT SENSOR USING FLUXGATE WITH SELF-EXCITATION SYSTEM**
Takahiro Kudo[1], Susumu Kuribara[1], Yasuhiro Takahashi[2]
{1}Fuji Electric Co., Ltd., Japan; {2}Fuji Electric FA Components & Systems Co., Ltd., Japan

A3P-M20 **HIGH OVERTONE BULK ACOUSTIC RESONATORS BUILT ON SINGLE CRYSTAL STACKS FOR SENSORS APPLICATIONS**
Sylvain Ballandras[1], Thomas Baron[1], Eric Lebrasseur[1], Gilles Martin[1], Sébastien Alzuaga[1], Jean-Michel Friedt[3], Jean-Claude Ponçot[2], Cedric Guichard[2]
{1}FEMTO-ST Institute, France; {2}Institut Pierre Vernier, France; {3} SENSeOR SAS, France

A3P-M21 **EXPERIMENTAL STUDY OF SINGLE LOOP SIGMA-DELTA AND MULTI STAGE NOISE SHAPING (MASH) MODULATORS FOR MEMS ACCELEROMETER**
Bader Almutairi, Michael Kraft
University of Southampton, United Kingdom

A3P-M22 **A NOVEL WIRELESS PASSIVE TEMPERATURE SENSOR UTILIZING MICROFLUIDIC PRINCIPLES IN MILLIMETER-WAVE FREQUENCIES**
Anya Traille[2], Sofiene Bouaziz[3], Herve Aubert[1], Patrick Pons[3], Manos Tentzeris[2]
{1}CNRS-LAAS University of Toulouse, France; {2}Georgia Institute of Technology, United States; {3}Université de Toulouse, CNRS, LAAS, France

A3P-M23 **A COIL-FREE DC MAGNETIC SENSOR UTILIZING MAGNETO-MECHANICAL DAMPING IN GIANT MAGNETOSTRICTIVE MATERIAL**
Jitao Zhang[1], Ping Li[1], Yumei Wen[1], Xian Huang[2]
{1}Chongqing University, China; {2}College of Optoelectronic Engineering, Chongqing University, China

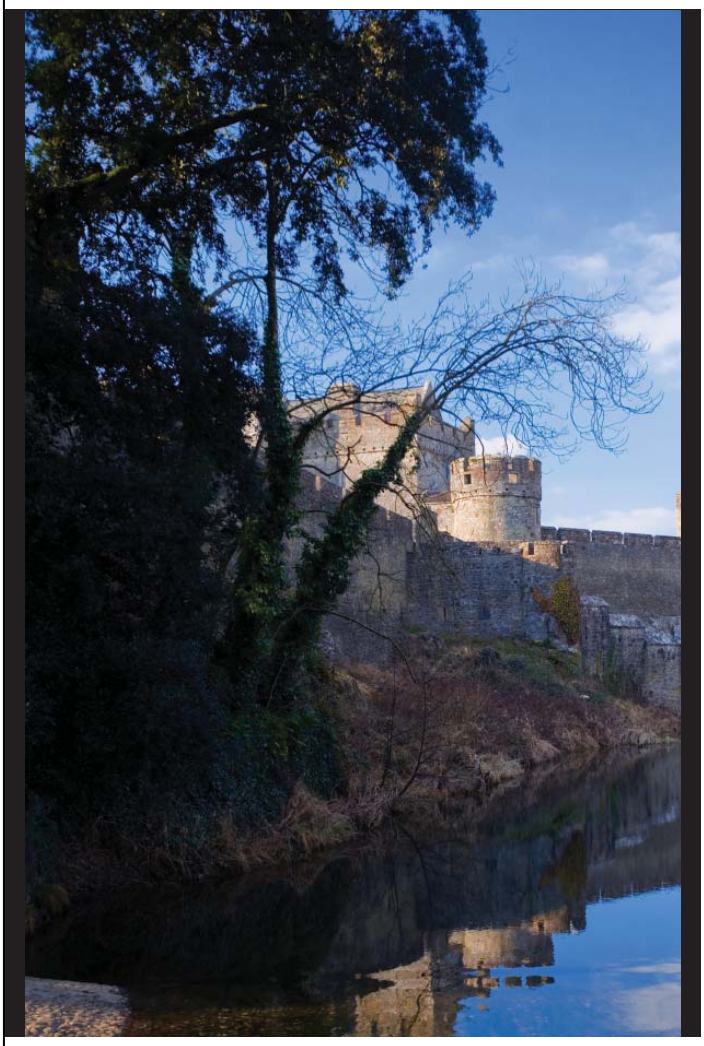
A3P-M24 **MODELING AND DESIGN OF A PLANAR 3-AXIS MEMS RATE GYRO**
Iannis Roland[2], Stéve Masson[2], Olivier Ducloux[2], Olivier Le Traon[2], Nathalie Isac[1], Alain Bosseboeuf[1]
{1}Institut d'Electronique Fondamentale, France; {2}Onera - The French Aerospace Lab, France

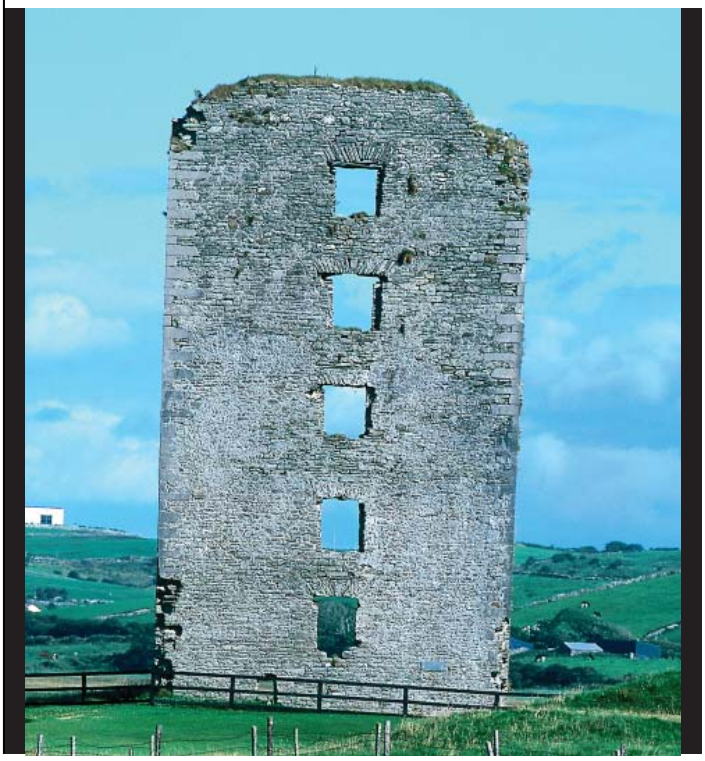
A3P-M25 **DEVELOPMENT OF A SMART RFID-BASED CORROSION SENSOR**
Walter Leon-Salas, Sirisha Kanneganti, Ceki Halmen
University of Missouri-Kansas City, United States

A3P-M26 **DIFFERENT ELECTROSTATIC VOLTAGE SENSITIVITY IN THICKNESS AND LATERAL FIELD EXCITATION FILM BULK ACOUSTIC RESONATORS**
X. Qiu, R. Tang, H. Huang, H. Yu, J. Oiler
Arizona State University, United States

A3P-M27 **ANALYSIS OF THE EFFICIENCY OF SPINNING CURRENT TECHNIQUES THRU COMPACT MODELING**
Morgan Madec, Jean-Baptiste Kammerer, Luc Hébrard, Christophe Lallement
InESS, France

A3P-M28 **TOUCHLESS CAPACITIVE SENSOR FOR HAND GESTURE**
Fatemeh Aezinia, Yifan Wang, Behraad Bahreyni
Simon Fraser University, Canada





SESSION A4L-A: CHEMICAL SENSORS Chairs: Elisabeth Mansfield *& Ward Johnson* *National Institute of Standards and Technology*	SPECIAL SESSION A4L-B: ACOUSTIC SENSORS FOR EXTREME ENVIRONMENTS Chairs: Ioannis Raptis, *NCSR IMEL - Athens*	SPECIAL SESSION A4L-C: SMART SKINS AND ANTENNAS Chairs: Konandur Rajanna, *Indian Institute of Science* Ching-Eng Png, *Inst. of High Performance Computing: A-STAR*
CONCERT HALL	**JEAN MONET**	**JOHN HOLLAND**
16:00		
A4L-A1 **A NOVEL GRAVURE PRINTED IMPEDANCE BASED FLEXIBLE ELECTROCHEMICAL SENSOR** Binu Baby Narakathu, Sai Guruva Avuthu Reddy, Massood Zandi Atashbar, Erika Rebrosova, Marian Rebros, Margaret Joyce *Western Michigan University, United States*	**A4L-B1** **INVITED: LANGASITE BASED HIGH-TEMPERATURE BULK ACOUSTIC WAVE SENSORS** Holger Fritze, Silja Schmidtchen, Michal Schulz, Denny Richter *Clausthal University of Technology, Germany*	**A4L-C1** **WIRELESS SENSING WITH SMART SKINS** Vasileios Lakafosis, Xiaohua Yi, Taoran Le, Edward Gebara, Yang Wang, Manos Tentzeris *Georgia Institute of Technology, United States*
16:15		
A4L-A2 **SILVER-FUNCTIONALIZED MULTI-WALL CARBON NANOTUBES COMPOSITE ELECTRODE FOR NON-ENZYMATIC DETECTION OF GLYCEROL** Aniela Pop[3], Florica Manea[3], Adriana Remes[3], Anamaria Baciu[3], Corina Orha[2], Nicolae Vaszilcsin[3], Stephen Picken[1], Joop Schoonman[1] *{1}Delft University of Technology, Netherlands; {2}National Institute for Research and Development in Microtechnologies, Romania; {3}Politehnica University of Timisoara, Romania*		
16:30		
A4L-A3 **IONIC-LIQUID BASED ELECTROCHEMICAL ETHYLENE SENSOR** Marcel Zevenbergen, Daan Wouters, Van-Anh Dam, Sywert Brongersma, Mercedes Crego-Calama *IMEC Netherlands / Holst Centre, Spain*	**A4L-B3** **MEMS RESONATORS WITH EXTREMELY LOW VIBRATION AND SHOCK SENSITIVITY** Bongsang Kim, Roy Olsson III, Kevin Smart, Ken Wojciechowski *Sandia National Laboratories, United States*	**A4L-C3** **METAMATERIAL BIOSENSOR FOR CANCER DETECTION** Luigi La Spada, Filiberto Bilotti, Lucio Vegni *Università degli Studi Roma Tre, Italy*
16:45		
A4L-A4 **ANALYSES OF PERFORMANCE OF NOVEL SENSORS WITH DIFFERENT COATINGS FOR DETECTION OF LIPOPOLYSACCHARIDE** A.R. Mohd Syaifudin[2], Subhas Mukhopadhyay[2], P.L. Yu[2], Ignacio Matias[3], J. Goicoechea[3], Jürgen Kosel[1], Chinthaka Gooneratne[1] *{1}King Abdullah University of Science and Technology, Saudi Arabia; {2}Massey University, New Zealand; {3}Universidad Pœblica de Navarra, Spain*	**A4L-B4** **SURFACE ACOUSTIC WAVE SENSOR BASED ON ALN/SAPPHIRE STRUCTURE FOR HIGH TEMPERATURE AND HIGH FREQUENCY APPLICATIONS** Eloi Blampain, Omar Elmazria, Thierry Aubert, Badreddine Assouar, Ouarda Legrani *Institut Jean Lamour, CNRS-Nancy-Université, France*	**A4L-C4** **MULTIFUNCTIONAL MESHED CARBON NANOTUBE THREAD PATCH ANTENNA** Steven Keller, Amir Zaghloul *US Army Research Laboratory, United States*
17:00		
A4L-A5 **A NOVEL MINIATURIZABLE CLOSED-LOOP HYDROGEL-BASED PH SENSOR** Volker Schulz[1], Henning Ebert[1], Gerald Gerlach[2] *{1}Solid-State Electronics Laboratory, Technische Universitaet Dresden, Germany; {2}Technische Universität Dresden, Germany*	**A4L-B5** **RECENT ADVANCES IN HARSH ENVIRONMENT ACOUSTIC WAVE SENSORS FOR CONTEMPORARY APPLICATIONS** Mauricio Pereira Da Cunha[2], R. J. Lad[2], Thomas Moonlight[2], Scott Moulzolf[2], Alberto Canabal[2], Roby Behanan[2], Peter M. Davulis[2], David Frankel[2], George Bernhardt[2], Thomas Pollard[1], D. F. McCann[1] *{1}Environetix Technologies Corp., United States; {2}University of Maine, United States*	**A4L-C5** **WIRELESS HARSH-ENVIRONMENT OXYGEN SENSORS** David Greve[2], Peng Zheng[1], Tao-Lun Chin[1], Irving Oppenheim[1], Vanessa Malone[1] *{1}Carnegie Mellon University, United States; {2}National Energy Technology Laboratory, United States*
17:15		
A4L-A6 **PLANAR OPTICAL WAVEGUIDE DESIGN FOR UV-NANOIMPRINTED MICRORING RESONATOR BASED BIOSENSORS** Rene Landgraf[1], Toni Haugwitz[1], Robert Kirchner[1], Andreas Finn[1], Wolf-Joachim Fischer[2] *{1}Fraunhofer Institute for Photonic Microsystems, Germany; {2} Fraunhofer Institute for Photonic Microsystems & Technische Universität Dresden, Germany*	**A4L-B6** **ULTRASONIC NDE IN A REACTOR CORE** David Parks, Bernhard Tittmann *Pennsylvania State University, United States*	

SPECIAL SESSION A4L-D: AMBIENT INTELLIGENCE TECHNOLOGIES & APPLICATIONS	SESSION A4L-E: FLEXIBLE SENSORS	SESSION A4L-F: OPTICAL BIOSENSORS
Chairs: Javier Alonso & Joan G. Haro, *Technical University of Cartagena*	Chairs: Patrick Pons, *CNRS LAAS*; Lei Wei, *Massachusetts Institute of Technology*	Chairs: Shin-Won Kang, *Kyungpook National University*; Huikai Xie, *University of Florida*
CHARLES PARSONS	**FB028**	**FG042**
16:00		
A4L-D1	**A4L-E1**	**A4L-F1**
INVITED: PERVASIVE COMPUTING AT SCALE: CHALLENGES AND RESEARCH DIRECTIONS Paolo Bellavista *Università di Bologna, Italy*	**FLEXIBLE FABRIC KEYBOARD WITH CONDUCTIVE POLYMER-COATED FIBERS** Seiichi Takamatsu[1], Takahiko Imai[1], Takahiro Yamashita[1], Takeshi Kobayashi[2], Koji Miyake[2], Toshihiro Itoh[2] *{1}Beans Laboratory, Japan; {2}National Institute of Advanced Industrial Science and Technology, Japan*	**PHASE-BASED 3D OPTICAL FLOW SENSORS FOR MOTION DETECTION** Albert Wang, Alyosha Molnar *Cornell University, United States*
16:15		
	A4L-E2	**A4L-F2**
	FLEXIBLE SILICON TRIAXIAL TACTILE IMAGER WITH INTEGRATED 800μM-PITCH SENSOR PIXEL STRUCTURESON A DIAPHRAGM Hidekuni Takao[1], Hiroki Okada[2], Makoto Ishida[2], Takaaki Suzuki[1], Fumikazu Oohira[1] *{1}Kagawa University, Japan; {2}Toyohashi University of Technology, Japan*	**A NOVEL 1-GRAM INSECT BASED DEVICE MEASURING VISUAL MOTION ALONG 5 OPTICAL DIRECTIONS** Frédéric Louis Roubieu[3], Fabien Expert[1], Marc Boyron[3], Benoît-Jérémy Fuschlock[3], Stéphane Viollet[3], Franck Ruffier[2] *{1}CNRS / Aix-Marseille University, France; {2}CNRS/Aix-Marseille University, France; {3}Institute of Movement Sciences, CNRS / University of the Mediterranean, France*
16:30		
A4L-D3	**A4L-E3**	**A4L-F3**
A FRAMEWORK FOR THE CONNECTIVITY OF AN INTERNET OF THINGS Daniel Corujo, Marcelo Lebre, Diogo Gomes, Rui Aguiar *Instituto de Telecomunicações, Portugal*	**ANALYSIS, SIMULATION AND FABRICATION OF CURVED MULTIMORPHS THAT UNDERGO BENDING AND TWISTING** Sagnik Pal, Huikai Xie *University of Florida, United States*	**ULTRA-SMALL IMAGING SYSTEM FOR CELL PHONE CAMERA USING BIREFRINGENT LENSES** Yupeng Zhang, Toshitsugu Ueda *Waseda University, Japan*
16:45		
A4L-D4	**A4L-B4**	**A4L-F4**
MULTIMODAL BIOSIGNAL SENSOR DATA HANDLING FOR EMOTION RECOGNITION Filipe Canento[3], Ana Fred[1], Hugo Silva[1], Hugo Gamboa[4], André Lourenço[2] *{1}Instituto de Telecomunicações, Portugal; {2}Instituto de Telecomunicações, DEETC, ISEL-IPL, Portugal; {3}Instituto Superior Técnico, Portugal; {4}PLUX & CEFITEC, FCT-UNL, Portugal*	**POLYMER MICROCANTILEVERS FOR THERMAL SENSING** Lucy Williamson Hodge[2], Richard Dunn[2], Robert Ibbotson[2], Ejaz Huq[2], Ajoy Kar[1] *{1}Heriot Watt University, United Kingdom; {2}Science and Technology Facilities Council, United Kingdom*	**OPTICAL SENSOR SYSTEM FOR PERIPHERAL VASCULAR DIAGNOSTICS OF THE PATIENTS BASED ON PULSE SPECTROSCOPY METHOD** Sergej Andruschenko[2], Ulrich Timm[3], Sebastian Koball[3], Michael Hinz[3], Jens Kraitl[3], Elfed Lewis[1], Hartmut Ewald[3] *{1}University of Limerick, Ireland; {2}University of Rostock, Germany; {3}Universität Rostock, Germany*
17:00		
A4L-D5	**A4L-E5**	**A4L-F5**
COLLABORATION OF SENSORS AND ACTUATORS THROUGH TRIPLE SPACES Aitor Gòmez-Goiri, Pablo Orduña, David Ausîn, Mikel Emaldi, Diego Lòpez-De-Ipiña *DeustoTech - Universidad de Deusto, Spain*	**DESIGN OF A PRINTABLE MULTI-FUNCTIONAL SENSOR FOR REMOTE MONITORING** Yi Feng, Qiang Chen, Li-Rong Zheng *Royal Institute of Technology, iPack Vinn Excellence Center, Sweden*	**DEVELOPMENT OF WEARABLE SENSITIVE GLOVE EMBEDDED WITH HETERO-HORE FIBER-OPTIC NERVES FOR MONITORING FINGER JOINTS** Kaori Onodera[2], Kazuhiro Watanabe[2], Michiko Nishiyama[1] *{1}Airframes and Structures Group, Aerospace Project Research Associate - JAXA, Japan; {2}SOKA University, Japan*
17:15		
A4L-D6	**A4L-E6**	**A4L-F6**
LIMITED RESOURCES IN AMBIENT SYSTEMS FOR DISASTER SCENARIOS Pawel Kulakowski *AGH University of Science and Technology, Poland*	**ORGANICALLY MODIFIED SILICATE FILM PH SENSOR FOR CONTINUOUS WOUND MONITORING** Dietmar Puchberger-Enengl[2], Christian Krutzler[1], Michael Vellekoop[2] *{1}Austrian Center for Medical Innovation and Technology, Austria; {2}Vienna University of Technology, Austria*	**SPECTRA OPTICAL DETECTION OF BIOMOLECULES USING A WHITE LIGHT SOURCE-BASED SPECTROPHOTOMETRIC PLATFORM** Susana Cardoso[2], Paulo Freitas[1], Debora Ferreira[4], Graça Minas[4], Adelaide Miranda[3] *{1}INESC-Microsistemas e Nanotecnologias (INESC-MN)& Instituto Superior Técnico, Portugal; {2}INESC-Microsistemas e Nanotecnologias (INESC-MN)&Institute for Nanosciences and Nanotechnologies(IN), Portugal; {3}International Iberian Nanotechnology Laboratory INL, Portugal; {4}Universidade do Minho, Portugal*

OPTIONAL ENTERTAINMENT & DINNER | 20:45 - 22:15

KEYNOTE PRESENTATION 2 | 08:00 - 08:45 | FOUNDATION BUILDING - CONCERT HALL

"MEMS and Sensing going Mobile"

Evgeni Gousev, *Qualcomm, USA.*

SPECIAL SESSION B1L-A: NANOTECHNOLOGY AND BIOSENSING

Chairs:
Aime Lay-Ekuakille, *University of Salento*
Alessandro Massaro, *Italian Institute of Technology*

SESSION B1L-B: MECHANICAL PARTICLE SENSORS

Chairs:
Hans JFL Goosen, *TU Delft*
Mina Rais-Zadeh, *University of Michigan*

SESSION B1L-C: INTEGRATED SENSOR INTERFACES

Chairs:
Michiel Pertijs, *TU Delft*
Sai-Weng Sin, *University of Macau*

CONCERT HALL	JEAN MONET	JOHN HOLLAND
9:00		
B1L-A1 **INVITED: DESIGN OF NANOSTRUCTURED SOL-GEL COATINGS FOR (BIO)SENSING APPLICATIONS** Emmanuel Scolan, Rolf Steiger, Raphaël Pugin, Bastien Schyrr, Stéphanie Pasche, Bernard Wenger, Guy Voirin *CSEM SA, Switzerland*	**B1L-B1** **SELF-EXCITING AND SELF-SENSING RESONANT CANTILEVER SENSORS FOR IMPROVED MONITORING OF AIRBORNE NANOPARTICLES EXPOSURE** Hutomo Suryo Wasisto[3], Lutz Doering[2], Stephan Merzsch[3], Andreas Waag[3], Erik Uhde[1], Erwin Peiner[3] *{1}Fraunhofer Institute for Wood Research - Wilhelm-Klauditz-Institut, Germany; {2}Physikalisch-Technische Bundesanstalt, Germany; {3}Technische Universität Braunschweig, Germany*	**B1L-C1** **STANDARD 0.18UM 1P6M CMOS IC FOUNDRY FLOW FOR ACCELEROMETER, ANALOG READOUT CIRCUIT AND WAFER LEVEL CAPPING PACKAGE INTEGRATION** Chien-Jo Huang[2], Che-Sheng Chen[2], Kuei-Ann Wen[2], Yu-Ting Cheng[2], Jen-Yi Chen[1], Chao-Sen Chang[1], Wen-Chieh Chou[1] *{1}Global Sensing Core, Inc., Taiwan; {2}National Chiao Tung University, Taiwan*
9:15		
	B1L-B2 **VAPOR SENSING MECHANISM STUDIES FOR MONOLAYER PROTECTED GOLD NANO-CLUSTERS ON QCM AND CHEMIRESISTOR TRANSDUCERS** Rih-Sheng Jian[2], Lung-Yu Sung[1], Chia-Jung Tsai[2], Chia-Jung Lu[2] *{1}Industrial Technology Research Institute, Taiwan; {2}National Taiwan Normal University, Taiwan*	**B1L-C2** **DESIGN AND FABRICATION OF A LOW INSERTION LOSS AND HIGH ISOLATION SI-BASED MICRO-SWITCH USING MEMS TECHNOLOGY** I-Yu Huang, Chian-Hao Sun, Guan-Ming Chen, Chang-Yu Lin, Wei-Hsun Chien *National Sun Yat-sen University, Taiwan*
9:30		
B1L-A3 **HIGHLY DISPERSED PT NANOPARTICLES DECORATED CARBON NANOCOMPOSITE (PT20/C80) FOR SENSITIVE NONENZYMATIC GLUCOSE DETERMINATION AND FORMIC ACID OXIDATION** Baljit Singh, Eithne Dempsey *ITT Dublin, Institute of Technology Tallaght, Ireland*	**B1L-B3** **ENHANCED AIRBORNE NANOPARTICLES MASS SENSING USING A HIGH-MODE RESONANT SILICON CANTILEVER SENSOR** Hutomo Suryo Wasisto[2], Stephan Merzsch[2], Andreas Waag[2], Ina Kirsch[1], Erik Uhde[1], Tunga Salthammer[1], Erwin Peiner[2] *{1}Fraunhofer Institute for Wood Research - Wilhelm-Klauditz-Institut, Germany; {2}Technische Universität Braunschweig, Germany*	**B1L-C3** **VOLTAGE-TO-FREQUENCY CONVERTER FOR LOW-POWER SENSOR INTERFACES** Cristina Azcona, Belén Calvo, Nicolàs Medrano, Santiago Celma *Universidad de Zaragoza, Spain*
9:45		
B1L-A4 **SINGLE-METABOLITE BIO-NANO-SENSORS AND SYSTEM FOR REMOTE MONITORING IN ANIMAL MODELS** Sandro Carrara[1], Léandre Bolomey[1], Cristina Boero[1], Andrea Cavallini[1], Eric Meurville[1], Giovanni De Micheli[1], Tanja Rezzonico[2], Michele Proietti[2], Fabio Grassi[2] *{1} École Polytechnique Fédérale de Lausanne, Switzerland; {2}Institute for Research in Biomedicine, Switzerland*	**B1L-B4** **QUARTZ RESONATOR BASED GAS MASS SPECTROMETRY** Lingyao Chen, Massood Tabib-Azar *University of Utah, United States*	**B1L-C4** **DESIGN OF MEMS BASED XOR AND AND GATES FOR RAD-HARD AND VERY LOW POWER LSI MECHANICAL PROCESSORS** Faisal Chowdhury, Dong-Ok Choe, Tatjana Jevremovic, Massood Tabib-Azar *University of Utah, United States*
10:00		
B1L-A5 **DESIGN AND FULL-WAVE ANALYSIS OF NONCONFORMAL FERMAT-LIKE SPIRAL MULTI-PORT MICROANTENNA SENSORS** Diego Caratelli[1], A. Yarovoy[1], Aimé Lay-Ekuakille[4], Alessandro Massaro[2], Zhihong Li[3] *{1}Delft University of Technology, Netherlands; {2}Italian Institute of Technology, Italy; {3}Peking University, China; {4}Università del Salento, Italy*	**B1L-B5** **ENGINEERING PICOGRAM LEVEL DETECTION USING HIGH FREQUENCY SURFACE ACOUSTIC WAVE CHEMICAL AND BIOLOGICAL SENSORS BASED ON MULTILAYERED DIAMOND/ALN/LINBO3 SUBSTRATES** Subramanian Sankaranarayanan[1], Reetu Singh[2], Venkat Bhethanabotla[2] *{1}Argonne National Laboratory, United States; {2}University of South Florida, United States*	**B1L-C5** **A SINGLE CHIP FLUOROMETER FOR FLUORESCENCE LIFETIME SPECTROSCOPY IN 65NM CMOS** Jian Guo, Sameer Sonkusale *Tufts University, United States*

SPECIAL SESSION B1L-A: NANOTECHNOLOGY AND BIOSENSING (CONT'D)	SESSION B1L-B: MECHANICAL PARTICLE SENSORS (CON'T'D)	SSESSION B1L-C: INTEGRATED SENSOR INTERFACES (CONT'D)
CONCERT HALL	JEAN MONET	JOHN HOLLAND
10:15		
B1L-A6 **NOVEL IMAGING METHOD AND OPTIMIZED DEMODULATION PIXELS FOR WIDE-FIELD FLUORESCENCE LIFETIME IMAGING MICROSCOPY** Lysandre-Edouard Bonjour[3], Amandev Singh[1], Thomas Baechler[1], Maher Kayal[2] *{1}CSEM SA, Switzerland; {2} École Polytechnique Fédérale de Lausanne, Switzerland; {3}Swiss Center for Electronics and Microtechnology & École Polytechnique Fédérale de Lausanne, Switzerland*	**B1L-E6** **VOLATILE-BASED RATIOMETRIC INFOCHEMICAL COMMUNICATION SYSTEM USING POLYMER-COATED PIEZOELECTRIC SENSOR ARRAYS** Zoltan Ràcz, Julian Gardner, Marina Cole, Yang Jian *University of Warwick, United Kingdom*	**B1L-C6** **SIC BASED FIELD EFFECT TRANSISTOR FOR H2S DETECTION** Zhafira Darmastuti[2], Mike Andersson[2], Mikael Larsson[1], Niclas Lindqvist[1], Lars Ojamae[2], Anita Lloyd Spetz[2] *{1}Alstom Power, Sweden; {2}Linkoping University, Sweden*

BREAK | 10:30- 11:00 | FOUNDATION BUILDING - ATRIUM

SPECIAL SESSION B1L-D: TOWARDS AUTONOMY IN SENSOR NETWORKS: A NEW PARADIGM FOR SENSOR NETOWRK ORGANIZATION Chairs: Elena Gaura, *Coventry University* *Thomas Newe*, *University of Limerick*	SESSION B1L-E: BIOCHEMICAL SENSORS & SYSTEMS Chairs: Svetlana Tatic-Lucic, *Lehigh University* Peter Hauptmann, *University of Magdeburg*	SPECIAL SESSION B1L-F: BIOMETRICS: LEARNING FROM NATURE Chairs: Paddy French, *Delft University of Technology* Gijs Krijnen, *University of Twente*
CHARLES PARSONS	**FB028**	**FG042**

9:00

B1L-D1

INVITED: COMMUNAL SENSOR NETWORK FOR ADAPTIVE NOISE REDUCTION IN AIRCRAFT ENGINE NACELLES

Kennie Jones, Douglas Nark, Michael Jones

NASA Langley Research Center, United States

B1L-E1

MEMS COULTER COUNTER FOR DYNAMIC IMPEDANCE MEASUREMENT OF CELLS

Yifan Wu, Mahmoud Almasri, James D. Benson

University of Missouri, United States

B1L-F1

INVITED: MECHANICAL PROCESSING OF ACOUSTIC INFORMATION IN THE EAR OF THE DESERT LOCUST

Daniel Robert[2], Natasha Mhatre[2], Thomas McDonagh[1]

{1}Rockefeller University, United States; {2}University of Bristol, United Kingdom

9:15

B1L-E2

NEW CW-PHOTOACOUSTIC-BASED PROTOCOL FOR NONINVASIVE AND SELECTIVE DETERMINATION OF AQUEOUS GLUCOSE LEVEL: A POTENTIAL ALTERNATIVE TOWARDS NONINVASIVE BLOOD SUGAR SENSING

Serge Camou, Yuko Ueno, Emi Tamechika

NTT Corporation, Japan

9:30

B1L-D3

INTERPOLATION OF SPATIAL TEMPERATURE PROFILES BY SENSOR NETWORKS

Reiner Jedermann[3], Javier Palafox- Albarràn[3], Jose Ignacio Robla[1], Pilar Barreiro[2], Luis Ruiz-García[2], Walter Lang[3]

{1}Spanish National Research Council, Spain; {2}Universidad Politécnica de Madrid, Spain; {3}Universität Bremen, IMSAS, Germany

B1L-E3

MULTI-FORCE PARTICLE HANDLING AND DETECTION STRATEGIES ON CENTRIFUGAL MICROFLUIDIC PLATFORMS

Robert Burger[1], Jonathan Siegrist[1], Patrick Reith[2], Laëtitia Zavattoni[3], Daniel Kirby[1], Robert Gorkin[1], Gregor Kijanka[1], Jens Ducrée[1]

{1}Dublin City University, Ireland; {2}IMTEK, University of Freiburg, Germany; {3}INSA, Toulouse, France

B1L-F2

BIOMIMETIC SONAR, OUTER EARS VERSUS ARRAYS

Jan Steckel, Filips Schillebeeckx, Herbert Peremans

Universiteit Antwerpen, Belgium

9:45

B1L-D4

DETECTION OF MILLIMETER MOVEMENTS USING ULTRASONIC RANGING AND PRECISE TIME SYNCHRONIZATION IN WIRELESS SENSOR NETWORKS

Marc Caesar Reyes Talampas, Rosanno Jc de Dios

University of the Philippines Diliman, Philippines

B1L-B4

GIANT MAGNETORESISTIVE BIOSENSOR FOR MYOGLOBIN IMMUNOASSAY

Hua Yang[2], Bingjun Qu[2], Bo Lei[2], Li Xie[1]

{1}Capital Medical University, China; {2}Tsinghua University, China

B1L-F3

A BIOLOGICALLY INSPIRED CMOS IMAGE SENSOR FOR POLARIZATION AND FAST MOTION DETECTION

Mukul Sarkar[1], David San Segundo Bello[3], Chris Van Hoof[3], Albert Theuwissen[2]

{1}Delft University of Technology, Netherlands; {2}Delft University of Technology & Harvest Imaging, Netherlands; {3}IMEC, Belgium

10:00

B1L-D5

HIGH-ACCURACY POSITIONING USING PHASE DIFFERENCE OF ELECTRODE ARRAY FOR TWO-DIMENSIONAL COMMUNICATION SENSOR NETWORK (2DCSN)

Toshifumi Oota, Takashi Matsuda, Youiti Kado, Bing Zhang

National Institute of Information and Communications Technology, Japan

B1L-E5

VISION SYSTEM FOR HIGH FRAME RATE WIRELESS CAPSULE ENDOSCOPE

Monica Vatteroni[3], Carmela Cavallotti[3], Pietro Valdastri[3], Arianna Menciassi[3], Paolo Dario[3], Pierantonio Merlino[1], Antonio Abramo[2]

{1}Agemont S.p.A, Italy; {2}Agemont S.p.A., Italy; {3}Scuola Superiore Sant'Anna, Italy

B1L-F4

LOWERING THE SENSORY THRESHOLD AND ENHANCING THE RESPONSIVITY OF BIOMIMETIC HAIR FLOW SENSORS BY ELECTROSTATIC SPRING SOFTENING

Harmen Droogendijk, Christiaan Bruinink, Remco Sanders, Ortwin Siebelder, Gijs Krijnen

University of Twente, Netherlands

10:15

B1L-D6

ENERGY-AUTONOMOUS WIRELESS VIBRATION SENSOR FOR CONDITION-BASED MAINTENANCE OF MACHINERY

Ziyang Wang[2], Frank Bouwens[2], Ruud Vullers[2], Frederik Petré[1], Steven Devos[1]

{1}FMTC, Belgium; {2}Imec/Holst Centre, Netherlands

B1L-E6

VERSATILE GAS MEASUREMENT SYSTEM BASED ON COMBINED NDIR TRANSMISSION AND PHOTOACOUSTIC SPECTROSCOPY

Eliseo Pignanelli, Karsten K hn, Andreas Schtze

Saarland University, Germany

B1L-F5

BIOINSPIRED, UNCOOLED CHITIN PHOTOMECHANICAL SENSOR FOR THERMAL INFRARED SENSING

Nuo Zhang, Jim Cheng, Clinton Warren, Albert Pisano

University of California, Berkeley, United States

BREAK | 10:30- 11:00 | FOUNDATION BUILDING - ATRIUM

SPECIAL SESSION B2L-A: ULTRASOUND MOLECULAR IMAGING AND NANOSYSTEMS

Chairs:
Aime Lay-Ekuakille, *University of Salento*
Alessandro Massaro, *Italian Institute of Technology*

CONCERT HALL

11:00

B2L-A1

INVITED: NANOCOMPOSITES FOR MULTIMODAL MOLECULAR IMAGING

Sergio Casciaro[1], Antonio Greco[1], Ernesto Casciaro[1], Francesco Conversano[1], Aimé Lay-Ekuakille[2]

{1}National Research Council, IFC, Italy; {2}Università del Salento, Italy

11:30

B2L-A3

EXPERIMENTAL ASSESSMENT OF GOLD NANORODS FOR OPTOACOUSTIC IMAGING IN A TISSUE-MIMICKING PHANTOM

Giulia Soloperto[2], Francesco Conversano[2], Antonio Greco[2], Sergio Casciaro[2], Andrea Ragusa[1]

{1}National Nanotechnology Laboratory, CNR-NANO, Italy; {2} National Research Council, IFC, Italy

11:45

B2L-A4

A NOVEL DUAL-FREQUENCY METHOD FOR SELECTIVE ULTRASOUND IMAGING OF TARGETED NANOPARTICLES

Francesco Conversano[1], Antonio Greco[1], Ernesto Casciaro[1], Sergio Casciaro[1], Aimé Lay-Ekuakille[2]

{1}National Research Council, IFC, Italy; {2}Università del Salento, Italy

12:00

B2L-A5

LOW-FREQUENCY ULTRASOUND CONTRAST ENHANCEMENT BEHAVIOR OF A NEW NANO-SYSTEM FOR DUAL-MODE IMAGING

Antonio Greco, Francesco Conversano, Giulia Soloperto, Roberto Franchini, Sergio Casciaro, Luca Menichetti

National Research Council, IFC, Italy

SESSION B2L-B: THERMAL MICROSYSTEMS

Chairs:
Jose Luis Santos, *INESC-Porto*
Mina Rais-Zadeh, *University of Michigan*

JEAN MONET

11:00

B2L-B1

THE USE OF THERMAL EFFECTS FOR INCREASING THE RESPONSIVITY OF PYROELECTRIC DETECTORS

Yvonne Querner, Volkmar Norkus, Gerald Gerlach

Technische Universität Dresden, Germany

11:15

B2L-B2

THERMAL WAVE PROPAGATION AND REFLECTION MODELING IN POROUS SILICON MEMBRANES

Frieder Lucklum, Bernhard Jakoby

Johannes Kepler Universität, Austria

11:30

B2L-B3

LIGHT-EMITTING DIODE JUNCTION-TEMPERATURE SENSING USING DIFFERENTIAL VOLTAGE/CURRENT MEASUREMENTS

Folkert Roscam Abbing, Michiel Pertijs

Delft University of Technology, Netherlands

11:45

B2L-B4

TEMPERATURE MAPPING FROM MOLECULAR ABSORPTION TOMOGRAPHY

Michael Wood, Krikor Ozanyan

University of Manchester, United Kingdom

12:00

B2L-B5

A DOUBLE LAYER MICRO-BRIDGE CALORIMETER

Jun Yu, Changyu Sun, Zhengxing Huang, Hao Wu, Zhenan Tang

Dalian University of Technology, China

12:15

B2L-B6

A 53.4 UW CMOS TEMPERATURE SENSOR WITH AN INACCURACY OF ±1.9°C FROM -65°C TO 165°C

Mitchell Sheng-Cheng Lee, Teng-Cheng Chen, Chia-Yi Liou, Herming Chiueh

NCTU, Taiwan

SESSION BL2-C: INFORMATION PROCESSING

Chairs:
Ching-Eng Png, *Inst. of High Performance Computing: A-STAR*
Changyuan Yu, *National University of Singapore*

JOHN HOLLAND

11:00

B2L-C1

ADVANCED CYCLIC CODING TECHNIQUE FOR LONG-RANGE RAMAN DTS SYSTEMS WITH METER-SCALE SPATIAL RESOLUTION OVER STANDARD SMF

Marcelo Soto[1], Tiziano Nannipieri[1], Alessandro Signorini[1], Gabriele Bolognini[1], Fabrizio Di Pasquale[1], Andrea Lazzeri[2], Federico Baronti[2], Roberto Roncella[2]

{1}Scuola Superiore Sant'Anna, Italy; {2}Università di Pisa, Italy

11:15

B2L-C2

REAL TIME AND ADAPTIVE KALMAN FILTER FOR JOINT NANOMETRIC DISPLACEMENT ESTIMATION, PARAMETERS TRACKING AND DRIFT CORRECTION OF EFFPI SENSOR SYSTEMS

Patrick Chawah[1], Anthony Sourice[1], Guy Plantier[1], Jean Chery[2]

{1}ESEO, France; {2}Géosciences Montpellier, France

11:30

B2L-C3

AN APPLICATION SPECIFIC INSTRUCTION SET PROCESSOR FOR ANGULAR POSITION ESTIMATION WITH INERTIAL MEASUREMENT UNITS

Simone Sabatelli[2], Marco Galgani[2], Luca Fanucci[2], Alessandro Rocchi[1]

{1}SensorDynamics AG, Italy; {2}Università di Pisa, Italy

11:45

B2L-C4

A NOVEL SINGLE SLOPE ADC DESIGN FOR WIDE DYNAMIC RANGE CMOS IMAGE SENSORS

Shang-Fu Yeh[2], Chih-Cheng Hsieh[2], Chiao-Jen Cheng[1], Chun-Kai Liu[1]

{1}Elan Microelectronics Corporation, Taiwan; {2}National Tsing Hua University, Taiwan

12:00

B2L-C5

WINDOW CALIBRATION FOR HARMONIC ANALYSIS OF RAMAN SPECTRA

Alicia Russin[1], Timothy Russin[1], Richard Waters[2]

{1}Space and Naval Warfare Systems Center - Pacific, United States; {2}SSC Pacific, United States

12:15

B2L-C6

DIFFERENTIAL PULSE-WIDTH PAIR BOTDA WITH FAST FALLTIME PULSES

Aldo Minardo[2], Luigi Zeni[3], Romeo Bernini[1]

{1}National Research Council, IREA, Italy; {2}Second University of Naples, Italy; {3}Università degli Studi di Napoli Federico II, Italy

LUNCH | 12:30- 13:30 | MAIN BUILDING - EDEN, RED RAISON RESTAURANT

SESSION B2L-D: SENSOR NETWORK TECHNOLOGIES I Chairs: Thomas Newe, *University of Limerick* Peter S.-K. Liaw, *National Taiwan University of Science & Technology*	SESSION B2L-E: BIOCHEMICAL SENSOR TECHNOLOGIES Chairs: Anna Grazia Mignani, *CNR IFAC* I-Yu Huang, *National Sun Yat-sen University*	SPECIAL SESSION B2L-F: SENSOR RELIABILITY Chairs: Wolfgang Habel, *BAM-Berlin* Jose Manuel Baptista, *Madeira University*
CHARLES PARSONS	**FB028**	**FG042**

11:00

B2L-D1

WEB-BASED SENSOR STREAMING WEARABLE FOR RESPIRATORY MONITORING APPLICATIONS

Carlos Rovira[1], Shirley Coyle[2], Brian Corcoran[2], Dermot Diamond[2], Tomas Ward[3], Aaron McCoy[3], Florin Stroiescu[4], Kieran Daly[4]

{1}Clarity Centre for Sensor Web Technologies / Tyndall National Institute, Ireland; {2}Dublin City University, Ireland; {3} National University of Ireland Maynooth, Ireland; {4}Shimmer Research, Ireland

B2L-E1

A SCALABLE CMOS SENSOR ARRAY FOR NEURONAL RECORDING AND IMAGING

Ben Johnson, Shane Peace, Thomas Cleland, Alyosha Molnar

Cornell University, United States

B2L-F1

INVITED: HOW DO APPLICATION-RELATED ISSUES INFLUENCE THE RELIABILITY OF FIBER OPTIC STRAIN MEASUREMENTS?

Wolfgang Habel, Vivien Schukar, Viktoriya Tkachenko

BAM Federal Institute for Materials Research and Testing, Germany

11:15

B2L-D2

OVERCOMING BODY OBSTRUCTION FOR ROBUST DATA COMMUNICATION IN WIRELESS BODY SENSOR NETWORKS BY PLACING RELAY NODES

Chun-Yu Lin, Yi-Yin Chang, Kuan-Chung Ding, Chung-Ta King

National Tsing Hua University, Taiwan

B2L-E2

LOW POWER CMOS CIRCUIT FOR SPIKE DETECTION

Anshu Sarje, Pamela Abshire

University of Maryland, College Park, United States

11:30

B2L-D3

ON-BODY TO ON-BODY CHANNEL CHARACTERIZATION

Fabio Di Franco, Christos Tachtatzis, Ben Graham, David Tracey, Nick Timmons, Jim Morrison

Letterkenny Institute of Technology, Ireland

B2L-E3

A SIMULTANEOUS MULTIMODAL SENSOR FOR PROTON AND LIGHT SENSING USING A HOLE AND ELECTRON ACCUMULATION TECHNIQUE

Hiroto Watanabe, Hirokazu Nakazawa, Fumihiro Dasai, Makoto Ishida, Kazuaki Sawada

Toyohashi University of Technology, Japan

B2L-F3

A RELIABILITY OF SILICON-CRYSTALLINE QUARTZ BONDING THROUGH REDUCING OF THE RESIDUAL STRESSES

Yury Zimin, Toshitsugu Ueda

Waseda University, Japan

11:45

B2L-D4

ENERGY-EFFICIENT TIME-STAMPLESS ADAPTIVE NONUNIFORM SAMPLING

Soheil Feizi, Georgios Angelopoulos, Vivek Goyal, Muriel Médard

Massachusetts Institute of Technology, United States

B2L-B4

MODELING MICROELECTRODE SENSORS FOR CELL-CULTURE MONITORING

Alberto Yúfera[1], Daniel Cañete[2], Paula Daza[2]

{1}Instituto de Microelectrònica de Sevilla,IMSE - Centro Nacional de Microelectrònica, CNM, Spain; {2}Universidad de Sevilla, Spain

B2L-F4

ADVANCED EXPERIMENTAL SETUP FOR THE RELIABILITY CHARACTERIZATION OF RADIO-ACOUSTIC SENSORS IN WATER PIPES

Daniele Trinchero[1], Riccardo Stefanelli[1], Abdullah Kadri[2], Adnan Abu-Dayya[2], T. Khattab[2], M. Hasna[2]

{1}Politecnico di Torino, Italy; {2}Qatar University, Qatar

12:00

B2L-D5

CONFIDENCE LEVEL ANALYSIS OF SENSING SPATIAL COVERAGE IN WIRELESS SENSOR NETWORKS

Hamid Rafiei Karkvandi, Efraim Pecht, Orly Yadid-Pecht

University of Calgary, Canada

B2L-E5

A RAPID QUANTITATIVE MEASUREMENT USING THE ELECTRO-MICROCHIP FOR KETAMINE AND LUTEINIZING HORMONE DETECTION

Chia-Hsien Yeh, Wei-Ting Wang, Zheng-Kai Sun, Yu-Cheng Lin

National Cheng Kung University, Taiwan

B2L-F5

FULLY INTEGRATED, HIGH YIELDING, HIGH RELIABILITY DC CONTACT MEMS SWITCH TECHNOLOGY & CONTROL IC IN STANDARD PLASTIC PACKAGES

Ray Goggin[1], Jo-Ey Wong[1], Bruce Hecht[1], Padraig Fitzgerald[1], Mark Schirmer[2]

{1}Analog Devices Inc, Ireland; {2}Quadrant Engineering, United States

12:15

B2L-D6

SECURE TRUST REPUTATION WITH MULTI-CRITERIA DECISION MAKING FOR WIRELESS SENSOR NETWORKS DATA AGGREGATION

Björn Stelte, Andreas Matheus

Universität der Bundeswehr M\ünchen, Germany

B2L-E6

SIMULTANEOUS, ACCURATE LIFETIME DETERMINATION OF TWO LUMINOPHORES USING TIME-DOMAIN TECHNIQUES

Bradley Collier, Michael McShane

Texas A&M University, United States

B2L-F6

HIGH SPEED CELL SIFFNESS EVALUATION TOWARD 100% RELIABILITY

Yuki Hirose[2], Makoto Kaneko[2], Tomohiro Kawahara[1], Yoko Yamanishi[1], Fumihito Arai[1]

{1}Nagoya University, Japan; {2}Osaka University, Japan

LUNCH | 12:30- 13:30 | MAIN BUILDING - EDEN, RED RAISON RESTAURANT

POSTER SESSION 2 | 13:30 - 15:15 | EGO 10
Chairs : Changyuan Yu, ***National University of Singapore***
Walter Lang, ***Universität Bremen***

SPECIAL SESSION: BIOMIMETICS: LEARNING FROM NATURE II

B3P-G1 **INFRARED DETECTORS BASED ON THE INFRARED RECEPTORS OF PYROPHILOUS BEETLES**
Herbert Bousack[1], Helmut Soltner[1], Andreas Offenhäusser[1], Thilo Kahl[2], Helmut Schmitz[2]
{1}Forschungszentrum Jülich, Germany; {2}Universität Bonn, Germany

B3P-G2 **A TINY DIRECTIONAL SOUND SENSOR INSPIRED BY CRICKETS DESIGNED FOR MICRO-AIR VEHICLES**
Franck Ruffier[3], Simon Benacchio[2], Fabien Expert[1], Erick Ogam[4]
{1}CNRS / Aix-Marseille University, France; {2}CNRS / University Aix-Marseille II, Biorobotique, Institut des Sciences du Mouvement, France; {3} CNRS/Aix-Marseille University, France; {4}Laboratoire de Mécanique et d'Acoustique, CNRS, Marseille, France

B3P-G3 **A MOUSE SENSOR AND A 2-PIXEL MOTION SENSOR EXPOSED TO CONTINUOUS ILLUMINANCE CHANGES**
Fabien Expert[1], Stéphane Viollet[3], Franck Ruffier[2]
{1}CNRS / Aix-Marseille University, France; {2}CNRS/Aix-Marseille University, France; {3}Institute of Movement Sciences, CNRS / University of the Mediterranean, France

B3P-G4 **CHARACTERIZATION OF A BIONIC ELECTROLOCATION SENSOR USING FINITE ELEMENT MODELING**
Kavita Mayekar[2], Martin Gottwald[2], Gerhard von der Emde[2], Deepak Damalla[1], Herbert Bousack[1]
{1}Forschungszentrum Jülich, Germany; {2}Universität Bonn, Germany

B3P-G5 **A BIO-INSPIRED ARTIFICIAL WHISKER FOR FLUID MOTION SENSING WITH INCREASED SENSITIVITY AND RELIABILITY**
William Eberhardt[2], Yousef Shakhsheer[2], Benton Calhoun[2], John Paulus[1], Mike Appleby[1]
{1}MikroSystems Inc, United States; {2}University of Virginia, United States

B3P-G6 **A 16-ELECTRODE BIOMIMETIC ELECTROSTATIC IMAGING SYSTEM FOR OCEAN USE**
Jonathan Friedman, Henry Herman, Newton Truong, Mani B. Srivastava
University of California, Los Angeles / NES Laboratory, United States

B3P-G7 **ASIC FOR HYBRID BIOSYNTHETIC INFOCHEMICAL CHEMORECEIVER**
Foysol Chowdhury[2], Zoltan Rácz[1], Marina Cole[1], Sanju Thomas[1], Julian Gardner[1]
{1}University of Warwick, United Kingdom; {2}Warwick University, United Kingdom

SPECIAL SESSION: NANOTECHNOLOGY AND BIOSENSING II

B3P-H1 **USING THE QUANTUM CAPACITANCE IN GRAPHENE TO ENABLE VARACTORS FOR PASSIVE WIRELESS SENSING APPLICATIONS**
Steven Koester
University of Minnesota-Twin Cities, United State

B3P-H4 **PD-DECORATED ZNO AND WO3 NANOWIRES FOR SENSING APPLICATIONS**
Oscar García-Serrano[1], Oscar Goiz[1], Felipe Chavez[2], Gabriel Romero-Paredes[1], Ramón Peña-Sierra[1]
{1}Centro de Investigación y de Estudios Avanzados del IPN, Mexico; {2} ICUAP - Benemérita Universidad Autónoma de Puebla, Mexico

SPECIAL SESSION: TOWARDS AUTONOMY IN SENSOR NETWORKS

B3P-J1 **MOBILE SENSOR NETWORKS: SWARMING**
Kennie Jones
NASA Langley Research Center, United States

B3P-J2 **ENGINEERING FOR EMERGENT BEHAVIOR**
Kennie Jones
NASA Langley Research Center, United States

CHEMICAL & GAS SENSORS

B3P-K1 **IMPROVING BASELINE STABILITY OF GAS SENSORS BASED ON ORGANIC FIELD-EFFECT TRANSISTORS BY MONITORING CARRIER MOBILITY**
Tomohiko Mori, Yoshihiro Kikuzawa, Koji Noda
Toyota Central R&D Labs., Inc., Japan

B3P-K2 **BAXWOY THICK FILM AS A CARBON DIOXIDE SENSOR**
Leon Cavanagh, Russell Binions
University College London, United Kingdom

B3P-K3 **FABRICATION AND CHARACTERISTICS OF HYDROGEN SENSORS BASED ON POROUS SIC FOR HARSH ENVIRONMENTS**
Kang San Kim, Gwiy-Sang Chung
University of Ulsan, Korea, South

B3P-K4 **SOLID-STATE POTENTIOMETRIC CO2 SENSOR IN THICK FILM TECHNOLOGY FOR BREATH ANALYSIS**
Sven Wieg?rtner[3], Gunter Hagen[3], Jaroslaw Kita[3], Ralf Moos[3], Manuel Seufert[1], Eckard Glaser[1], Kerstin Grimmel[1], Armin Bolz[1], Christa Schmaus[2], Andre Kießig[2]
{1}Corscience GmbH & Co. KG, Germany; {2}SIEGERT electronic GmbH, Germany; {3}Universität Bayreuth, Germany

B3P-K5 **A STUDY OF HYDROGEN GAS SENSING PERFORMANCE OF PT/GRAPHENE/GAN DEVICES**
Jerry Yu[2], Mahnaz Shafiei[1], Jian Ou[2], Koo Shin[3], Wojtek Wlodarski[2]
{1}Queensland University of Technology, Australia; {2}RMIT University, Australia; {3}Sejong University, Korea, South

B3P-K6 **LOCALLY RESOLVED IN-SITU DETECTION OF THE SOOT LOADING IN DIESEL PARTICULATE FILTERS**
Gunter Hagen, Andreas Piontkowski, Andreas M ller, Dieter Br ggemann, Ralf Moos
Universität Bayreuth, Germany

B3P-K7 **POLYMER-BASED MICROMACHINED CHEMICAPACITOR GAS SENSOR ON A TEMPERATURE CONTROLLED PLATFORM**
Tahereh Arezoo Emadi, Cyrus Shafai, Douglas Thomson, Michael Freund, Noel White, Digvir Jayas
University of Manitoba, Canada

B3P-K8 **DETECTION OF NATURAL BIO-TOXINS USING AN IMPROVED DESIGN INTERDIGITAL SENSORS**
A.R. Mohd Syaifudin[1], Subhas Mukhopadhyay[1], P.L. Yu[1], Michael Haji-Sheikh[2], Cheng-Hsin Chuang[3], Hsun-Pei Wu[3]
{1}Massey University, New Zealand; {2}Northern Illinois University, United States; {3}Southern Taiwan University, Taiwan

B3P-K9 **HUMIDITY SENSING PROPERTIES OF SPRAYED THIN FILM MWCNT-PVP COMPOSITES**
Mehran Ghahremanpour, Edwin Baumgartner, Martin Bogner, Nourdin Boufercha, Joachim Sägebarth, Hermann Sandmaier
Universität Stuttgart, Germany

B3P-K10 **A CARBON NANOTUBE GAS SENSOR USING CMOS-BASED PLATFORM**
Wei-Cheng Tian[2], Chun-Yen Kuo[2], Chang-Jung Hsieh[2], Hung-Ling Lu[1], Chia-Jung Lu[1]
{1}National Taiwan Normal University, Taiwan; {2}National Taiwan University, Taiwan

B3P-K11 **A POWER-SAVING APPROACH FOR DRIVING INTEGRATED FET GAS SENSORS**
Lucanos Marsilio Strambini, Giovanni Mattia Lazzerini, Giuseppe Barillaro
Universitã di Pisa, Italy

CHEMICAL & GAS SENSORS

B3P-K12 **DISCRIMINATING GAS CONCENTRATIONS IN EXTREME TEMPERATURE ENVIRONMENTS**
Benjamin Furnival, Nicholas Wright, Alton Horsfall
Newcastle University, United Kingdom

B3P-K13 **LOW-COST HYDROGEN SULFIDE GAS SENSOR ON PAPER SUBSTRATES; FABRICATION AND DEMONSTRATION**
Jawad Sarfraz[2], Daniel Tobjörk[2], Ronald Österbacka[2], Mika Lindén[1]
{1}Universität Ulm, Germany; {2} bo Akademi University, Finland

B3P-K14 **SIMULTANEOUSLY MEASUREMENT OF FREQUENCY SHIFT AND SERIES RESISTANCE CHANGES OF A QUARTZ RESONATOR USING A MILLER QCM OSCILLATOR**
Loreto Rodriguez-Pardo, Ana María Cao-Paz, Jose Fariña
Universidade de Vigo, Spain

B3P-K15 **NDIR HUMIDITY MEASUREMENT**
Thomine Stolberg-Rohr, Rainer Buchner, Arun Krishna, Lars Munch, Kenneth Pihl, John Skou Hansen, Senad Tojaga, Henrik Gedde Moos, Jens Müller Jensen
Danfoss IXA, Denmark

B3P-K16 **ELECTRICAL AND AFM STRUCTURAL STUDIES OF A HUMIDITY SENSORS BASED ON KERATIN (HUMAN HAIR)**
Karumbaiah Chappanda, Massood Tabib-Azar
University of Utah, United States

B3P-K17 **A NEW METHOD FOR MONITORING AMMONIUM NITRATE CONTAMINATION IN NATURAL WATER SOURCES BASED ON INDEPENDENT COMPONENT ANALYSIS**
Mohd Amri Md Yunus, Subhas Mukhopdhyay
Massey University, New Zealand

B3P-K18 **DEVELOPMENT OF AN EXTREMELY SELECTIVE E-NOSE EMPLOYING A SINGLE POLYCYCLIC AROMATIC HYDROCARBON-BASED CHEMFET**
Radu Ionescu, Yael Zilberman, Hossam Haick
Technion - Israel Institute of Technology, Israel

B3P-K19 **A SENSITIVE, FAST-RESPONDING PASSIVE ELECTROSTATIC RADON MONITOR**
Ryan Griffin[1], Artur Kochermin[1], Garry Tarr[1], Heather McIntosh[3], Heping Ding[3], John Weber[3], Renato Falcomer[2]
{1}Carleton University, Canada; {2}Health Canada, Canada; {3}National Research Council, Canada

B3P-K20 **DEVELOPMENT OF ACCURATE SYSTEM\ OF GAS DETECTION BASED ON LOVE WAVE SENSORS FUNCTIONALIZED WITH COBALT CORROLES APPLIED TO THE DETECTION OF CARBON MONOXIDE**
Virginie Blondeau-Patissier[1], Meddy Vanotti[1], David Rabus[1], Jean-Yves Rauch[1], Sylvain Ballandras[1], Mohammed Chkounda[2], Jean-Michel Barbe[2]
{1}FEMTO-ST Institute, France; {2}Institut de Chimie Moléculaire de l'Université de Bourgogne, France

B3P-K21 **LOW-COST IMPLEMENTATIONS OF PH MONITORING PLATFORMS**
Themistoklis Prodromakis, Yan Liu, Christofer Toumazou
Imperial College London, United Kingdom

B3P-K22 **HUMIDITY INFLUENCE IN APPLICATION OF µGC-SYSTEMS FOR ETHYLENE GAS WITH PRECONCENTRATOR DEVICES AND SNO2 BASED DETECTORS**
Adam Sklorz, Aljoscha Schu, Michael Nießen, Steffen Janßen, Walter Lang
Universität Bremen, IMSAS, Germany

B3P-K23 **PH SENSING FROM FREQUENCY RESPONSE OF SGFET**
Abdelghani Kherrat[1], France Le Bihan[1], Emmanuel Jacques[1], Maxime Thomas[1], Olivier De Sagazan[1], Samuel Crand[1], Tayeb Mohammed-Brahim[1], Florence Razan[2]
{1}IETR, University of Rennes I, France; {2}SATIE/BIOMIS, France

B3P-K24 **TRACE ORGANICS MONITORING IN DRINKINGWATER USING TENAX-COATED FIBERS**
Daniel Hogg[2], Bassam Alfeeli[3], Ashley Hoover[1], Ting Zhang[1], Gary Rice[1], Masoud Agah[2]
{1}College of William and Mary, United States; {2}Virginia Polytechnic Institute and State University, United States; {3}Virginia Polytechnic Institute and State University & Kuwait Institute for Scientific Research, Kuwait

B3P-K25 **THE EFFECT OF PILLAR ARRAY IN SEMI PACKED MICRO GAS CHROMATOGRAPHY**
Bassam Alfeeli[2], Shree Narayanan[2], Mathew McMillan[1], Daniel Hirtenstein[1], Gary Rice[1], Masoud Agah[2]
{1}College of William and Mary, United States; {2}Virginia Polytechnic Institute and State University, United States

B3P-K26 **APPLICATION OF METAL ORGANIC FRAMEWORK CRYSTALS FOR SENSING OF VOLATILE ORGANIC GASES**
Amir Khoshaman, Behraad Bahreyni
Simon Fraser University, Canada

B3P-K27 **FABRICATION AND CHARACTERIZATION OF MEMS-BASED RESONANT ORGANIC GAS SNIFFERS**
Arash Hajjam, Andrew Logan, Siavash Pourkamali
University of Denver, United States

B3P-K28 **TOWARDS AN ELECTRONIC NOSE BASED ON NANO-STRUCTURED TRANSITION METAL OXIDES ACTIVATED BY A TUNEABLE UV LIGHT SOURCE**
Bonex Mwakikunga, Thomas Malwela, Kenneth Hillie, Gebhu Ndlovu
CSIR, South Africa

B3P-K29 **NON INVASIVE POSSIBILITY OF BODY DEHYDRATION MONITORING**
Dmitry Solovei, Petra Businova, Jana Drbohlavova, Jaromir Hubalek, Vojtech Adam, Rene Kizek
Brno University of Technology, Czech Rep.

B3P-K30 **A NEW STACK ELECTRODE TYPE CMOS COMPATIBLE GAS SENSOR**
Chih-Hsiung Shen, Hsu-Pei Chen, Chun-Ming Cheng, Shu-Jung Chen
National Changhua University of Education, Taiwan

SENSOR/ACTUATOR SYSTEMS

B3P-L1 **CHIP TO WAFER TEMPORARY BONDING WITH SELF-ALIGNMENT BY PATTERNED FDTS LAYER FOR SIZE-FREE MEMS INTEGRATION**
Jian Lu, Hideki Takagi, Ryutaro Maeda
National Institute of Advanced Industrial Science and Technology, Japan

B3P-L2 **FABRICATION AND PERFORMANCE OPTIMIZATION OF AN AA SIZE ELECTROMAGNETIC ENERGY HARVESTER USING MAGNETIC SPRING**
Foisal Riduan, Byung-Chul Lee, Gwiy-Sang Chung
University of Ulsan, Korea, South

B3P-L3 **MEMS BASED MICROACTUATOR FOR MICROJET APPLICATIONS**
Jaspreet Singh[1], K Rajanna[1], B Umapathi[2], M.M Nayak[2], K Nagachenchaiah[2]
{1}Indian Institute of Science, India; {2}Semiconductor Laboratory, India

SENSOR/ACTUATOR SYSTEMS

B3P-L4 **CCII-BASED INTERFACE FOR CAPACITIVE RESISTIVE SENSORS**
Andrea De Marcellis, Giuseppe Ferri, Paolo Mantenuto, Fabrizio Valente, Carlo Cantalini, Luca Giancaterini
Università degli Studi dell'Aquila, Italy

B3P-L5 **A NOVEL TIME-CONTROLLED INTERFACE CIRCUIT FOR RESISTIVE SENSORS**
Andrea De Marcellis[1], Giuseppe Ferri[1], Alessandro Depari[2], Alessandra Flammini[2]
{1}Università degli Studi dell'Aquila, Italy; {2}Università degli Studi di Brescia, Italy

B3P-L6 **A NOVEL READOUT CIRCUIT FOR AN OTFD GAS SENSOR WITH A NEW FRONT-END TRANS-IMPEDANCE AMPLIFIER**
Wan Jun Lin, Paul C.-P. Chao, Shir-Kuan Lin, Hsiao-Wen Zan
National Chiao Tung University, Taiwan

B3P-L7 **A 1.8V READOUT INTEGRATED CIRCUIT WITH ADAPTIVE TRANSIMPEDANCE CONTROL AMPLIFIER FOR IR FOCAL PLANE ARRAYS**
Lo-Wei Huang[2], Chih-Cheng Hsieh[2], Wen-Hsu Chang[1], Ying-Zong Juang[1], Chin-Fong Chiu[1]
{1}National Chip Implementation Center, Taiwan; {2}National Tsing Hua University, Taiwan

B3P-L8 **A NOVEL GAS SENSOR IN THE FORM OF MICRO-MACHINED RESONATOR AND ITS READOUT CIRCUIT**
Bing-Ze Xue[1], Paul C.-P. Chao[1], Bor-Shyh Lin[1], Chun-Yin Tsai[1], Tsung-Lin Chen[1], Hsin-Hao Liao[2], Hann-Huei Tsai[2], Ying-Zong Juang[2]
{1}National Chiao Tung University, Taiwan; {2}National Chip Implementation Center, Taiwan

B3P-L9 **TECHNOLOGY, CHARACTERIZATION AND PRELIMINARY SENSING APPLICATION OF PHOTOELECTROSYNTHESIZED POLYPYRROLE ON MICROSTRUCTURED SILICON**
Elisabetta Mazzotta[1], Cosimino Malitesta[1], Salvatore Surdo[2], Lucanos Marsilio Strambini[2], Giuseppe Barillaro[2]
{1}Università del Salento, Italy; {2}Università di Pisa, Italy

B3P-L10 **SENSORS/ACTUATORS NETWORK DEVELOPMENT FOR AERONAUTICS STRUCTURE HEALTH MONITORING**
Hamza Boukabache, Mouhamed Matmat, Christophe Escriba, Jean-Yves Fourniols
Université de Toulouse, CNRS, LAAS, France

B3P-L11 **EXPERIMENTAL EVALUATION OF AN INTRAVASCULAR DIFFERENTIAL PRESSURE FLOW METER USING MEMS PRESSURE SENSORS**
Kumar Swamy Hosur Satyamurthy, Erik Timpson, Walter Leon-Salas
University of Missouri-Kansas City, United States

B3P-L12 **DETECTING LOCAL EVENTS USING GLOBAL SENSING**
Mahsan Rofouei, Majid Sarrafzadeh, Miodrag Potkonjak
University of California, Los Angeles, United States

B3P-L13 **HETEROGENEOUS MEASUREMENT SYSTEM BASED ON OPTICAL FIBER AND ULTRASONIC SENSORS TO DETERMINE ETHANOL CONCENTRATION**
Gustavo Rafael Collere Possetti, Galileu Godoy Terada, Rafael Jose Daciuk, César Yutaka Ofuchi, Flàvio Neves Junior, Lúcia Valéria Ramos de Arruda, Marcia Muller, José Luís Fabris
Federal University of Technology - Paranà, Brazil

B3P-L14 **CAPACITIVE SENSOR SYSTEM FOR SUB NANOMETER DISPLACEMENT MEASUREMENT**
Sha Xia, Stoyan Nihtianov
Delft University of Technology, Netherlands

B3P-L15 **LOW-WEIGHT ELECTROSTATIC SAMPLER FOR AIRBORNE NANOPARTICLES**
Stephan Merzsch[2], Hutomo Suryo Wasisto[2], Andreas Waag[2], Ina Kirsch[1], Erik Uhde[1], Tunga Salthammer[1], Erwin Peiner[2]
{1}Fraunhofer Institute for Wood Research - Wilhelm-Klauditz-Institut, Germany; {2}Technische Universität Braunschweig, Germany

B3P-L16 **QUALIFICATION OF A STABLE CAPACITIVE SENSOR INTERFACE BASED ON CAPACITANCE-RESISTANCE COMPARISON**
Ruimin Yang[2], Ali Fekri[2], Stoyan Nihtianov[2], Roumen Nojdelov[1]
{1}Arsen Development Ltd, Bulgaria; {2}Delft University of Technology, Netherlands

B3P-L17 **ELECTROSTATIC MEMS EMULSIFYING DEVICE WITH HIGH FLOW RATE**
Jinwoo Jeong, Kukjin Chun
Seoul National University, Korea, South

SENSOR NETWORKS

B3P-M1 **BIOINSPIRED RESOURCE MANAGEMENT FOR MULTIPLE-SENSOR TARGET TRACKING SYSTEMS**
Hendrick Lambert, Dana Sinno
Massachusetts Institute of Technology, United States

B3P-M2 **REEL: A REAL-TIME, COMPUTATIONALLY EFFICIENT, REPROGRAMMABLE FRAMEWORK FOR WIRELESS SENSOR NETWORKS**
Cesare Alippi, Romolo Camplani, Manuel Roveri, Luca Vaccaro
Politecnico di Milano, Italy

B3P-M3 **DEVELOPMENT OF CUSTOM CMOS LSI FOR ULTRA-LOW POWER WIRELESS SENSOR NODE IN HEALTH MONITORING SYSTEMS**
Hironao Okada[1], Toshihiro Itoh[1], Takashi Masuda[2]
{1}National Institute of Advanced Industrial Science and Technology, Japan; {2}University of Tokyo, Japan

B3P-M4 **S-DAWIN: A SELF-ADAPTED DISTRIBUTED ALGORITHM FOR DATA GATHERING IN WIRELESS SENSOR NETWORKS**
Marcos Goyeneche, Jesús Villadangos, Jose Javier Astrain
Universidad Pública de Navarra, Spain

B3P-M5 **PERFORMANCE ANALYSIS OF THE NRF24L01 ULTRA-LOW-POWER TRANSCEIVER IN A MULTI-TRANSMITTER AND MULTI-RECEIVER SCENARIO**
Peter Christ, Bernd Neuwinger, Felix Werner, Ulrich R ckert
CITEC Bielefeld University, Germany

B3P-M6 **MARSSENS: A MODULAR ARCHITECTURE FOR THE SECURITY OF SENSOR NETWORKS**
Victor Cionca[2], Thomas Newe[2], Vasile Dadarlat[1]
{1}Universitatea Tehnica Cluj-Napoca, Romania; {2}University of Limerick, Ireland

B3P-M7 **NANOTECHNOLOGY-BASED TRUSTED REMOTE SENSING**
James Bradley Wendt, Miodrag Potkonjak
University of California, Los Angeles, United States

B3P-M8 **CAMERA SELECTION USING A LOCAL IMAGE QUALITY METRIC FOR A DISTRIBUTED SMART CAMERA NETWORK**
Edward Shen, Richard Hornsey
VISOR Lab, York University, Canada

B3P-M9 **MONITORING VITAL SIGNS AND LOCATION OF PATIENTS BY USING ZIGBEE WIRELESS SENSOR NETWORKS**
Raquel Gutiérrez[1], Samuel Fernàndez[1], Juan Jesús García[1], Juan Carlos García[1], Liam Marnane[2]
{1}Universidad de Alcalà, Spain; {2}University College Cork, Ireland

B3P-M10 **SECURITY PRIMITIVES AND PROTOCOLS FOR ULTRA LOW POWER SENSOR SYSTEMS**
Saro Meguerdichian, Miodrag Potkonjak
University of California, Los Angeles, United States

OPEN POSTERS

B3P-N1 **A PERFORMANCE COMPARISON ON MEASUREMENT DISTANCE BETWEEN OOK AND SS MODULATION FOR INDOOR POSITIONING USING ULTRASONIC TRANSDUCERS**
Akimasa Suzuki, Taketoshi Iyota, Kazuhiro Watanabe
Soka University, Japan

B3P-N2 **CITISENSE AIR QUALITY MONITORING MOBILE SENSOR NODE**
Piero Zappi, Jin-Hong Park, Tajana Rosing
UCSD, United States

B3P-N3 **WAVELENGTH TUNABLE ABRUPT TAPERED MACH-ZEHNDER INTERFEROMETERS FOR TEMPERATURE SENSING APPLICATIONS**
Nan-Kuang Chen[1], Zhi-Zheng Feng[1], Tsung-Hsun Yang[1], Kuan-Yi Lu[1], Shien-Kuei Liaw[2], Yi-Ning Chen[1]
{1}Department of Electro-Optical Engineering/National United University, Taiwan; {2}Graduate Institute of Electro-Optical Engineering, National Taiwan University of Science and Technol, Taiwan

B3P-N5 **ALGAN/GAN HIGH ELECTRON MOBILITY TRANSISTOR BASED PRESSURE SENSOR FOR HARSH ENVIRONMENTS - DESIGN AND TEST**
Libor Rufer[3], Stephane Vittoz[3], Michael Edwards[4], Chris Bowen[4], Duncan Allsopp[4], Gabriel Vanko[2], Tibor Lalinský[2], Ulrich Heinle[1], Emmanuel Le Boulbar[4]
{1}MicroGaN, Germany; {2}Slovak Academy of Sciences, Bratislava, Slovakia; {3}TIMA Labs, Univ. Grenoble, France; {4}University of Bath, United Kingdom

B3P-N6 **A FLEXIBLE LOW-COST MOBILE NON INTRUSIVE CARDIAC MONITOR SUPPORTING PATIENT POST OPERATIVE CARE MANAGEMENT**
Paul Fortier, Benjamin Viall, Steven Shannon, Patrick Dasilva, Eric Boucher
UMass Dartmouth, United States

B3P-N8 **A BASIC READOUT CIRCUIT FOR THE DEEP TRAPPING GATE SENSOR**
N.T. Fourches[1], J.B Cizel[2], F. Lugiez[1]
{1}CEA, France; {2}Université, France

B3P-N9 **COST ACTION TD1001: NOVEL AND RELIABLE OPTICAL FIBRE SENSOR SYSTEMS OR FUTURE SECURITY AND SAFETY APPLICATIONS (OFSESA)**
Sinead O'Keeffe
University of Limerick, Ireland

B3P-N10 **RADIO TOMOGRAPHIC IMAGING ANDGEOLOCATION USING SUN SPOTS**
Russell Lenahan, Richard Martin, Brady Christel, Cody Lawyer
AFIT, United States

B3P-N11 **DEVELOPMENT OF A WIRELESS BIOSENSOR ENABLING THE MONITORING OF BONE FORMATION IN VIVO**
Jan Steinkuehler[1], Clemens Zsifkovits[2], Guenter Lepperdinger[2], Peter Ertl[1]
{1}AIT, Austria; {2}OAW, Austria

B3P-N12 **A DISCRIMINATION METHOD BETWEEN A MOVING HUMAN AND OBJECT USING A HETERO-CORE FIBER OPTIC SENSITIVE MAT**
Ai Hosoki, Yongwoon Choi, Kazuhiro Watanabe
Department of Information Systems Science, Faculty of Engineering, SOKA University, Japan

B3P-N14 **CONSTRUCTION OF REFRACTOMETER FOR MEASUREMENT OF SEAWATER DENSITY**
Øyvind Tengesdal[2], Jon Oddvar Hellevang[3], Jostein Hovdenes[1], Lars Egil Helseth[2]
{1}Aanderaa Data Instruments, Norway; {2}Department of Physics and Technology - University of Bergen, Norway; {3}The Michelsen Centre for Industrial Measurement Science and Technology, Norway

B3P-N15 **THE BREATH MONITORING SENSOR BY A HETERO-CORE OPTICAL FIBER**
Shohei Akita, Atsushi Seki, Kazuhiro Watanabe
SOKA University, Japan

B3P-N16 **UNCONSTRAINED RESPIRATORY MONITORING DURING SLEEP WITH HETERO-CORE FIBER OPTIC PRESSURE SENSORS COVERED WITH A MATTRESS PAD**
Mitsuo Miyamoto[2], Tetsuya Kon[2], Michiko Nishiyama[1], Kazuhiro Watanabe[2]
{1}Aerospace Project Research Associate, Japan; {2}SOKA University, Japan

B3P-N17 **NEW APPROACH IN SENSOR NETWORK TECHNOLOGY FOR USAGE IN "THE INTELLIGENT CONTAINER"**
Steffen Jan˜en
University Bremen, Institute of Microsensors, - actuators and -systems, German

B3P-N18 **FABRICATION OF A MINIATURIZED MEMS PARTICULAR MATTER (PM) MONITOR**
Igor Paprotny[2], Frederick Doering[2], Michael Seidel[2], Richard White[2], Max Sokolov[1], Alexey Umnov[1]
{1}Nihzny Novogord State University, Russia; {2}University of California, United States

B3P-N19 **EVALUATION OF A PSOC-BASED SENSOR NETWORK TEST-BED**
Rakhee M[1], Manoj Kumar D[1], Shashi Kumar P[1], Surabhi B[1], Sai Phaneendra P[1], M.B. Srinivas[1], Karthikeyan M[3], Patrick Kane[2]
{1}BITS-Pilani,Hyderabad Campus, India; {2}Cypress Semiconductor Corporation, San Jose, California, India; {3}Cypress Semiconductor Technology (India) Pvt. Ltd., Bangalore, India

B3P-N20 **HYDROCARBON DETECTION BUOY USING STRAIN GAGE-BASED SENSOR**
Sangwoo Oh, Moonjin Lee, Hyeukjin Choi
Korea Ocean Research & Development Institute, Korea, South

SESSION B4L-A: NANOMATERIALS FOR SENSORS

Chairs:
Shao-Ying Huang, *The University of Hong Kong*
Jin-Chern Chiou, *National Chiao Tung University*

SESSION B4L-B: THERMAL SENSORS

Chairs:
Maryam Ziaei-Moayyed, *Sandia National Labs*
Konandur Rajanna, *Indian Institute of Science*

SESSION B4L-C: MACROSCOPIC SENSOR APPLICATIONS

Chairs:
Gregory Pandraud, *TU Delft*
José Luis Santos, *INESC-Porto*

CONCERT HALL

15:15

B4L-A1

DEVELOPMENT OF A SIMULATOR FOR MODELLING OF ELECTRICAL AND MECHANICAL PROPERTIES OF NANOCOMPOSITE MATERIALS AND SENSORS

Alborz Amini, Behraad Bahreyni

Simon Fraser University, Canada

15:30

B4L-A2

OXYGEN SENSING WITH ZNO THIN FILMS

Michiel Blauw[2], Van-Anh Dam[2], Mercedes Crego-Calama[2], Sywert Brongersma[2], Jan Musschoot[1], Christophe Detavernier[1]

{1}Gent University, Belgium; {2}IMEC Netherlands / Holst Centre, Netherlands

15:45

B4L-A3

USING MEMS-BASED PRECONCENTRATORS TO IDENTIFY IRON CATALYZED LIPID OXIDATION PRODUCTS IN BREATH

Heather Vereb, Bassam Alfeeli, Andrea Dietrich, Masoud Agah

Virginia Polytechnic Institute and State University, United States

16:00

B4L-A4

OPTOCHEMICAL TRANSDUCERS BASED ON GAN NANODISCS IN NANOWIRES

Jorg Teubert[1], Pascal Becker[1], Florian Furtmayer[2], Martin Eickhoff[1]

{1}Justus-Liebig-Universität Gießen, Germany; {2}Technische Universität M nchen, Germany

16:15

B4L-A5

NANOELECTRODE ARRAYS FOR MEASURING SYMPATHETIC NERVOUS ACTIVITY

Aamer Mahmood[2], Peng-Sheng Chen[1], A. George Akingba[1]

{1}Indiana University, United States; {2}Purdue University, United States

16:30

B4L-A6

INCORPORATION OF OPTICAL ENZYMATIC SENSING CHEMISTRY INTO BIOCOMPATIBLE HYDROGELS

Jason Roberts, Bradley Collier, Michael McShane

Texas A&M University, United States

JEAN MONET

15:15

B4L-B1

INTEGRATED SELF-SUPPLIED SYSTEM FOR ENVIRONMENTAL TEMPERATURE SENSING

Alessandro Lazzarini Barnabei[3], Marco Grassi[2], Daria Pinna[2], Enrico Dallago[2], Piero Malcovati[2], Giulio Ricotti[1]

{1}STMicroelectronics, Italy; {2}Università degli Studi di Pavia, Italy; {3}Università di Pavia, Italy

15:30

B4L-B2

NOVEL TEMPERATURE SENSOR IMPLEMENTED ON NANOPOROUS ANODIC ALUMINUM OXIDE TEMPLATE

Jen-Hao Yeh, Chitsung Hong, Fu-Ming Hsu, WeiLeun Fang

National Tsing Hua University, Taiwan

15:45

B4L-B3

STABILITY MEASUREMENTS OF SILICON MEMS RESONANT THERMOMETERS

Eldwin Ng[2], Hyung Kyu Lee[2], Chae Hyuck Ahn[2], Renata Melamud[1], Thomas Kenny[2]

{1}SiTime Corporation, United States; {2}Stanford University, United States

16:00

B4L-B4

A 25MW CMOS SENSOR FOR WIND AND TEMPERATURE MEASUREMENT

Jianfeng Wu[2], Caspar van Vroonhoven[1], Youngcheol Chae[1], Kofi Makinwa[1]

{1}Delft University of Technology, Netherlands; {2}Tsinghua University, China

16:15

B4L-B5

A 105-NW CMOS THERMAL SENSOR FOR POWER-AWARE APPLICATIONS

Toshi Nagayama, Tetsuya Hirose, Yuji Osaki, Nobutaka Kuroki, Masahiro Numa

Kobe University, Japan

16:30

B4L-B6

THERMAL HISTORY SENSING INSIDE HIGH-EXPLOSIVE ENVIRONMENTS USING THERMOLUMINESCENT MICROPARTICLES

Merlin Mah[2], Philip Armstrong[2], Sangho Kim[2], Joel Carney[1], James Lightstone[1], Joseph Talghader[2]

{1}Indian Head Division, Naval Surface Warfare Center, United States; {2}University of Minnesota, United States

JOHN HOLLAND

15:15

B4L-C1

A STEP TOWARDS THE PREDICTION OF A ROCK COLLAPSE: ANALYSIS OF MICRO-ACOUSTIC BURSTS

Cesare Alippi, Giacomo Boracchi, Antonio Marullo, Manuel Roveri

Politecnico di Milano, Italy

15:30

B4L-C2

MONITORING OF MINING INDUCED SUBSIDENCE THROUGH MEASUREMENT OF GROUND STRAINS WITH FIBER BRAGG GRATING SENSORS

Giorgio Nosenzo

Monitor Optics Systems, Ireland

15:45

B4L-C3

AN ULTRA-LOW NOISE MEMS ACCELEROMETER FOR SEISMIC IMAGING

Don Milligan, Brian Homeijer, Robert Walmsley

Hewlett-Packard, United States

16:00

B4L-C4

REMOTE SENSOR FOR WINTER ROAD SURFACE STATUS DETECTION

Patrik Jonsson

Mid Sweden University, Sweden

16:15

B4L-C5

A MINIATURISED ARROW BALLISTIC MEASUREMENT SYSTEM

John Barton[2], Jan Vcelak[2], Javier Torres-Sanchez[2], Brendan O'Flynn[2], Cian O'Mathuna[2], Robert Donahoe[1]

{1}Full Flight Technology LLC, United States; {2}Tyndall National Institute, Ireland

SESSION B4L-D: WIRELESS INTERFACES

Chairs:
JPeter S.-K. Liaw, *National Taiwan University of Science & Technology*
Tigang Ning, *Beijing Jiaotong University*

CHARLES PARSONS

15:15

B4L-D1

POWERING WIRELESS SENSORS: MICROTECHNOLOGY-BASED LARGE-AREA THERMOELECTRIC GENERATOR FOR MASS APPLICATIONS

Gunnar Pasold[3], P. Etlin[3], Marcus Hahn[3], Uwe Muster[3], Vahe Nersessian[3], Donato Bonfrate[1], Rudolf Buser[1], Marco Cucinelli[1], Martin Gutsche[1], Marcel Kehl[1], Nicolas Zäch[1], Roger Hazelden[2]

{1}Interstaatliche Hochschule für Technik Buchs NTB, Switzerland; {2}TRW Conekt, United Kingdom; {3}TRW Switzerland GmbH, Switzerland

15:30

B4L-D2

ELECTROMAGNETIC CONTACTLESS INTERROGATION TECHNIQUE FOR QUARTZ RESONATOR SENSORS

Marco Baú, Marco Ferrari, Vittorio Ferrari, Emanuele Tonoli

Università degli Studi di Brescia, Italy

15:45

B4L-D3

A POWER SENSOR UNIT FOR THE LOCALIZATION OF GSM MOBILE PHONES FOR SEARCH AND RESCUE APPLICATIONS

Stefan Zorn, Gabor Bozsik, Richard Rose, Alexander Goetz, Robert Weigel, Alexander Koelpin

Universität Erlangen-Nürnberg, Germany

16:00

B4L-D4

A NOVEL MICROWAVE POWER SENSOR USING MEMS FIXED-FIXED BEAM

Yan Cui[2], Xiao Ping Liao[2], Zheng Zhu[1]

{1}Key Laboratory of MEMS of Ministry of Education, Southeast University, China; {2}Southeast University, China

16:15

B4L-D5

NOVEL NARROWBAND ACOUSTIC SENSORS FOR SUB-GHZ WIRELESS MEASUREMENTS

David Rabus[1], Thomas Baron[1], Eric Lebrasseur[1], Sébastien Alzuaga[1], Gilles Martin[1], Sylvain Ballandras[1], Jean-Michel Friedt[2]

{1}FEMTO-ST Institute, France; {2}SENSeOR SAS, France

16:30

B4L-D6

MAGNETOELECTRIC EFFECT IN COMPOSITE OF FERROMAGNETIC CONSTANT-ELASTICITY ALLOY, PIEZOELECTRIC CERAMIC AND FESIB RIBBON

Caijiang Lu, Ping Li, Yumei Wen, Aichao Yang

Chongqing University, China

SESSION B4L-E: BIOSENSORS I

Chairs:
Martin Kraft, *Carinthian Tech Research*
Mona Zaghloul, *George Washington University*

FB028

15:15

B4L-E1

MONOLITHICALLY INTEGRATED FREQUENCY-RESOLVED MACH-ZEHNDER INTERFEROMETERS FOR HIGHLY-SENSITIVE MULTIPLEXED LABEL-FREE BIO/CHEMICAL SENSING

Konstantinos Misiakos[3], Athanasios Botsialas[3], Ioannis Raptis[3], Eleni Makarona[3], Panagiota Petrou[3], Sotirios Kakabakos[3], Gerhard Jobst[1], Remco Stoffer[4], Marcel Hoekman[2]

{1}Jobst Technologies GmbH, Germany; {2}LioniX BV, Netherlands; {3}NCSR Demokritos, Greece; {4}PhoeniX BV, Netherlands

15:30

B4L-E2

STUDY OF ENHANCED BIOSENSORS BASED ON 2-D SANDWICHED PLASMON PHOTONIC CRYSTALS

Jinying Zhang[1], Hua Huang[1], Xinming Ji[1], Jia Zhou[1], Yiping Huang[1], Weijiang Xu[2], Julien Carlier[2], Bertrand Nongaillard[2]

{1}ASIC and System State Key Lab, Fudan University, China; {2}Université de Valenciennes, France

15:45

B4L-E3

TUNABLE AND RECONFIGURABLE PLASMONIC-PHOTONIC RESONANCES IN HYBRID METALLO-DIELECTRIC QUASICRYSTALS FOR BIOSENSING

Alessio Crescitelli[2], Armando Ricciardi[2], Marco Consales[2], Antonello Cutolo[2], Vincenzo Galdi[2], Andrea Cusano[2], Emanuela Esposito[1], Carmine Granata[1]

{1}National Research Council, Cibernetic Institute, Italy; {2} Università degli Studi del Sannio, Italy

16:00

B4L-B4

HIGH ENHANCEMENT SERS SUBSTRATES CREATED USING DEP-DLA & ANNEALING AU-W

Faisal Chowdhury, Karumbaiah Chappanda, Massood Tabib-Azar

University of Utah, United States

16:15

B4L-E5

MICROCANTILEVER ARRAY SENSORS WITH INTEGRATED PDMS MICROFLUIDICS

Gregory Nordin, Ryan Anderson, Weisheng Hu, Stanley Ness, Danny Richards, Joseph Oxborrow, Timothy Gustafson, Ben Tsai, Brian Mazzeo, Adam Woolley

Brigham Young University, United States

16:30

DINNER | 19:00 - 22:00 | THOMAND PARK

SPECIAL SESSION B4L-F: OPTICAL METROLOGY FOR STRUCTURAL HEALTH MONITORING

Chairs:
Frederic Surre, *City University London*
Marco Petrovich, *University of Southampton*

FG042

15:15

B4L-F1

INVITED: CALIBRATION FACILITY FOR QUALITY CERTIFICATION OF SURFACE-ATTACHED FIBER OPTIC AND ELECTRICAL STRAIN SENSORS

Wolfgang Habel, Vivien Schukar, Nadine Kusche

BAM Federal Institute for Materials Research and Testing, Germany

15:45

B4L-F3

A NOVEL FBG INTERROGATION METHOD FOR POTENTIAL STRUCTURAL HEALTH MONITORING APPLICATIONS

Thanh Binh Pham[2], Han Cheng Seat[2], Olivier Bernal[3], Maha Suleiman[1]

{1}-, France; {2}ENSEEIHT-INPT, France; {3}Université de Toulouse, CNRS, LAAS, France

16:00

B4L-F4

APPLICATION OF FIBER-OPTIC STRAIN SENSORS FOR MONITORING OF A PRE-STRESSED CONCRETE BOX GIRDER BRIDGE

Pradipta Banerji[4], Sanjay Chikermane[3], Ken Grattan[1], Sun Tong[1], Frederic Surre[1], Richard Scott[2]

{1}City University London, United Kingdom; {2}Durham University, United Kingdom; {3}Indian Institute of Technilogy Bombay, India; {4}Indian Institute of Technology Bombay, India

16:15

B4L-F5

LONG-TERM MONITORING OF CONCRETE FOOTBRIDGE USING OPTICAL METROLOGY

Frederic Surre[1], Tong Sun[1], Ken Grattan[1], Elena N. Barton[2], Bufa Zhang[2], Nick McCormick[2]

{1}City University London, United Kingdom; {2}National Physical Laboratory, United Kingdom

16:30

B4L-F6

FIBRE OPTIC STRAIN AND CONFIGURATION SENSING IN ENGINEERING COMPONENTS PRODUCED BY ADDITIVE LAYER RAPID MANUFACTURING

R. R. J. Maier[2], William N Macpherson[2], James S Barton[2], Mark Carne[1], Mark Swan[1], J Nik Sharma[1], Simon K Futter[1], David A Knox[1], Benjamin J S Jones[1], Scott McCulloch[1]

{1}Atomic Weapons Establishment, United Kingdom; {2}Heriot-Watt University, United Kingdom

KEYNOTE PRESENTATION 3 | 08:00 - 08:45 | FOUNDATION BUILDING - CONCERT HALL
"Plasmonic Sensing Techniques"
Prof Aaron Ho, *Electronic Engineering, Chinese Univ. of Hong Kong, China.*

SESSION C1L-A: NANOSENSORS	SPECIAL SESSION C1L-B: SELF-MIXING LASER SENSORS	SESSION C1L-C: FLUIDS AND FLOW
Chairs: Michael Kraft, *University of Southampton*; Svetlana Tatic-Lucic, *Lehigh University*	Chairs: Thierry Bosch, *Université de Toulouse-LAAS*; Hans JFL Goosen, *TU Delft*	Chairs: Martin Eickhoff, *Giessen University*; Chongqing Wu, *Beijing Jiaotong University*
CONCERT HALL	JEAN MONET	JOHN HOLLAND
9:00		
C1L-A1 **NOVEL GRAPHENE BRIDGE FOR NEMS BASED DEVICES** Karumbaiah Chappanda, Massood Tabib-Azar *University of Utah, United States*	**C1L-B1** **INVITED: SELF-MIX INTERFEROMETER TO MEASURE TRANSPARENT PLATES THICKNESS AND INDEX OF REFRACTION** Silvano Donati[2], Giuseppe Martini[2], Mohammad Taghi Fathi[1] *{1}Università degli Studi di Pavia, Italy; {2}Università di Pavia, Italy*	**C1L-C1** **ELECTROCHEMICAL SENSOR TO DETERMINE DIRECTION OF CHEMICAL FLOW: FLUID DYNAMICS ANALYSIS ON SENSING PROBE STRUCTURE** Tomomi Makishita, Hiroshi Ishida *Tokyo University of Agriculture and Technology, Japan*
9:15		
C1L-A2 **SINGLE PIXEL INFRARED CAMERA USING A CARBON NANOTUBE PHOTODETECTOR** Hongzhi Chen, Ning Xi, Bo Song, Liangliang Chen, King Wei Chiu Lai *Michigan State University, United States*		**C1L-C2** **CMOS COMPATIBLE ACOUSTIC PARTICLE VELOCITY SENSORS** Paolo Bruschi[2], Federico Butti[2], Massimo Piotto[1] *{1}National Research Council, IEIIT, Italy; {2}Università di Pisa, Italy*
9:30		
C1L-A3 **DIRECT FABRICATION OF POLYMER NANOFIBER MEMBRANE FOR PIEZOELECTRIC VIBRATION SENSOR** Tingping Lei[2], Lei Xu[1], Zhan Zhan[2], Jiang Du[2], Yiwen Jiang[2], Gaofeng Zheng[2], Lingyun Wang[2], Daoheng Sun[2] *{1}Jingdezhen Ceramic Institute, China; {2}Xiamen University, China*	**C1L-B3** **A SELF-MIXING DISPLACEMENT SENSOR COMPENSATING PARASITIC VIBRATION WITH A MEMS ACCELEROMETER** Usman Zabit, Olivier Bernal, Thierry Bosch *Université de Toulouse, CNRS, LAAS, France*	**C1L-C3** **A DROP GENERATOR FOR THE EVALUATION OF AUTOMOTIVE RAIN SENSORS** Hubert Zangl, Thomas Bretterklieber *Graz University of Technology, Austria*
9:45		
C1L-A4 **CONDUCTING AFM STUDIES OF METAL SURFACE CONTACT RESISTANCE FOR NEMS SWITCHES** Karumbaiah Chappanda, Massood Tabib-Azar *University of Utah, United States*	**C1L-B4** **ANALYSIS AND CONTROL OF SPECKLE EFFECTS IN SELF-MIXING INTERFEROMETRY** Reza Atashkhooei[1], Santiago Royo[1], Francisco Javier Azcona[1], Usman Zabit[2] *{1}Universidad Politecnica de Catalunya, Spain; {2}Université de Toulouse, CNRS, LAAS, France*	**C1L-C4** **NOVEL SENSOR COMBINING IMPEDANCE SPECTROSCOPY AND SURFACE ACOUSTIC WAVES TO DETECT BLOOD COAGULATION TIME AND HEMATOCRIT VALUE** Glen Guhr[2], Raimund Br nig[2], Hagen Schmidt[2], Manfred Weihnacht[2], Siegmund Gehrisch[1], Gerlinde Siegert[1] *{1}Institute for Clinical Chemistry and Laboratory Medicine TU Dresden, Germany; {2}Leibniz Institute for Solid State and Materials Research Dresden, Germany*
10:00		
C1L-A5 **HIGH PERFORMANCE SURFACE PLASMON RESONANCE SENSOR BASED ON TWO DIMENSIONAL ULTRA-THIN METAL NANOSLIT ARRAYS** Ling Sieben-Xu, Peter Offermans, Greja Brom-Verheyden, Sywert Brongersma, Mercedes Crego-Calama *IMEC Netherlands / Holst Centre, Netherlands*	**C1L-B5** **FLOW PROFILE MEASUREMENT IN MICRO-CHANNELS USING CHANGES IN LASER JUNCTION VOLTAGE DUE TO SELF-MIXING EFFECT** Milan Nikolic[2], Yah Leng Lim[2], Stephen Wilson[2], Aleksandar Rakic[2], Lucie Campagnolo[1], Julien Perchoux[1], Thierry Bosch[1] *{1}Université de Toulouse, CNRS, LAAS, France; {2}University of Queensland, Australia*	**C1L-C5** **SMART CATHETER FLOW SENSOR FOR CONTINUOUS REGIONAL CEREBRAL BLOOD FLOW MONITORING** Chunyan Li[1], Pei-Ming Wu[1], Zhizhen Wu[3], Chong H. Ahn[3], Jed A. Hartings[3], Raj K. Narayan[2] *{1}Feinstein Institute for Medical Research, United States; {2} North Shore-LIJ Health System Foundation, United States; {3} University of Cincinnati, United States*
10:15		
C1L-A6 **SYNTHESIS AND CHARACTERIZATION OF PLANT CERAMICS DOPED TIN OXIDE FOR HUMIDITY SENSING APPLICATION** Udaya Aruldoss[1], John Kennedy Loudusamy[3], Judith Vijaya John[2], Umapathy M. J[1] *{1}Anna University, India; {2}Loyola Collegee, India; {3}VIT University India*	**C1L-B6** **A NEW THREE DEGREES-OF-FREEDOM MOTION SENSOR BASED ON LASER-SELF-MIXING WITH PIGTAILED SOURCES** Francesco De Lucia, Michela Di Vietro, Maurizio Dabbicco, Gaetano Scamarcio *Università degli studi di Bari Aldo Moro, Italy*	**C1L-C6** **CONTACTLESS LIQUID-LEVEL MEASUREMENT THROUGH OPAQUE CONTAINER USING MILLIMETER-WAVE SENSOR** Tatsuo Nakagawa, Akihiko Hyodo, Kenichi Osada, Hideaki Kurata, Shigeru Oho *Hitachi Ltd., Japan*

BREAK | 10:30- 11:00 | FOUNDATION BUILDING - ATRIUM

SPECIAL SESSION C1L-D: INTELLIGENT WEARABLE WIRELESS INERTIAL MEASUREMENT

Chairs:
Michael Walsh & Clan O'Mathuna, *Tyndall National Institute*

CHARLES PARSONS

SESSION C1L-E: MULTI-AXIS SENSORS

Chairs:
Maryam Ziaei-Moayyed, *Sandia National Labs*
Marco Grassi, *University of Pavia*

FB028

SESSION C1L-C: OPTICAL SENSORS & SYSTEMS I

Chairs:
Nan-Kuang Chen, *National United University*
Olga Conde, *Universidad de Cantabria*

FG42

9:00

C1L-D1
Invited: Wearable Wireless Sensing for Sports and Ubiquitous Interactivity
Michael Lapinski, Mark Feldmeier, Joseph Paradiso
Massachusetts Institute of Technology, United States

C1L-E1
A Microfabricated Platform for Three-Dimensional Microsystems
Grant McCallum, Rosa Lahiji, Mehran Meregany
Case Western Reserve University, United States

C1L-F1
Resonance-Based Optical Fiber Refractometers
Carlos Ruiz Zamarreño, Sergio Lopez, Miguel Hernaez, Ignacio Del Villar, Ignacio Raul Matias, Francisco Javier Arregui
Universidad Pública de Navarra, Spain

9:15

C1L-E2
Design and Fabrication of Electro-Thermally Activated Micro Gripper with Large Tip Opening and Holding Force
Jay Jamshid Khazaai, Hongwei Qu, Meir Shillor, Lorenzo Smith
Oakland University, United States

C1L-F2
Curved Tapered Optical Fibre Surface Pressure Sensor
Matthew Partridge, Renata Jarzebinska, Séamus Higson, Frank Davis, Stephen James, Ralph Tatam
Cranfield University, United Kingdom

9:30

C1L-D3
An Inertial Smart-Sensor Based on Silicon Nanowires for Wireless Sportive Activity Monitoring
Olivier Leman[2], El Mehdi Boujamaa[2], Wenceslas Rahajandraibe[2], Edith Kussener[2], Stephane Meillère[2], Hervé Barthélémy[2], Guillaume Jourdan[1], Patrice Rey[1]
{1}CEA-Lèti, France; {2}IM2NP - CNRS / Aix-Marseille University, France

C1L-E3
Multi-Axis Flexible Force Sensor for Tactile Display
Baekchul Kim, Seunghoon Shin, Yungkwan Lee, Jaedo Nam, Hyouk Ryeol Choi, Hyungpil Moon, Jachoon Koo
Sungkyunkwan University, Korea, South

C1L-F3
Simultaneous Measurement of Temperature and Strain Distribution Using Brillouin Scattering in Dispersion-Shifted Fibers
Aleksander Wosniok, Katerina Krebber
BAM Federal Institute for Materials Research and Testing, Germany

9:45

C1L-D4
Two Stage Kalman Filtering for Position Estimation Using Dual Inertial Measurement Units
Nagesh Yadav, Chris Bleakley
University College Dublin, Ireland

C1L-E4
Proposed Digital, Auto Ranging, Self Calibrating Inertial Sensor
Paul Swanson, Charles Tally, Richard Waters
SSC Pacific, United States

C1L-F4
Fiber Bragg Distributed Chemical Sensor
Arjen Boersma, Milan Saalmink, Timme Lucassen, Sjoukje Wiegersma, Rob Jansen, Rik Jansen, Lun Cheng
TNO, Netherlands

10:00

C1L-D5
Multi-Sensor Classification of Tennis Strokes
Damien Connaghan[2], Phillip Kelly[2], Noel E. O'Connor[2], Mark Gaffney[3], Michael Walsh[1], Cian O'Mathuna[1]
{1}Clarity Centre for Sensor Web Technologies / Tyndall National Institute, Ireland; {2}Dublin City University, Ireland; {3} Tyndall National Institute, Ireland

C1L-E5
A Physiological Camera Shake Model for Image Stabilization Systems
Fabien Gavant, Laurent Alacoque, Antoine Dupret, Dominique David
CEA-Léti, France

C1L-F5
Radiation Hard Humidity Sensors for High Energy Physics Applications Using Polymide-Coated Fiber Bragg Gratings Sensors
Gaia Berruti[4], Marco Consales[4], Antonello Cutolo[4], Andrea Cusano[4], Giovanni Breglio[5], Salvatore Buontempo[2], Paolo Petagna[1], Michele Giordano[3]
{1}European Organization for Nuclear Research, Switzerland; {2}Istituto Nazionale di Fisica Nucleare, Italy; {3}National Research Council, IMCB, Italy; {4}Università degli Studi del Sannio, Italy; {5}Università degli Studi di Napoli Federico II, Italy

10:15

C1L-D6
Capturing the Overarm Throw in Darts Employing Wireless Inertial Measurement
Michael Walsh[1], John Barton[3], Brendan O'Flynn[1], Cian O'Mathuna[1], Magdelena Tyndyk[2]
{1}Clarity Centre for Sensor Web Technologies / Tyndall National Institute, Ireland; {2}MEDIC Cork Institute of Technology, Ireland; {3}Tyndall National Institute, Ireland

C1L-E6
A User-Independent Sensor Gesture Interface for Embedded Device
Xiaoyan Dang[2], Wei Wang[2], Kevin Wang[2], Mingzhi Dong[1], Liang Yin[1]
{1}Beijing University of Posts and Telecommunications, China; {2}Intel Labs China, China

C1L-F6
Miniaturized Photonic Crystal Fiber Tip Sensor for Refractive Index Sensing
Dora Juan Juan Hu[1], Jun Long Lim[1], Yixin Wang[1], Perry Ping Shum[2]
*{1}A*STAR Institute of High Performance Computing, I2R, Singapore; {2}Nanyang Technological University, Singapore*

BREAK | 10:30- 11:00 | FOUNDATION BUILDING - ATRIUM

SESSION C2L-A: BIOMEDICAL MONITORS	SESSION C2L-B: INTEGRATED SENSORS	SESSION C2L-C: FLUID PROPERTY SENSORS
Chairs: Jin-Chern Chiou, *National Chiao Tung University*; Rosalind Wynne, *Villanova University*	Chairs: Michiel Pertijs, *TU Delft*; Sai-Weng Sin, *University of Macau*	Chairs: Qing-An Huang, *Southeast University-Nanjing*; Colin Fitzpatrick, *University of Limerick*
CONCERT HALL	**JEAN MONET**	**JOHN HOLLAND**
11:00		
C2L-A1 **SELF-POWERED WIRELESS URINARY INCONTINENCE SENSOR FOR DISPOSABLE DIAPERS** Ami Tanaka, Takahiro Yamanaka, Hirofumi Yoshioka, Kensuke Kobayashi, Takakuni Douseki *Ritsumeikan University, Japan*	**C2L-B1** **AN IMPLANTABLE HUMIDITY-TO-FREQUENCY SENSOR IN CMOS TECHNOLOGY** Dominik Cirmirakis, Andreas Demosthenous, Nooshin Saeidi, Anne Vanhoest, Nick Donaldson *University College London, United Kingdom*	**C2L-C1** **A VISCOSITY SENSOR UTILIZING AN ELECTROMAGNETICALLY ACTUATED OSCILLATING SPHERE** Stefan Clara, Hannes Antlinger, Bernhard Jakoby *Johannes Kepler Universitit, Austria*
11:15		
C2L-A2 **A POCKET-SIZED COLORIMETRIC URINE READER FOR TELEMEDICINE IN THE DEVELOPING COUNTRIES** Dae-Sik Lee[1], Won Ick Jang[1], Mun Yeon Jung[1], Byung Gu Jeon[3], Chunhwa Ihm[2] *{1}Electronics & Telecommunications Research Institute, Korea, South; {2}Eulji University Hospital, Korea, South; {3}Korea Advanced Institute of Science and Technology, Korea, South*	**C2L-B2** **CW METAL DETECTOR BASED ON AMR SENSOR ARRAY** Michal Janosek, Jan Vyhnanek, Pavel Ripka *Czech Technical University in Prague, Czech Rep.*	**C2L-C2** **DENSITY SENSITIVE DRIVING MODE OF A DOUBLE MEMBRANE VISCOMETER** Bernhard Weiss[1], Martin Heinisch[1], Bernhard Jakoby[1], Erwin K. Reichel[2] *{1}Johannes Kepler Universitit, Austria; {2}Katholieke Universiteit Leuven, Belgium*
11:30		
C2L-A3 **EMBEDDED MULTIPLEXED POLYMER OPTICAL FIBER SENSOR FOR ESOPHAGEAL MANOMETRY** Bram Van Hoe[3], Erwin Bosman[3], Jeroen Missinne[3], Geert Van Steenberge[3], Peter Van Daele[3], Wei Zhang[1], Ian Johnson[1], Kate Sugden[1], David J. Webb[1], Kyriacos Kalli[2] *{1}Aston University, United Kingdom; {2}Cyprus University of Technology, Cyprus; {3}Ghent University - IMEC, Belgium*	**C2L-B3** **A NOVEL APPROACH FOR ACHIEVING BULK SILICON MEMS ON CMOS SUBSTRATE BY AU-AU BONDING** Chun-Hua Cai, Ming Qin *Southeast University, China*	**C2L-C3** **INVESTIGATION OF FABRICATING A LINBO3 ULTRASONIC PHASED ARRAY TRANSDUCER OF MORE THAN 100 MHZ** Jinying Zhang[1], Weijiang Xu[3], Julien Carlier[3], Xinming Ji[1], Bertrand Nongaillard[3], Samuel Queste[2], Yiping Huang[1] *{1}ASIC and System State Key Lab, Fudan University, China; {2} FEMTO-ST Institute, Université de Franche-Comté, France; {3} Université de Valenciennes, France*
11:45		
C2L-A4 **AN INFORMATION SENSOR WITH IN-PIXEL-PROCESSING FOR GERIATRIC NURSING** Chin Yin[2], Chih-Cheng Hsieh[2], Wen-Hsu Chang[1], Ying-Zong Juang[1], Chin-Fong Chiu[1] *{1}National Chip Implementation Center, Taiwan; {2}National Tsing Hua University, Taiwan*	**C2L-B4** **A WIRELESS PASSIVE SENSOR FOR PH MONITORING EMPLOYING TEMPERATURE COMPENSATION** Sharmistha Bhadra, Greg Bridges, Douglas Thomson, Michael Freund *University of Manitoba, Canada*	**C2L-C4** **INFLUENCE OF NON-NEWTONIAN FLUID DYNAMICS ON SAW INDUCED ACOUSTIC STREAMING IN VIEW OF BIOLOGICAL APPLICATIONS** Subramanian Sankaranarayanan[1], Reetu Singh[2], Venkat Bhethanabotla[2] *{1}Argonne National Laboratory, United States; {2}University of South Florida, United States*
12:00		
C2L-A5 **MEDICAL DIAGNOSTIC-BASED SENSOR SELECTION** James Bradley Wendt, Miodrag Potkonjak *University of California, Los Angeles, United States*	**C2L-B5** **SILICON MULTI-STAGE CURRENT-MODE PIEZORESISTIVE PRESSURE SENSOR WITH ANALOG TEMPERATURE COMPENSATION** Guilherme Coraucci[3], Fabiano Fruett[2], Saulo Finco[1] *{1}Center for Information and Technology Renato Archer, Brazil; {2}Universidade Estadual de Campinas, Brazil; {3}University of Campinas, Brazil*	**C2L-C5** **A MODIFIED 3D FAST MARCHING SIMULATION FOR THICK PHOTORESISTS LITHOGRAPHY** Li-Li Shi[2], Zai-Fa Zhou[2], Wei-Hua Li[2], Bei Chen[1], Xiao-Qian Li[1], Qing-An Huang[2] *{1}Key Laboratory of MEMS of Ministry of Education, Southeast University, China; {2}Southeast University, China*
12:15		
	C2L-B6 **A MICRO-POWER HIGH-RESOLUTION SIGMA-DELTA CMOS TEMPERATURE SENSOR** Souha Hacine, Tarik El Khach, Frederick Mailly, Laurent Latorre, Pascal Nouet *LIRMM, France*	**C2L-C6** **DETERMINING LIQUID PROPERTIES BY EXTRAORDINARY ACOUSTIC TRANSMISSION THROUGH PHONONIC CRYSTALS** Ralf Lucklum[2], Mikhail Zubtsov[2], Manzhu Ke[4], Alexandr Oseev[2], Ulrike Hempel[1], Bernd Henning[3] *{1}Institute for Automation and Communication, Germany; {2}Otto-von-Guericke-Universitit, Germany; {3}University of Paderborn, Germany; {4}Wuhan University, China*

LUNCH | 12:30- 13:30 | MAIN BUILDING - EDEN, RED RAISON RESTAURANT

SPECIAL SESSION: SENSOR TECHNOLOGIES FOR ENVIRONMENTALMONITORING OF CLEAN & SECURE WATER SUPPLIES Chairs: Ashok Vaseashta, *Norwich University* Sameer Sonkusale, *Tufts University*	SPECIAL SESSION: ORGANIC BIOSENSORS Chairs: Giuseppe Scarpa, *Technische Universität München* José Manuel Baptista, *Madeira University*	SESSION C2L-F OPTICAL SENSORS & SYSTEMS II Chairs: Nan-Kuang Chen, *National United University* Andrea Cusano, *Università degli Studi del Sannio*
CHARLES PARSONS	**FB028**	**FG042**
11:00		
C2L-D1 **INVITED: LOW COST HYDROCARBON SPILLAGE SENSOR FOR THE MARINE ENVIRONMENT WITH INTERFACING TO A MOTE PLATFORM** Eoin O'Connell, Sinead O'Keeffe, Tom Newe, Elfed Lewis *University of Limerick, Ireland*	**C2L-E1** **INVITED: CONDUCTING POLYMER TRANSISTORS FOR BIOSENSOR APPLICATIONS** George Malliaras *Ecole des Mines de St. Etienne, France*	**C2L-F1** **HARMONIC ANALYSIS WITH A MEMS-BASED RAMAN SPECTROMETER** Timothy Russin[1], Maxwell Kerber[1], Alicia Russin[1], Andrew Wang[1], Richard Waters[2] *{1}Space and Naval Warfare Systems Center - Pacific, United States; {2}SSC Pacific, United States*
11:15		
	C2L-E2 **A PRELIMINARY STUDY OF VAPOUR-PHASE POLYMERIZED POLY(3,4-ETHYLENEDIOXYTHIOPHENE) AS A TRANSPARENT NEURAL ELECTRODE** Alasdair Campbell[1], Sarah-Emily Mutch[1], Jorge Costas Dantas Faria[1], Xuhua Wang[1], Nikolay Vaklev[1], Nikolai Vysokov[1], Patrick Degenaar[2], Donal Bradley[1] *{1}Imperial College London, United Kingdom; {2}Newcastle University, United Kingdom*	**C2L-F2** **ENABLING MID-IR SPECTROSCOPIC SENSING: MEMS-BASED HIGH-SPEED FT-IR COMPACT SPECTROMETERS** Andreas Kenda[2], Martin Kraft[2], Thilo Sandner[3], Stephan L ttjohann[1], Arno Simon[1] *{1}Bruker Optik GmbH, Germany; {2}CTR Carinthian Tech Research AG, Austria; {3}Fraunhofer Institute for Photonic Microsystems, Germany*
11:30		
C2L-D3 **ENERGY EFFICIENT AIR QUALITY MONITORING SYSTEM** Anuj Kumar, I P Singh, S K Sud *Indian Institute of Technology Delhi, India*	**C2L-E3** **INNOVATIVE ELECTRONIC BIOSENSORS BASED ON ORGANIC THIN FILM TRANSISTORS** Maria Daniela Angione[3], Daniel Fine[5], Serafina Cotrone[3], Maria Magliulo[3], Nicola Cioffi[3], Gerardo Palazzo[3], Gaetano Scamarcio[1], Antonia Mallardi[2], Ananth Dodabalapur[4], Luigia Sabbatini[3], Luisa Torsi[3] *{1}CNR-INFM LIT3, Italy; {2}National Research Council, IPCF, Italy; {3}Università degli studi di Bari Aldo Moro, Italy; {4} University of Texas at Austin, United States; {5}University of Texas Health Science Center at Houston, United States*	**C2L-F3** **SENSING SYSTEM FOR QUANTITATIVE ANALYSIS OF METAL PARTICLES USING LASER-INDUCED BREAKDOWN SPECTROSCOPY** Satoshi Ikezawa, Muneaki Wakamatsu, Toshitsugu Ueda *Waseda University, Japan*
11:45		
C2L-D4 **SENSORY PLATFORM ARCHITECTURE BASED ON CYBERPHYSICAL SYSTEMS FOR CLIMATE BEHAVIORS DETECTING IN URBAN FOREST ENVIRONMENTS** Otavio Chase, Jose Felipe Almeida, Marcos Sampaio, Jorge Roberto Brito-De-Souza *Federal Rural University of Amazon, Brazil*	**C2L-E4** **LOW-COST SOLUTION-PROCESSABLE ORGANIC THIN-FILM TRANSISTORS FOR (BIO)SENSING APPLICATIONS** Giuseppe Scarpa[2], Anna-Lena Idzko[1], Alexandra M nzer[2], Stefan Thalhammer[1] *{1}Helmholtz Zentrum München, Germany; {2}Technische Universität München, Germany*	**C2L-F4** **CMOS PHOTODIODES FOR NARROW LINEWIDTH APPLICATIONS** Frank Hochschulz, Stefan Dreiner, Holger Vogt, Uwe Paschen *Fraunhofer Institute for Microelectronic Circuits and Systems, Germany*
12:00		
C2L-D5 **ELECTROMAGNETIC (EM) WAVE PROPAGATION FOR THE DEVELOPMENT OF AN UNDERWATER WIRELESS SENSOR NETWORK (WSN)** Ahmed Abdallah Abdou, Andy Shaw, Alex Mason, Ahmed Al-Shamma'a, Jeff Cullen, Stephen Wylie *Liverpool John Moores University, United Kingdom*	**C2L-E5** **SCALLOPED ELECTRODES FOR HIGHLY SENSITIVE ELECTRICAL MEASUREMENTS** Patricia Vazquez, Maria Dimaki, Winnie Edith Svendsen *DTU Nanotech, Denmark*	**C2L-F5** **STREAK-MODE OPTICAL SENSOR IN STANDARD BICMOS TECHNOLOGY** Martin Zlatanski[1], Wilfried Uhring[2] *{1}ABB Switzerland Ltd., Switzerland; {2}University of Strasbourg and CNRS, France*
12:15		
C2L-D6 **CHEM.-BIO CONTAMINATION DETECTION SYSTEM FOR WATER SECURITY SITUATIONAL AWARENESS** Brian Nordmann *U.S. Dept. of State, United States*		**C2L-F6** **CMOS-COMPATIBLE GATE-ALL-AROUND SILICON NANOWIRE DETECTOR** Maryam Ziaei-Moayyed, Murat Okandan *Sandia National Laboratories, United States*

LUNCH | 12:30- 13:30 | MAIN BUILDING - EDEN, RED RAISON RESTAURANT

POSTER SESSION 3 | 14:00 - 15:45 | EGO 10
Chairs : Changyuan Yu, ***National University of Singapore***
Walter Lang, ***Universität Bremen***

SPECIAL SESSION: FROM SENSOR TO WEB II

C3P-G1 **DOPPELLAB: TOOLS FOR EXPLORING AND HARNESSING MULTIMODAL SENSOR NETWORK DATA**
Gershon Dublon, Laurel Pardue, Brian Mayton, Noah Swartz, Nicholas Joliat, Patrick Hurst, Joseph Paradiso
Massachusetts Institute of Technology, United States

C3P-G2 **MONITORING PHYSICAL SPACE USING MOBILE PHONES FOR INFERRING SOCIAL AND CONTEXTUAL INTERACTIONS**
Athanasios Antoniou, Evangelos Theodoridis, Ioannis Chatzigiannakis, Georgios Mylonas
Computer Technology Institute and Press, Greece

C3P-G3 **WEB-BASED MONITORING OF YEAR-LENGTH DEPLOYMENTS OF AUTONOMOUS GAS SENSING PLATFORMS ON LANDFILL SITES**
Fiachra Collins, Dylan Orpen, Cormac Fay, Colum Foley, Alan Smeaton, Dermot Diamond
Dublin City University, Ireland

C3P-G4 **INTEGRATION OF SMART HOUSE SENSORS INTO A FULLY NETWORKED (WEB) ENVIRONMENT**
Daniele Trinchero[1], Riccardo Stefanelli[1], Davide Brunazzi[1], A. Casalegno[2], M. Durando[2], A. Galardini[2]
{1}Politecnico di Torino, Italy; {2}Torino Piemonte Internet Exchange, Italy

C3P-G5 **ENABLING GLOBALLY UNIQUE SENSOR ID WITH DUAL-INTERFACE RF TAG**
Jin Mitsugi[1], Hisakazu Hada[2], Tatsuya Inaba[2], Katsumasa Ihara[3], Goushi Kojima[3], Tomonori Kondo[3]
{1}Auto-ID Laboratory / Keio University, Japan; {2}Keio University, Japan; {3}Toppan Printing Co., LTD, Japan

SPECIAL SESSION: ACOUSTIC SENSORS FOR EXTREME ENVIRONMENTS II

C3P-H1 **HIGH TEMPERATURE PT/LGS SAW SENSOR: FROM THEORY TO EXPERIMENT**
Thierry Aubert[1], Frederic Sarry[1], Omar Elmazria[1], Badreddine Assouar[1], Laurent Bouvot[2], Pascal Nicolay[2]
{1}Institut Jean Lamour, CNRS-Nancy-Université, France; {2}Institut Jean Lamour, Nancy-Université, France

C3P-H2 **ACOUSTIC DAMPING IN RESONATORS OF LANGASITE AND LANGATATE AT ELEVATED TEMPERATURES**
Ward Johnson[2], Sudook Kim[2], Satoshi Uda[3], Christine Rivenbark[1]
{1}Krystal Engineering LLC, United States; {2}National Institute of Standards and Technology, United States; {3}Tohoku University, Japan

SPECIAL SESSION: SELF-MIXING LASER SENSORS II

C3P-J1 **INFLUENCE OF AMBIENT TEMPERATURE ON THE PERFORMANCE OF VCSEL BASED SELF-MIXING SENSORS: FLOW MEASUREMENTS**
Ranveer Matharu[2], Julien Perchoux[1], Aleksandar Rakic[2]
{1}Université de Toulouse, CNRS, LAAS, France; {2}University of Queensland, Australia

SPECIAL SESSION: AMBIENT INTELLIGENCE TECHNOLOGIES AND APPLICATIONS

C3P-K1 **DECISION SUPPORT IN AMI SPORT ENVIRONMENTS**
Javier Vales-Alonso, Pablo López-Matencio, Juan Alcaraz, Joan García-Haro
Universidad Politécnica de Cartagena, Spain

PHENOMENA, MODELING & EVALUATION

C3P-L1 **SPECTROSCOPIC STUDY AND ANALYSIS OF THE IMPACT OF ALCOHOL INTAKE ON BIO-IMPEDANCE OF THE HUMAN BODY**
Yasuhisa Omura, Kazuma Kojima
Kansai University, Japan

C3P-L3 **SIZE OPTIMIZATION FOR HIGH FREQUENCY QUARTZ RESONATOR USING FINITE ELEMENT VIBRATION ANALYSIS**
Jing Ji, Hiroshi Oigawa, Hsin Hui Chen, Meng Zhao, Toshitsugu Ueda
Waseda University, Japan

C3P-L4 **PARALLEL DATA PROCESSING FOR SPARSE DATA TOMOGRAPHY SENSORS**
Jose Cantoral Ceballos, Krikor Ozanyan
University of Manchester, United Kingdom

C3P-L5 **USE OF ELECTRO-MAGNETIC ANALYSIS TO MONITOR ACTIVITY OF A DIGITAL CIRCUIT IN A NON-INTRUSIVE WAY**
Sébastien Thomas[3], David Faura[2], Guillaume Duc[1], Jean-Luc Danger[1], Didier Regis[4], Marc Gatti[4]
{1}Telecom ParisTech, France; {2}Thales Avionics, France; {3}Thales Avionics & Institut Télécom / Télécom ParisTech, France; {4}Thales Systémes Aéroportés, France

C3P-L6 **THE MODELING OF THE ALIGNMENT SENSITIVITY OF A SAWR STRAIN SENSOR TO APPLIED STRAIN**
Brian Donohoe, Brian McCormack, Dermot Geraghty, Garret O'Donnell
Trinity College Dublin, Irelan

C3P-L7 **THEORETICAL MODELING OF THERMAL EXPANSION OF CRYSTALLINE SILICON BY USING THE STRAIN PHONON SPECTRA**
Wei-Wei Zhang, Shuang-Ying Lei, Hong Yu, Qing-An Huang
Southeast University, China

C3P-L8 **CHARACTERIZATION OF IRON OXIDE-GOLD CORE-SHELL MULTIFUNCTIONAL NANOPARTICLES IN BIOMEDICAL IMAGING**
Luca Menichetti[2], Daniela Arosio[3], Daniele Demarchi[2], Luigi Paduano[5], Alessandra Flori[4], Francesco Conversano[2], Sergio Casciaro[2], Vincenzo Positano[1], Leonardo Manzoni[3]
{1}CNR-Regione Toscana Fondazione G.Monasterio, Italy; {2}National Research Council, IFC, Italy; {3}National Research Council, ISTM, Italy; {4}Scuola Superiore Sant'Anna, Italy; {5}Università degli Studi di Napoli Federico II, Italy

C3P-L9 **A METHODOLOGY FOR RELIABILITY PREDICTION: THERMAL AND RF MEMS CASE OF STUDIES**
Mohamed Matmat, Hamza Boukabache, Antoine Marty, Daniel Esteve, Christophe Escriba, Jean-Yves Fourniols
Université de Toulouse, CNRS, LAAS, France

C3P-L10 **SIMULATION OF A MEMS CORIOLIS GYROSCOPE WITH CLOSED-LOOP CONTROL FOR ARBITRARY INERTIAL FORCE, ANGULAR RATE, AND QUADRATURE INPUTS**
Charles Tally, Richard Waters, Paul Swanson
SSC Pacific, United States

C3P-L11 **ALLAN VARIANCE ANALYSIS ON MEMS TILT SENSORS WITH DIFFERENT PRINCIPLES OF OPERATION**
Zdenek Havranek, Stanislav Klusacek, Petr Benes, Martin Vagner
Brno University of Technology, Czech Rep.

C3P-L12 **CROSSTALK EFFECTS OF AVALANCHE CMOS PHOTODIODES**
Meng-Lin Hsia, Zhe Ming Liu, Chieh Ning Chan, Oscal T.-C. Chen
National Chung Cheng University, Taiwan

PHENOMENA, MODELING & EVALUATION

C3P-L13 **APPLICATION OF A 2-D ANISOTROPIC ETCHING SIMULATOR ON PERFORATED ETCHING OF QUARTZ WAFER**
Meng Zhao, Hiroshi Oigawa, Jing Ji, Toshitsugu Ueda
Waseda University, Japan

C3P-L14 **A NOVEL METHOD FOR EVALUATING TRIAXIAL STRAIN GAGES USED IN PRINTED CIRCUIT BOARD ASSEMBLIES (PCBA) STRAIN MONITORING**
Hongbin Shi, Satoshi Ikezawa, Toshitsugu Ueda
Waseda University, Japan

C3P-L15 **A NOVEL VELOCITY SENSOR BASED ON ELECTRO MAGNETIC INDUCTION**
Haijun Han[1], Yanjie Liu[1], Tao Liu[2], Yoshio Inoue[2], Kyoko Shibata[2]
{1}Harbin Institute of Technology, China; {2}Kochi University of Technology, Japan

C3P-L16 **MULTI-SCALE MODELING TO STUDY MECHANISM OF BIOFOULING ELIMINATION IN A SURFACE ACOUSTIC WAVE BIOSENSOR**
Subramanian Sankaranarayanan[1], Reetu Singh[2], Venkat Bhethanabotla[2]
{1}Argonne National Laboratory, United States; {2}University of South Florida, United States

C3P-L36 **LUMINESCENT NANOPARTICLE-BASED INTRACELLULAR SENSING**
Barbara Korzeniowska, Anja Schulz, Dorota Wencel, Colette McDonagh
Dublin City University, Ireland

APPLICATIONS

C3P-L36 **LUMINESCENT NANOPARTICLE-BASED INTRACELLULAR SENSING**
Barbara Korzeniowska, Anja Schulz, Dorota Wencel, Colette McDonagh
Dublin City University, Ireland

C3P-M1 **AN EXTENSIBLE FRAMEWORK FOR THE MANAGEMENT OF REMOTE SENSOR DATA**
Michael McGrath, John Delaney
Intel Ireland Ltd, Ireland

C3P-M2 **ADVANCED THERMAL SENSORS FOR PRECISION AC VOLTAGE METROLOGY**
Thomas Lipe, Joseph Kinard, Donald Novotny, June Sims
National Institute of Standards and Technology, United States

C3P-M3 **EMBEDDED PATTERN RECOGNITION SYSTEMSFOR LIQUIDS CLASSIFICATION: A COMPARISON STUDY**
Luis Gil-Sánchez[1], Eduardo Garcia-Breijo[1], José Garrigues[1], Nicolás Laguarda[1], Rafael Masot[1], Javier Ibáñez[1], John Atkinson[2], Monika Glanc[2]
{1}Universidad Politécnica de Valencia, Spain; {2}University of Southampton, United Kingdom

C3P-M4 **DESIGN AND DEVELOPMENT OF MOBILE CARDIAC MARKER MONITORING SYSTEM FOR PREVENTION OF ACUTE CARDIOVASCULAR DISEASE**
Jihwan Lee, Jaehyo Jung, Youn Tae Kim
Chosun University, Korea, South

C3P-M5 **OMNI-DIRECTIONAL RAIN SENSOR UTILIZING SCATTE RED LIGHT REFLECTION BY WATER PARTICLE ON AUTOMOTIVE WINDSHIELD GLASS**
Kyoo Nam Choi
University of Incheon, Korea, South

C3P-M6 **FABRICATION OF BECU MODULE PROBE ARRAY USING HEATING AND FUSING CURRENTS**
Dongin Lee[3], Sangwon Kim[3], Daeyoung Kong[3], Chanseob Cho[3], Bonghwan Kim[1], Byeungleul Lee[2], Jonghyun Lee[3]
{1}Catholic University of Daegu, Korea, South; {2}Korea University of Technology and Education, Korea, South; {3}Kyungpook National University, Korea, South

C3P-M7 **APPLICATION OF CONTINUOUS WAVELET TRANSFORMATION TO MONITOR DIABETIC NEUROPATHY AND VASOMOTION REACTION PATTERNS**
Jens Kraitl, Ulrich Timm, Hartmut Ewald
Universität Rostock, Germany

C3P-M8 **IMPACT OF FUNCTIONAL CROSS-LINKER ON RECOGNITION PROPERTIES OF A BISPHENOL-A IMPRINTED POLYMER FILM FOR COATING A QUARTZ CRYSTAL MICROBALANCE**
Maria Concepcion Cela-Pérez, Jose Manuel López-Vilariño, Maria Victoria González-Rodráguez
Universidade da Coruña, Spain

C3P-M9 **DEVELOPMENT OF NON-INVASIVE BIOCHEMICAL DEVICE FOR MONITORING THE LITHIUM LEVEL FROM SALIVA FOR BIPOLAR DISORDER PATIENTS**
Jung Ho Kim, Dermot Diamond, King Tong Lau
Dublin City University, Ireland

C3P-M10 **BIOCOMPATIBLE POLYMERIC WIRELESS PRESSURE SENSOR FOR INTRAOCULAR PRESSURE SENSING APPLICATION**
Ning Xue[2], Jeong-Bong Lee[2], Steven Foland[2], Sung Pil Chang[1]
{1}Inha University, Korea, South; {2}University of Texas at Dallas, United States

C3P-M11 **ACCURATE SENSOR FOR LANI5 HYDROGEN STORAGE DEVICES**
Denis Marcotte, Frédéric Domingue
Universitédu Québec à Trois-Rivières, Canada

C3P-M12 **NON-INVASIVE LOW COST METHOD FOR LINEAR AND ANGULAR ACCELERATIONS MEASUREMENT IN BIPED LOCOMOTION MECHANISMS**
Viacheslav Khomenko[3], Olivier Bruneau[3], Fethi Ben Ouezdou[3], Patrick Henaff[1], Artem Melnyk[1], Volodymyr Borysenko[2]
{1}Cergy-Pontoise University, France; {2}Donetsk National Technical University, Ukraine; {3}Versailles Saint Quentin-en-Yvelines University, France

C3P-M13 **A DIRECTIONAL GAMMA RAY DETECTOR USING A SINGLE CHIP COMPUTATIONAL SENSOR**
Nathan Schemm, Sina Balkir, Michael Hoffman, Mark Bauer
University of Nebraska-Lincoln, United States

C3P-M14 **STUDY AND EVALUATION OF A SINGLE DIFFERENTIAL SENSOR DESIGN BASED ON ELECTRO-TEXTILE ELECTRODES FOR ECG BIOMETRICS APPLICATIONS**
Hugo Silva[1], André Lourenço[2], Renato Lourenço[4], Paulo Leite[4], David Coutinho[3], Ana Fred[1]
{1}Instituto de Telecomunicações, Portugal; {2}Instituto de Telecomunicações, DEETC, ISEL-IPL, Portugal; {3}ISEL-IPL, CC, Portugal; {4}ISEL-IPL, DEECT, Portugal

C3P-M15 **A MAGNETOSTRICTIVE/PIEZOELECTRIC LAMINATE TRANSDUCER BASED VIBRATION ENERGY HARVESTER WITH RESONANCE FREQUENCY TUNABILITY**
Ming Li, Yumei Wen, Ping Li, Jin Yang
Chongqing University, China

C3P-M16 **A FEASIBILITY STUDY OF THE OPTOACOUSTIC IMAGING OF MICROCALCIFICATION FOR EARLY BREAST CANCER DETECTION**
Te-I Chiu[1], Tsai-Chu Hsiao[1], Shih-Bin Luo[1], Wanting Tien[1], Yao-You Cheng[2], Meng-Lin Li[2]
{1}Industrial Technology Research Institute, Taiwan; {2}National Tsing Hua University, Taiwan

APPLICATIONS

C3P-M17 **AUTOMATED INSPECTION OF MOLTEN METAL USING MACHINE LEARNING**
Olivier Steiger[1], Michael Kukulski[2]
{1}ABB Switzerland Inc., Switzerland; {2}Swiss Federal Institue of Technology Z rich ETH, Switzerland

C3P-M18 **CLASSIFICATION OF HONEYS OF DIFFERENT FLORAL ORIGINS BY ARTIFICIAL NEURAL NETWORKS**
Luis Gil-Sànchez, Eduardo Garcia-Breijo, José Garrigues, Miguel Alcañiz, Isabel Escriche, Melinda Kadar
Universidad Politécnica de Valencia, Spain

C3P-M19 **3D BIOIMAGING SENSOR OF BREAST CANCER CELL USING RARE-EARTH-DOPED CERAMIC NANOPHOSPHORS AND NEAR-INFRARED**
Ryosuke Osaki, Ming Ding, Hiroshi Hyodo, Kohei Soga, Hiroshi Takemura, Hiroshi Mizoguchi
Tokyo University of Science, Japan

C3P-M20 **NON-INVASIVE HUMAN BREATH SENSOR**
Roopa G[1], K Rajanna[1], M.M Nayak[2]
{1}Indian Institute of Science, India; {2}LVPO,ISRO, India

C3P-M21 **ENHANCEMENT OF PULSE CONTOUR ANALYSIS IN THE PULMONARY ARTERY BY USE OF HEART SOUNDS**
Jens Kirchner, André van Ooyen, Sergey Ershov, Olaf Skerl
BIOTRONIK SE & Co. KG, Germany

C3P-M22 **VISIBLE AND INFRARED OPTICAL PROBES FOR HEMODYNAMIC PARAMETERS ASSESSMENT**
Tània Pereira[2], Tatiana Oliveira[2], Manuel Cabeleira[2], Vânia Almeida[2], Elisabeth Borges[2], João Cardoso[2], Carlos Correia[2], Helena Pereira[1]
{1}ISA- Intelligent Sensing Anywhere, Portugal; {2}University of Coimbra, Portugal

C3P-M23 **AUTOMATIC INFRARED BASED TEMPERATURE MEASURING SYSTEM FOR HEALTH MONITORING IN VETERINARY APPLICATIONS**
Tom Wirthgen[1], Stephan Zipser[1], Ulrike Franze[2], Steffi Geidel[2], Georg Lempe[3]
{1}Fraunhofer Institute for Transportation and Infrastructure, Germany; {2} University of Applied Sciences Dresden, Germany; {3}University of Applied Sciences Karlsruhe, Germany

C3P-M24 **A QOS ENABLED VISUAL SENSOR-SYSTEM APPLIED TO THE PROBLEM OF LOCALIZING MOBILE PLATFORMS IN INDOOR ENVIRONMENTS**
Christoph Walter, Erik Schulenburg, Maik Poggendorf, Norbert Elkmann
Fraunhofer Institute for Factory Operation and Automation, Germany

C3P-M25 **A PROGRAMMABLE PLUG&PLAY INTERFACE FOR WSN APPLICATIONS**
Sergio D. Vera, Alberto Bayo, Nicolàs Medrano, Belén Calvo, Santiago Celma
Universidad de Zaragoza, Spain

C3P-M26 **A HANDHELD BETA+ PROBE FOR INTRA OPERATIVE DETECTION OF RADIOTRACERS**
Christian Mester[2], Claudio Bruschini[3], Patricia Magro[2], Nicolas Demartines[1], Vincent Dunet[1], Eugene Grigoriev[5], Anatoli Konoplyannikov[5], Vadim Talanov[5], Maurice Matter[1], John Prior[1], Edoardo Charbon[4]
{1}Centre Hospitalier Universitaire Vaudois, Switzerland; {2} cole Polytechnique Fédérale de Lausanne, Switzerland; {3} École Polytechnique Fédérale de Lausanne & Centre Hospitalier Universitaire Vaudois, Switzerland; {4} cole Polytechnique Fédérale de Lausanne & Delft University of Technology, Switzerland; {5}Forimtech, Switzerland

C3P-M27 **VEHICLE STATE ESTIMATION USING GPS/IMU INTEGRATION**
Yuquan Wang[1], Jan Mangnus[1], Dragan Kostic[1], Henk Nijmeijer[1], Sven Jansen[2]
{1}Eindhoven University of Technology, Netherlands; {2}Netherlands Organisation of Applied Scientific Research TNO, Netherlands

C3P-M28 **MILLIMETER SIZE PATCH BEHAVIOR OF GECKO-INSPIRED REVERSIBLE ADHESIVE**
John Tamelier, Sathya Chary, Kimberly Turner, Jing Yu, Saurabh Das, Jacob Israelachvili
University of California, Santa Barbara, United States

C3P-M29 **SENSING MILLIMETER-SCALE DYNAMICS IN CORTICAL SURFACE POTENTIALS FOR NEURAL PROSTHETICS**
Spencer Kellis, Bradley Greger, Sara Hanrahan, Paul House, Richard Brown
University of Utah, United States

C3P-M30 **DEVELOPMENT OF PROBES FOR COCHLEAR IMPLANTS**
Nishant Lawand[1], P. J. French[1], Jeroen Briaire[2], Johan Frijns[2]
{1}Delft University of Technology, Netherlands; {2}Leiden University Medical Center, Netherlands

C3P-M31 **A SAW PASSIVE WIRELESS SENSOR SYSTEM FOR MONITORING TEMPERATURE OF AN ELECTRIC CORD CONNECTOR AT LONG DISTANCE**
Ping Li, Hua Xie, Yumei Wen, Chuan Wang, Shiyuan Huang, Zhiwei Ren, Junjie He, Dang Lu
Chongqing University, China

C3P-M32 **INERTIAL SENSOR ORIENTATION FOR CRICKET BOWLING MONITORING**
Andrew Wixted[1], Daniel James[1], Marc Portus[2]
{1}Griffith University, Australia; {2}Praxis Sport Science Pty Ltd, Australia

C3P-M33 **OPTICAL MEASUREMENTS OF VIBRATION OF MEDIUM VOLTAGE TRANSFORMERS**
Letizia De Maria, D. Bartalesi, G. Pirovano, P. Serragli
RSE SpA, Italy

C3P-M34 **A SELF-POWERED AC CURRENT SENSOR EMPLOYING MAGNETOSTRICTIVE/ PIEZOELECTRIC CYLINDERICAL COMPOSITE**
Jitao Zhang, Ping Li, Yumei Wen, Aichao Yang
Chongqing University, China

C3P-M35 **SELECTIVE GROWTH OF MWCNT ON PATTERNED TUNGSTEN AT ROOM TEMPERATURE USING OXYGEN PLASMA AND PHOTO-RESIST**
Faisal Chowdhury, Karumbaiah Chappanda, Massood Tabib-Azar
University of Utah, United States

C3P-M36 **FRAME BY FRAME WAVELET DECOMPOSITION OF ELECTRICAL CAPACITANCE VALUES FOR REAL TIME TOMOMETRIC APPLICATIONS**
Ru Yan[1], Saba Mylvaganam[2]
{1}Telemark University College, Norway; {2}Telemark University College & Telemark Technological R&D Institute, Norway

C3P-M37 **A LOW-POWER 12-BIT CAPACITANCE-TO DIGITAL CONVERTER FOR CAPACITIVE MEMS PRESSURE SENSOR**
Sagnik Kar, Walter Leon-Salas
University of Missouri-Kansas City, United States

C3P-M38 **INTEGRATED MICROSYSTEM WITH HUMIDITY, TEMPERATURE AND LIGHT SENSORS FOR MONITORING THE PRESERVATION CONDITIONS OF FOOD**
Davide Cartasegna[1], Fabrizio Conso[1], Achille Donida[1], Marco Grassi[1], Luca Picolli[1], Gabriele Rescio[1], Piero Malcovati[1], Giuseppe Perretti[2], Gian Franco Regnicoli[2]
{1}Università degli Studi di Pavia, Italy; {2}Università degli Studi di Perugia, Italy

C3P-M39 **A SELF-POWERED HIGH SENSITIVE SENSOR FOR AC ELECTRIC CURRENT**
Wei He, Ping Li, Yumei Wen, Caijiang Lu
Chongqing University, China

C3P-M40 **A 3V SINGLE SUPPLY LIA FOR PORTABLE SENSING SYSTEMS**
Javier Aguirre, Nicolàs Medrano, Belén Calvo, Santiago Celma
Universidad de Zaragoza, Spain

APPLICATIONS

C3P-M41 **A FREQUENCY DOMAIN BURST DETECTION TECHNIQUE FOR WATER DISTRIBUTION SYSTEMS**
Thaw Tar Thein Zan[2], Kai-Juan Wong[2], Hock Beng Lim[2], Andrew J. Whittle[1]
{1}Massachusetts Institute of Technology, United States; {2} Nanyang Technological University, Singapore

C3P-M42 **NEGATIVE-DIELECTROPHORESIS SEPARATION MODULES BASED HIGH THROUGHPUT AND HIGH EFFICIENT CELL SORTING PLATFORM FOR LEUKEMIA CELL**
Junghun Lee[1], Youngwoong Kim[1], Minchurl Kim[1], Byungkyu Kim[1], Ji Yoon Kang[2]
{1}Korea Aerospace University, Korea, South; {2}Korea Institute of Science and Technology, Korea, South

C3P-M43 **A PORTABLE SENSING SYSTEM FOR WATER QUALITY MONITORING**
Karen Twomey[1], Meyrick Stephens[1], Greg Jasionek[2], Dimtri Papkovsky[2], Vladimir Ogurtsov[1]
{1}Tyndall National Institute, Ireland; {2}University College Cork, Ireland

C3P-M44 **BENEFITS OF A HYPERSPECTRAL MICROWAVE SENSOR**
Sid Ahmed Boukabara[2], Kevin Garrett[1]
{1}IMSG Inc., United States; {2}NOAA/NESDIS, United States

C3P-M45 **TIME DELAY ESTIMATION FOR ACOUSTIC SOURCE LOCATION BY MEANS OF SHORT-TIME CROSS-CORRELATION**
Alain Le Duff[1], Seif Eddine Hamdi[1], Guy Plantier[1], Bertrand Lascoup[2]
{1}ESEO, France; {2}ESTACA, France

C3P-M46 **SENSOR ARRAY FOR PV SHADING MEASUREMENTS**
Carlos Barreiro, Ari Bross, John Schmalzel, Peter Jansson
Rowan University, United States

C3P-M47 **EMBEDDED PROCESS FOR FLEXIBLE CONDUCTIVE ELECTRODES FOR APPLICATIONS IN TISSUE ELECTRICAL IMPEDANCE SCANNING (EIS)**
Daehan Chung[3], Ajit Khosla[3], Sam Seyfollahi[3], Bonnie Gray[3], Ash Parameswaran[3], Ramani Ramaseshan[1], Kirpal Kohli[2]
{1}BC Cancer Agency-Abbotsford Centre, Canada; {2}Fraser Valley Cancer Centre, Canada; {3}Simon Fraser University, Canada

C3P-M49 **PRECISION NAVIGATION SENSORS FACILITATE FULL AUTO PILOT CONTROL OF SMART ROV FOR OCEAN ENERGY APPLICATIONS**
Daniel Toal, Edin Omerdic, Gerard Dooly
University of Limerick, Ireland

C3P-M50 **MULTI-CYCLE 0.35-UM CMOS INTEGRATED ELECTRONIC INTERFACE CIRCUIT FOR ENERGY HARVESTING SYSTEMS**
Enrico Dallago, Alberto Danioni, Marco Grassi, Piero Malcovati, Marco Marchesi, Giuseppe Venchi
University of Pavia, Italy

C3P-M51 **A METHOD OF MOTHER WAVELET FUNCTION LEARNING FOR DWT-BASED ANALYSIS USING EEG SIGNALS**
Won-Seok Kang, Kookrae Cho, Seung-Hyun Lee
Daegu Gyeongbuk Institute of Science & Technology, Korea, South

C3P-M52 **AN INVESTIGATION ON THE RESPONSIVITY AND NOISE OF A WIRE-BONDED CMOS MICRO-FLUXGATE SENSOR**
Won-Seok Kang, Yu-TingLiu
Taiwan

SESSION C4L-A: LATE NEWS BIO/CHEM SENSORS & SYSTEMS

Chairs:
Pietro Siciliano, *CNR IMM*
Anna Grazia Mignani, *CNR IFAC*

CONCERT HALL

15:45

C4L-A1

HIGH-PERFORMANCE MULTICAPILLARY GAS SEPARATION COLUMNS WITH MPG STATIONARY PHASES

Hamza Shakeel, Masoud Agah

Virginia Polytechnic Institute and State University, United States

16:00

C4L-A2

ONLINE MEASUREMENT OF CORNEA DEFORMATION DURING NON-CONTACT TONOMETRY

Tim Krijger[1], Makoto Kaneko[2]

{1}Delft University of Technology, Netherlands; {2}Osaka University, Graduate School of Engineering, Japan

16:15

C4L-A3

DNA HYBRIDIZATION DETECTION BASED ON AN ORGANIC CHARGE MODULATED FIELD EFFECT TRANSISTOR

Monia Demelas, Stefano Lai, Massimo Barbaro, Annalisa Bonfiglio

University of Cagliari, Italy

16:30

C4L-A4

STEERING WHEEL PHOTONIC CRYSTAL FIBER FOR MONOCLONAL ANTIBODY DETECTION

Rosalind Wynne, Emily Battinelli, Francis Anuszewski, Mark Reimlinger, William Kelly

Villanova University, United States

16:45

C4L-A5

UNCONSTRAINED PULSE PRESSURE SENSING FOR HEALTH MANAGEMENT BASED ON A HETERO-CORE FIBER OPTIC SENSOR

Michiko Nishiyama[1], Kazuhiro Watanabe[2]

{1}Japan Aerospace Exploration Agency, Japan; {2}Soka University, Japan

17:00

C4L-A6

SENSING MECHANISM IN RECEPTOR-MODIFIED ORGANIC FIELD EFFECT TRANSISTOR BASED VAPOR SENSORS

Davianne Duarte[1], Bradley Holliday[2], Ananth Dodabalapur[1]

{1}Microelectronics Research Center, The University of Texas at Austin, United States; {2}The University of Texas at Austin, United States

SESSION C4L-B: IMAGE SENSORS

Chairs:
Shao-Ying Huang, *The University of Hong Kong*
Gary Pickrell, *Virginia Polytechnic Institute & State University*

JEAN MONET

15:45

C4L-B1

A SECOND GENERATION 3D INTEGRATED FEATURE-EXTRACTING IMAGE SENSOR

Xiangyu Zhang[1], Shoushun Chen[1], Eugenio Culurciello[2]

{1}Nanyang Technological University, Singapore; {2}Yale University, United States

16:00

C4L-B2

INTEGRATED FILTER-LESS BICMOS SENSOR FOR RGB-LED COLOR DETERMINATION

Andreas Polzer, Wolfgang Gaberl, Milos Davidovic, Horst Zimmermann

Vienna University of Technology, Austria

16:15

C4L-B3

A TWO-STEP READOUT CMOS IMAGE SENSOR ACTIVE PIXEL ARCHITECTURE

Tsung-Hsun Tsai, Richard Hornsey

VISOR Lab, York University, Canada

16:30

C4L-B4

OPTICAL SPECTROSCOPY AND PATTERN RECOGITION TECHNIQUES FOR DISCRIMINATING AND CLASSIFYING SCOTCH WHISKIES

Anna Grazia Mignani[1], Leonardo Ciaccheri[1], A.A. Mencaglia[1], Belén Gordillo[2], Maria Lourdes Gonzalez-Miret[2], Francisco Jose Heredia[2], Brian Culshaw[3]

{1}National Research Council, IFAC, Italy; {2}Universidad de Sevilla, Spain; {3}University of Strathclyde, United Kingdom

16:45

C4L-B5

NOVEL SENSOR CELL DESIGN AND ALGORITHM TO ONLINE REALIZE STABLE AND COST EFFECTIVE OPTICAL CONCENTRATION MEASUREMENTS AT FLUCTUATING LIGHT SOURCE SITUATIONS

Martin Degner[2], Hartmut Ewald[2], Elfed Lewis[1]

{1}University of Limerick, Ireland; {2}Universität Rostock, Germany

17:00

C4L-B6

ALL ALD TIO2-AL2O3-TIO2 HORIZONTAL SLOT WAVEGUIDES FOR OPTICAL SENSING

A. Purniawan, P. J. French, Gregory Pandraud, Yujian Huang, P. M. Sarro

Delft University of Technology, Netherlands

SESSION C4L-C: CAPACITIVE SENSING TECHNOLOGIES

Chairs:
Qing-An Huang, *Southeast Universitz-Nanjing*
Luc Hebrard, *InESS Strasbourg*

JOHN HOLLAND

15:45

C4L-C1

AN 8-12GHZ CAPACITIVE POWER SENSOR BASED ON MEMS CANTILEVER BEAM

Zhenxiang Yi[2], Xiao Ping Liao[2], Zheng Zhu[1]

{1}Key Laboratory of MEMS of Ministry of Education, Southeast University, China; {2}Southeast University, China

16:00

C4L-C2

CAPACITIVELY COUPLED ATMOSPHERIC RF MICROPLASMA DEVICES

Wen Yuan, Massood Tabib-Azar

University of Utah, United States

16:15

C4L-C3

CAPACITIVE LEVEL SENSOR FOR LAYERED FILLINGS IN TANKS AND VESSLES BASED ON METAMATERIAL TRANSMISSION LINE

Martin Schüßler, Margarita Puentes, Christian Mandel, Rolf Jakoby

Technische Universität Darmstadt, Germany

16:30

C4L-C4

AN EFFICIENT METHOD FOR MODELING PLANAR INTERDIGITATED ELECTRODES FOR CAPACITIVE SENSING

Stefan Schaur, Bernhard Jakoby

Johannes Kepler Universität, Austria

16:45

C4L-C5

A SYSTEM LEVEL MODELING FOR DISTRIBUTED RF MEMS DEVICES CONSIDERING THERMALLY INDUCED PACKAGING EFFECT

Cheng Zhao, Jing Song, Qing-An Huang

Southeast University, China

17:00

C4L-C6

A SURFACE-MICROMACHINED MEMS ACOUSTIC SENSOR WITH BACK-PLATE ANCHORS OF 100 MM DEPTH

Jaewoo Lee, Chang-Han Je, Ju-Hyun Jeon, Woo-Seok Yang, Jongdae Kim

Electronics and Telecommunications Research Institute, Korea, South

SESSION C4L-D: SENSOR NETWORK TECHNOLOGIESII

Chairs:
Gijs Krijnen, ***University of Twente***
Marco Grassi, ***University of Pavia***

CHARLES PARSONS

15:45

C4L-D1
LOW POWER WIRELESS SENSOR NETWORK FOR BUILDING MONITORING
Tom Torfs[2], Tom Sterken[2], Steven Brebels[2], Juan Santana[3], Richard van Den Hoven[3], Chris Van Hoof[2], Nicolas Saillen[6], Nicolas Bertsch[4], Davide Trapani[7], Daniele Zonta[7], Paris Marmaras[5], Matthaios Bimpas[1]
{1}ICCS, Greece; {2}IMEC, Belgium; {3}IMEC Netherlands / Holst Centre, Netherlands; {4}MEMSCAP, France; {5}Netscope, Greece; {6}Thermo-Fisher Scientific, Netherlands; {7}Università degli Studi di Trento, Italy

16:00

C4L-D2
DEVELOPMENT OF PROTOTYPE SENSOR NODES WITH HIGH-ACCURACY RANGING FOR LOCALIZATION ON WIRELESS SENSOR NETWORKS
Jun-Ya Takayama, Hong Phuoc Thanh, Sang-Il Ko, Shinji Ohyama
Tokyo Institute of Technology, Japan

16:15

C4L-D3
ANTENNA TUNING FOR WEARABLE WIRELESS SENSORS
John Buckley[2], Brendan O'Flynn[1], Peter Haigh[2], Cian O'Mathuna[1], Kevin McCarthy[3]
{1}Clarity Centre for Sensor Web Technologies / Tyndall National Institute, Ireland; {2}Tyndall National Institute, Ireland; {3}University College Cork, Ireland

16:30

C4L-D4
EXTENDED-RANGE WIRELESS SENSOR NETWORKS WITH ENHANCED IEEE 802.15.4 CSMA/CA
Chih-Kuang Lin, Titos Kokkinos, Francis Mullany
Bell Labs Ireland, Alcatel-Lucent, Ireland

16:45

C4L-D5
INTEGRATED CENTRALIZED ELECTRIC CURRENT MONITORING SYSTEM USING WIRELESSLY ENABLED NON-INTRUSIVE AC CURRENT SENSORS
Qiliang Xu, Michael Seidel, Igor Paprotny, Richard White, Paul Wright
University of California, Berkeley, United States

17:00

C4L-D6
DATA MANAGEMENT OF WIRELESS SENSOR NETWORK IMPLEMENTED IN RURAL ENVIRONMENTS WITH SMS COMMUNICATION PROTOCOL
Diego Antolin, Alberto Bayo, Nicolàs Medrano, Belén Calvo, Santiago Celma
Universidad de Zaragoza, Spain

SESSION C4L-E: ELECTROMAGNETIC SENSORS

Chairs:
Lei Wei, ***Massachusetts Institute of Technology***
Colin Fitzpatrick, ***University of Limerick***

FB028

15:45

C4L-E1
REMOTELY-INTERROGATED THREE-AXIS FIBER LASER MAGNETOMETER
Geoffrey Cranch[1], Gary Miller[1], Charles Askins[1], Clay Kirkendall[1], Robert Bartolo[2]
{1}Naval Research Laboratory, United States; {2}Sotera Defense Solutions, United States

16:00

C4L-E2
A NOVEL MICROFABRICATED HIGH PRECISION VECTOR MAGNETOMETER
Dirk Ettelt[1], Guillaume Dodane[1], Marcel Audoin[1], Arnaud Walther[1], Guillaume Jourdan[1], Patrice Rey[1], Philippe Robert[1], Jérôme Delamare[2]
{1}CEA-Léti, France; {2}CNRS/G2ELab, France

16:15

C4L-E3
RESEARCH ON THE PHASE OF AN INLINE COUPLING RF MEMS POWER SENSOR
Zhiqiang Zhang[1], Xiao Ping Liao[2]
{1}Key Laboratory of MEMS of Ministry of Education, Southeast University, China; {2}Southeast University, China

16:30

C4L-E4
IRONLESS POSITION SENSOR WITH INTRINSIC IMMUNITY TO EXTERNAL MAGNETIC FIELDS
Alessandro Masi[2], Alessandro Danisi[2], Roberto Losito[2], Yves Perriard[1]
{1} École Polytechnique Fédérale de Lausanne, Switzerland; {2} European Organization for Nuclear Research, Switzerland

16:45

C4L-E5
MINIATURIZED HIGH RESOLUTION SYNTHETIC APERTURE RADAR AT 94 GHZ FOR MICROLITE AIRCRAFT OR UAV
Winfried Johannes[2], Helmut Essen[2], Stephan Stanko[2], Rainer Sommer[2], Alfred Wahlen[2], Jörn Wilcke[2], Christian Wagner[2], Michael Schlechtweg[1], Axel Tessmann[1]
{1}Fraunhofer Institute for Applied Solid State Physics, Germany; {2}Fraunhofer Institute for High Frequency Physics and Radar Techniques, Germany

17:00

C4L-E6
DETECTION COIL INDEPENDENT FREQUENCY DOMAIN MEASUREMENTS FOR AN INDUCTIVELY COUPLED RESONANT MAGNETOELASTIC BENDING SENSOR
Sebastian Sauer, Uwe Marschner, Wolf-Joachim Fischer
Technische Universität Dresden, Germany

SESSION C4L-F: OPTICAL SENSORS & SYSTEMS III

Chairs:
Olga Conde, ***Universidad de Cantabria***
Andrea Cusano, ***Università degli Studi del Sannio***

FG042

15:45

C4L-F1
A MINIATURE OPTICAL HUMIDITY SENSOR
Jinesh Mathew, Yuliya Semenova, Gerald Farrell
Dublin Institute of Technology, Ireland

16:00

C4L-F2
1-D POLYMERIC PHOTONIC CRYSTAL HUMIDO-CHROMIC SENSOR
Maria-Isidora Georgaki[2], Petros Oikonomou[2], Nikos Papanikolaou[2], Panagiotis Argitis[2], Ioannis Raptis[2], Jakub Rysz[1], Andrzej Budkowski[1], Margarita Chatzichristidi[4], Nikolaos Moustakas[2], Athanasios Botsialas[3]
{1}Jagiellonian University, Poland; {2}NCSR Demokritos, Greece; {3}ThetaMetrisis S.A., Greece; {4}University of Athens, Greece

16:15

C4L-F3
DUAL EXCITATION FLUORESCENCE-BASED SENSORS FOR PH AND DISSOLVED CARBON DIOXIDE MONITORING
Dorota Wencel, John Moore, Niall Stevenson, Colette McDonagh
Dublin City University, Ireland

16:30

C4L-F4
DEVELOPMENT OF A MICROWAVE DISPLACEMENT SENSOR FOR HYDRAULIC DEVICES
Sorin Fericean[1], Andrea Hiller-Brod[1], Albert Dorneich[1], Markus Fritton[1], Josef B chler[2], Thomas Holzschuh[2]
{1}Balluff GmbH, Germany; {2}MicSenS, Germany

16:45

C4L-F5
OPTIMIZED ACOUSTIC WAVE DETECTOR BASED ON LONG PERIOD GRATING
Jacques-Olivier Gaudron, Frederic Surre, Tong Sun, Ken Grattan
City University London, United Kingdom

17:00

C4L-F6
INTEGRATED SAMPLE PREPARATION AND SENSING: MICRORESONATOR OPTICAL SENSORS EMBEDDED IN DIGITAL ELECTROWETTING MICROFLUIDICS SYSTEMS
Matthew Royal, Richard Fair, Nan Jokerst
Duke University, United States

CONFERENCE ADJOURNS | 17:15