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WELCOME MESSAGE

Dear IEEE SENSORS 2012 participants, welcome to Taipei, Taiwan.

This is the 11th IEEE SENSORS conference. Based on the technical and social programs, this conference promises to be one of the best, if not THE best of the 11. Based on the preregistrations, the attendance is expected to be between 650 and 700.

The number of abstract submissions, 1082, is close to the all-time record of 1092, in 2009. The acceptance rate is 54%. Of the 580 accepted papers, 266 will be presented in oral and 314 in poster sessions. It is important to note that the poster and oral paper submissions have undergone identical peer reviews. Where a paper is presented has no relationship to its quality. It depends only on where the paper best fits into the program.

The success of a conference depends not only on the technical program but also on the social program. The highlights of this year's social program will be the banquet and the visit to the National Palace Museum. This museum has a permanent collection of nearly 700 000 pieces of ancient Chinese artifacts and artworks, making it one of the largest in the world. The collection encompasses over 8000 years of Chinese history.

The banquet will be held on the top floor of the magnificent Grand Hotel, a landmark whose main building is one of the world's tallest Chinese classical buildings. Be sure to bring your camera!

IEEE sponsored or cosponsored more than 1000 conferences, and published more than 100 journals last year. The successes of IEEE are due to the more than 200 000 volunteers who serve IEEE each year. Similarly, the success of IEEE SENSORS 2012 is due to the dedication of more than 150 volunteers. The Technical Program Committee (TPC) alone consisted of 138 volunteers.

We wish to thank all the volunteers who contributed, but, especially the Regional Program Chairs: Masayoshi Esashi, Juergen Brugger and Reza Ghodssi; Organizing Committee Chair Yu-Cheng Lin; Tutorial Chair Jerwei Hsieh; Special Session Co-Chairs Paul Chao and Peter Chang; Best Paper Award Chair Lina Sarro; and Conference Treasurer Mike McShane.

We wish to recognize and thank our Keynote Speakers: Prof. Kiyoshi Toko of Kyushu University, Japan; Prof. Gina-Luca Bona of EMPA, Switzerland; and Prof. Khalil Najafi of University of Michigan, USA; whose participation in this conference is invaluable. We appreciate their expertise and willingness to share their time with us in Taipei.

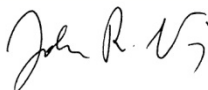
WELCOME MESSAGE

We also wish to thank the professional conference organizers of Conference Catalysts, LLC, under the leadership of Chris Dyer. Chris, Judy Scharmann and the rest of the Conference Catalysts team played a vital role in organizing this conference.

The locations of IEEE SENSORS conferences rotate each year; Asia/Pacific to Europe/Africa to the Americas. Next year, IEEE SENSORS 2013 will be held in Baltimore, MD, USA, 3 to 6 November 2013. We hope to see you there.



Jin-Chern (JC) Chiou
General Co-Chair



John Vig
General Co-Chair



Weileun Fang
Technical Program Chair

GENERAL INFORMATION

Registration & Information Desk

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

Sunday, October 28	8:00 AM - 5:30 PM
Monday, October 29	7:00 AM - 5:00 PM
Tuesday, October 30	7:00 AM - 5:00 PM
Wednesday, October 31	7:00 AM - 3:00 PM

Meeting Room Locations

Concurrent Sessions A: Room 101A
Concurrent Sessions B: Room 101B
Concurrent Sessions C: Room 102
Concurrent Sessions D: Room 101C
Concurrent Sessions E: Room 101D
Concurrent Sessions F: Room 103
Poster Sessions: Room 201

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 will be provided to you on a flash drive. 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 USD IEEE Member

Additional Electronic Proceedings: \$100 USD Non Member

Message and Job Market Board

The Message and Job Market Board will be located near the Conference Registration Desk. Posting is allowed by job seekers. Recruiters are not allowed to post.

Conference Attire

Attire during the duration of the Conference is business casual.

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

Currency Exchange

New Taiwan Dollars are acceptable at regular stores and restaurants. You can exchange your currency at airports, banks, and some larger hotels. The exchange rate fluctuates daily. For current exchange rates, please visit: www.exchangerate.com.



GENERAL INFORMATION

Tipping Standards

Tipping is typically not practiced in Taiwan.

Smoking

All meeting rooms and seated functions are smoke free. Please adhere to the smoking policy of the Taiwan International Convention Center.

Cellular Phones

As a courtesy to your fellow attendees, please turn off your cell phone ringer during the conference.

SOCIAL PROGRAM

Sunday, October 28

Event: Tutorial Lunch

Time: 12:10 PM - 1:20 PM

Location: 3F North Lounge

Event: Welcome Reception

Time: 6:00 PM - 9:00 PM

Location: Taipei World Trade Center

Join us for the Welcome Reception at the Taipei World Trade Center. The Reception will be held on the 33rd floor of Taipei World Trade Center International Trade Building, next to Taipei 101. You will enjoy the fantastic night view with nice wine and beautiful music. Cocktail Buffet will begin at 6:00 PM, with Welcome Remarks from General Chairs, J.C. Chiou and John Vig, at 7:00 PM.

Monday, October 29

Event: Conference Lunch

Time: 12:30 PM - 1:30 PM

Location: 3F Banquet Hall

Tuesday, October 30

Event: Conference Lunch

Time: 12:20 PM - 1:10 PM

Location: 3F Banquet Hall

Event: Tour of National Palace Museum

Time: 3:15 PM - 6:15 PM

Location: National Palace Museum - Transportation will be provided.

Event: Banquet Dinner

Time: 6:30 PM - 9:30 PM

Location: Grand Hotel

Transportation will be provided. The first returning bus will leave at 9:00 PM, and the last returning bus will leave at 10:00 PM. Busses will take attendees back to the TICC.

Our Conference Banquet will be held at The Grand Hotel, a historic Taipei landmark. The Grand Ballroom is located on the top floor of the hotel. We will gather for a pre-dinner glass of wine as we take in the city views. Dinner and special local entertainment will follow!

Your paid registration fee includes one banquet ticket. Guest tickets can be purchased for \$65.00 USD each at the Registration Desk.



SOCIAL PROGRAM

Wednesday, October 31

Event: Conference Lunch

Time: 12:10 PM - 1:10 PM

Location: 3F Banquet Hall



IEEE SENSORS 2012 COMMITTEE

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Jin-Chern (JC) Chiou, *National Chiao Tung University, Taiwan*

Technical Program Chair

Weileun Fang, *National Tsing Hua University, Taiwan*

Regional Program Chair - Asia/Oceania

Masayoshi Esashi, *Tohoku University, Japan*

Regional Program Chair - Europe/Africa

Juergen Brugger, *EPFL, Switzerland*

Regional Program Chair - The Americas

Reza Ghodssi, *University of Maryland, USA*

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Peter Chang, *Industrial Technology Research Institute (ITRI), Taiwan*

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國科企業有限公司



Sinodynamics Enterprise Co., Ltd

Sinodynamics Enterprise Co., Ltd, established in 1980, with headquarter in Taipei, Taiwan. We are the agency of mechanical

testing system of material testing, structural testing, biomedical engineering, environmental simulation reliability testing, and non-destructive testing. We also provide shock & vibration control system. We have more than thirty years' experiences in testing field. We have skillful engineers and provide equipments installation, training, maintain, calibration and technical consultant. We are the most valuable equipment provider for your product's reliability, durability, performance and safety.

Asia Pacific Microsystems, Inc.



Asia Pacific Microsystems, Inc.

APM has been dedicated in the MEMS manufacturing since founded in 2001. Through continuous efforts on the MEMS innovation and commercialization, APM has developed itself into one of the leading MEMS pure-play foundries in

the world. With extensive manufacturing experiences in MEMS sensors and actuators, APM provide foundry services to customers in automotive, consumer electronics, telecommunication, industrial, and biomedical industry. The customers are distributed around the world, and range from startups to large companies. Based in Hsinchu Science Park in Taiwan, the centre of the global semiconductor technology, APM can also access the mature semiconductor resources in a close range. During the last decade, APM has delivered services to numerous MEMS companies which have successfully launched their innovative MEMS devices. APM will continue working on the professional MEMS foundry service, and grow together with customers.

Domintech, Co. Ltd.



Domintech Technology Co., Ltd (DMT) is a product company in design and manufacturing for MEMS motion sensor, including 3-axis accelerometers, 3-axis gyroscopes and pressure sensors. DMT's has the experiencing design team for MEMS sensor and ASIC. We also build up

our own packaging and testing manufacturing line in side our fab. DMT's technology has applied piezo-resistive and piezo-electrical sensing principle to develop MEMS motion sensors since 2006. The 1st MEMS 3-axis accelerometer has been mass-production successfully and applied into consuming application in 2009. Now, the MEMS accelerometer positioned DMT as the domestic first and solely provider of the MEMS motion sensor. 3-axis gyroscope is also going to be introduced to market and the engineering samples will be available in the end of 2012 Q4 for selected customers first. Domintech attempts to be the top supplier of MEMS motion sensor in the worldwide. Moreover, inertial module of six axes and sensor fusion algorithm will be planned as well then.

EXHIBITORS

IEEE Gold



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



The Council sponsors the annual IEEE SENSORS Conference and 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.

Miradia



Founded in California 2003, Miradia as a fabless company is focused on MEMS product & manufacturing technology development. Our R&D team located in Silicon Valley and Hsinchu in Taiwan has been devoted to developing digital micro-mirror display and sensor technologies like accelerometer, gyro and pressure sensor by utilizing our patented 3D MEMS-CMOS integrated process platform. Our goal is to provide high performance products with lower price for consumer electronics. Based on several years' experiences in production handling and MEMS product development, we further want to introduce our 3D- MEMS process platform established in an eight-inch IC foundry Fab to partners interested in doing MEMS products. We provide turnkey services including MEMS design, device simulation, and component manufacturing, packaging and testing solutions. We are committed to creating solutions to shorten your product development period and reduce your risks and cost on production.

EXHIBITORS

Pentad Scientific



汎達科技有限公司

專業 熱忱 團隊合作 PENTAD SCIENTIFIC CORPORATION

Engaged in material analysis technology providers and equipment sales including following items: The microsection and metallographic related equipment and supplies, electronic microscope equipment and supplies, kinds of zoom lens and the imaging system, hardness testing equipment and standard test block, the micro or nano/film/biological & bio-tech test inspection instrument.

Sensirion AG

SENSIRION
THE SENSOR COMPANY

Sensirion AG, headquartered in Staefa, Switzerland, is the world's leading manufacturer of digital microsenors and systems. The product range includes humidity and temperature sensors, mass flow controllers, gas flow and liquid flow sensors, and differential pressure sensors. An international network with sales offices in the USA, Germany, China, Japan and Korea supplies international OEM customers with tailor-made sensor system solutions for a vast range of applications. Among other things, these include analytical instruments, consumer goods and automobiles, as well as the medical and HVAC industries. One of the hallmark features of Sensirion products is the use of patented CMOSens® Technology. CMOS-based sensor elements and systems permit intelligent system integration, including calibration and a digital interface. Sensirion's credentials as a reliable OEM supplier are underscored by its ISO/TS 16949 certification. Contact: www.sensirion.com, info@sensirion.com, Tel. +41 44 306 40 00, Fax +41 44 306 40 30

UniSense Microsystems Technology Co., Ltd.



聯興微系統科技
UniSense Tech

Established in July 2006, UniSense Microsystems Technology Co., Ltd. is a fabless MEMS design house,

specializing in the various types of sensor devices including pressure, temperature, humidity and other physical sensors. Currently, UniSense is not only offering high quality sensors, but also providing related control and interface IC which are most competitive and easy to use. The filed of application is including consumer electronics, medical electrical products as well as automotive electronics. In the future, UniSense will continuous to provide more precision, smarter sensor and module to our partners, end product producers to help everyone lives in healthy and comfortable lifestyle.

Wiley-Blackwell



WILEY-BLACKWELL

Wiley-Blackwell was formed in February 2007 as a result of the acquisition of Blackwell Publishing Ltd. by John Wiley & Sons, Inc., and its merger with Wiley's Scientific, Technical, and Medical business. Together, the companies have created a global publishing business with deep strength in every major academic and professional field. Wiley-Blackwell publishes approximately 1,400 scholarly peer-reviewed journals and an extensive collection of books with global appeal. {For more information on Wiley-Blackwell, please visit www.wiley.com or <http://onlinelibrary.wiley.com>}



TECHNICAL PROGRAM INFORMATION

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 = Monday B = Tuesday C = Wednesday

The second character (i.e., 2) indicates the session time:

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

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

L = Lecture Session P = Poster Session

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

A= 101A B= 101B C= 102 D= 101C E=101D F= 103

TECHNICAL PROGRAM INFORMATION

Poster Sessions

Three poster sessions will be held in Room 201, from 15:00 - 16:50 on Monday, 13:10 - 15:00 on Tuesday, and 10:20 - 12:10 on Wednesday. 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 = Monday B = Tuesday C = Wednesday

The second character (i.e., 3) 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., P) indicates that the paper is a poster.

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

H= 12 Open Poster

J= 1 Modeling

K= 2 Chemical and Gas

L= 3 Bio (and Medical)

M= 4 Optical

N= 5 Physical and Mechanical

O= 6 Sensor/ Actuator

P= 7 Sensor Network

Q= 8 Applications/ Others

R= 9 Special Session

SESSION GRID - SUNDAY, OCTOBER 28

	PARALLEL SESSION 1: SENSORS AND SENSING TECHNOLOGIES ROOM 101C	PARALLEL SESSION 2: SENSING SYSTEM INTEGRATION AND APPLICATION ROOM 101D
8:00 AM – 8:30 AM	TUTORIAL REGISTRATION AND CHECK-IN - TICC	
8:30 AM – 5:30 PM		
8:30 AM – 10:10 AM	TOPIC: NANOSCALE ELECTROMECHANICAL SENSORS AND THEIR EMERGING APPLICATIONS	TOPIC: FIRE DETECTION SYSTEM DESIGN FOR RELIABILITY
10:10 AM – 10:30 AM	COFFEE BREAK	
10:30 AM – 12:10 PM	TOPIC: OPTOMECHANICS: HOW LIGHT IMPACTS MECHANICS	TOPIC: HEAT REPLACES BATTERIES TO POWER WIRELESS SENSORS
12:10 PM - 1:20 PM	LUNCH - 3F NORTH LOUNGE	
1:20 PM – 3:00 PM	TOPIC: WAFER LEVEL VACUUM PACKAGING FOR SENSORS	TOPIC: OPTICAL COHERENCE TOMOGRAPHY-BASED IMAGING AND SENSING OF TISSUES AND CELLS
3:00 PM – 3:20 PM	COFFEE BREAK	
3:20 PM – 5:00 PM	TOPIC: MEMS DESIGN	TOPIC: ANALOG, MEMS AND SENSORS ENABLE OUR MOBILE DEVICES INTO A SMART WORLD
4:00 PM – 5:30 PM	RESEARCH SPEED DATING MEETING - ROOM 101A and 101B	
6:00 PM – 9:00 PM	WELCOME RECEPTION- TAIPEI WORLD TRADE CENTER	

SESSION GRID - MONDAY, OCTOBER 29

	ROOM 101A	ROOM 101B	ROOM 102	ROOM 101C	ROOM 101D	ROOM 103
7:00 AM – 5:00 PM	REGISTRATION - TICC					
8:00 AM – 8:20 AM	OPENING REMARKS – PLENARY HALL					
8:20 AM – 9:05 AM	KEYNOTE PRESENTATION 1 – PLENARY HALL "BIOCHEMICAL SENSORS FOR MIMICKING GUSTATORY AND OLFACTORY SENSES" PROFESSOR KIYOSHI TOKO					
9:15 AM – 10:30 AM	A1L-A: PHENOMENA AND MODELING I	A1L-B: BIOSENSORS I	A1L-C: STRAIN / FORCE SENSORS	A1L-D: SENSOR NETWORKS I	A1L-E: MISCELLANEOUS SENSORS I	A1L-F: MAGNETIC SENSORS FOR LOW INVASIVE DIAGNOSIS AND THERAPY
10:30 AM – 11:00 AM	COFFEE BREAK - ROOM 201					
11:00 AM – 12:30 PM	A2L-A: CHEMICAL AND GAS SENSORS I	A2L-B: OPTICAL SENSING SYSTEMS	A2L-C: INERTIA SENSORS	A2L-D: SENSING CIRCUITS	A2L-E: MISCELLANEOUS SENSORS II	A2L-F: BENDABLE / STRETCHABLE SENSORS AND SYSTEMS I
12:30 PM – 1:30 PM	LUNCH - 3F BANQUET HALL					
1:30 PM – 3:00 PM	A3L-A: OPTICAL SENSORS I	A3L-B: BIOSENSORS II	A3L-C: RESONATORS	A3L-D: WIRELESS / MICROWAVE TECHNIQUE FOR SENSING	A3L-E: FABRICATION AND MATERIAL CHARACTERIZATION	A3L-F: MATERIAL- INTEGRATED SENSING AND INTELLIGENCE IV CONCEPTS / FUNDAMENTAL TECHNOLOGIES AND APPLICATION
3:00 PM - 4:50 PM	A4P-G: MONDAY POSTER SESSION - ROOM 201					

SESSION GRID - TUESDAY, OCTOBER 30

	ROOM 101A	ROOM 101B	ROOM 102	ROOM 101C	ROOM 101D	ROOM 103
7:00 AM - 5:00 PM	REGISTRATION - TICC					
8:00 AM - 8:45 AM	KEYNOTE PRESENTATION 2 - PLENARY HALL "MATERIAL CHALLENGES AND OPPORTUNITIES FOR SENSOR APPLICATIONS" PROFESSOR GIAN-LUCA BONA					
8:50 AM - 10:20 AM	B1L-A: CHEMICAL AND GAS SENSORS II	B1L-B: BIOSENSORS III	B1L-C: ACOUSTIC/RESONANT SENSORS	B1L-D: SENSOR NETWORKS II	B1L-E: OPTICAL FIBER SENSORS	B1L-F: BENDABLE / STRETCHABLE SENSORS AND SYSTEMS II
10:20 AM - 10:50 AM	COFFEE BREAK - ROOM 201					
10:50 AM - 12:20 PM	B2L-A: GAS SENSORS I	B2L-B: BIOSENSORS IV	B2L-C: PRESSURE SENSORS	B2L-D: ACTUATORS	B2L-E: ENERGY HARVESTING / CONVERTER	B2L-F: ODOR SENSING AND OLFACTORY DISPLAY
12:20 PM - 1:10 PM	LUNCH - 3F BANQUET HALL					
1:10 PM - 3:00 PM	B3P-G: TUESDAY POSTER SESSION - ROOM 201					
3:15 PM - 6:15 PM	TOUR OF NATIONAL PALACE MUSEUM					
6:30 PM - 9:30 PM	BANQUET DINNER - GRAND HOTEL					

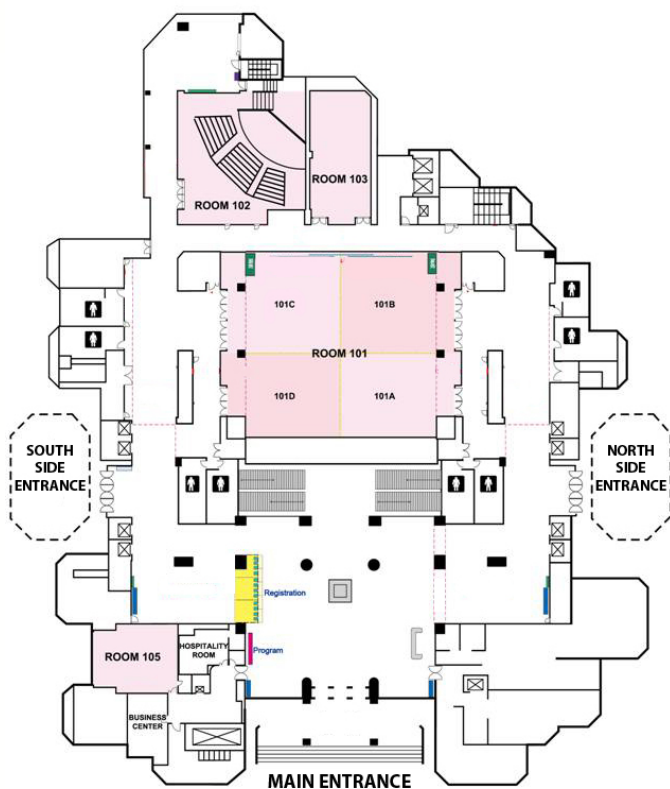
SESSION GRID - WEDNESDAY, OCTOBER 31

	ROOM 101A	ROOM 101B	ROOM 102	ROOM 101C	ROOM 101D	ROOM 103
7:00 AM - 3:00 PM	REGISTRATION - TICC					
8:00 AM - 8:45 AM	KEYNOTE PRESENTATION – PLENARY HALL "BIOMIMETIC HAIR SENSORS: UTILIZING THE THIRD DIMENSION" PROFESSOR KHALIL NAJAFI					
8:50 AM - 10:20 AM	C1L-A: PHENOMENA AND MODELING II	C1L-B: ELECTROCHEMICAL AND PH SENSORS	C1L-C: CMOS LIGHT / IMAGE SENSORS	C1L-D: LOW POWER / SELF-POWERED SENSOR NETWORK	C1L-E: BIOSENSORS FOR FOOD AND AGRICULTURE	C1L-F: QUASI ONE DIMENSIONAL NANOSTRUCTURES FOR SENSING APPLICATIONS
10:20 AM - 12:10 PM	C2P-G: WEDNESDAY POSTER SESSION - ROOM 201					
12:10 PM - 1:10 PM	LUNCH - 3F BANQUET HALL					
1:10 PM - 2:40 PM	C3L-A: GAS SENSORS II	C3L-B: SENSING OF BACTERIA AND CELLS	C3L-C: MAGNETIC SENSORS	C3L-D: INTEGRATED SENSORS / CMOS-MEMS	C3L-E: DIVERSE APPLICATIONS OF MAGNETIC SENSORS AND NEW MAGNETIC SENSOR DEVELOPMENT	C3L-F: PRACTICE AND EVALUATION OF SENSOR NETWORKS
2:40 PM - 3:10 PM	COFFEE BREAK - ROOM 201					
3:10 PM - 4:40 PM	C4L-A: GRAPHENE AND CARBON NANOTUBE BASED SENSORS	C4L-B: OPTICAL SENSORS II	C4L-C: THERMAL / FLOW SENSORS	C4L-D: IMAGE / OPTICAL MEASUREMENT	C4L-E: BIOMIMETICS - LEARNING FROM NATURE	C4L-F: INTERNET OF THINGS TECHNOLOGIES AND SERVICES
5:00 PM	CONFERENCE ADJOURNS					

TICC FLOOR PLAN

Floor Plan

TAIPEI INTERNATIONAL CONVENTION CENTER (TICC)



FIRST FLOOR PLAN

MONDAY POSTER SESSION FLOOR PLAN

The Monday poster session floor plan shows the position of each numbered poster. The three letter and number prefix of each poster has been omitted from this diagram. The following groups, or tracks, are featured in this poster session:

H= 12 Open Poster
J= 1 Modeling
K= 2 Chemical and Gas
L= 3 Bio (and Medical)
M= 4 Optical
N= 5 Physical and Mechanical
O= 6 Sensor/ Actuator
P= 7 Sensor Network
Q= 8 Applications/ Others
R= 9 Special Session

Exhibitors are listed below as of October 11, 2012. The Exhibitor booth numbers in the center are as follows:

Booth # 1 - GSDTEC International Inc.
Booth # 2 - Pentad Scientific
Booth # 3 - Domintech, Co. Ltd.
Booth # 4 - UniSense Microsystems Technology Co., Ltd.
Booth # 5 - Asia Pacific Microsystems, Inc.
Booth # 6 - National Nano Device Laboratories, National Applied
Booth # 7 - Sensirion AG
Booth # 8 - Miradia
Booth # 9-10 - IEEE Sensors Council/ IEEE Gold
Booth # 11 - Wiley-Blackwell
Booth # 12 - Sinodynamics Enterprise Co., Ltd
Research Laboratories
Booth # 13 -National Applied Research Laboratories National Chip
Implementation Center
Booth # 14 - Evabiotech Ltd.
Booth # 15 - STMicroelectronics

MONDAY POSTER SESSION - ROOM 201

H5 | J1
H4 | J2
H3 | J3
H2 | J4
H1 | J5
Q13 | J6
Q12 | J7
Q11 | J8
Q10 |

13	12
14	11
15	10
16	09
17	08
18	07

Coffee Break Area

Coffee Break Area

01
02
03
04
05
06

M13 | M12 | K1
R2 | M14 | M11 | K2
R1 | N1 | M10 | K3
O15 | N2 | M9 | K4
O14 | N3 | M8 | K5
O13 | N4 | M7 | K6
O12 | N5 | M6 | K7
O11 | N6 | M5 | K8
O10 | N7 | M4 | K9

Q9 | P1
Q8 | P2
Q7 | P3
Q6 | P4
Q5 | P5
Q4 | P6
Q3 | P7
Q2 | P8
Q1 | P9

O9 | N8 | M3 | K10
O8 | N9 | M2 | K11
O7 | N10 | M1 | K12
O6 | N11 | L12 | L1
O5 | N12 | L11 | L2
O4 | N13 | L10 | L3
O3 | N14 | L9 | L4
O2 | N15 | L8 | L5
O1 | N16 | L7 | L6

TUESDAY POSTER SESSION FLOOR PLAN

The Tuesday poster session floor plan shows the position of each numbered poster. The three letter and number prefix of each poster has been omitted from this diagram. The following groups, or tracks, are featured in this poster session:

J= 1 Modeling
K= 2 Chemical and Gas
L= 3 Bio (and Medical)
M= 4 Optical
N= 5 Physical and Mechanical
O= 6 Sensor/ Actuator
P= 7 Sensor Network
Q= 8 Applications/ Others
R= 9 Special Session

Exhibitors are listed below as of October 11, 2012. The Exhibitor booth numbers in the center are as follows:

Booth # 1 - GSDTEC International Inc.
Booth # 2 - Pentad Scientific
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Booth # 6 - National Nano Device Laboratories, National Applied
Booth # 7 - Sensirion AG
Booth # 8 - Miradia
Booth # 9-10 - IEEE Sensors Council/ IEEE Gold
Booth # 11 - Wiley-Blackwell
Booth # 12 - Sinodynamics Enterprise Co., Ltd
Research Laboratories
Booth # 13 -National Applied Research Laboratories National Chip
Implementation Center
Booth # 14 - Evabiotech Ltd.
Booth # 15 - STMicroelectronics

TUESDAY POSTER SESSION - ROOM 201

Q14 | J1
 Q13 | J2
 Q12 | J3
 Q11 | J4
 Q10 | J5
 Q9 | J6
 Q8 | J7
 Q7 | J8
 Q6 | J9

13	12
14	11
15	10
16	09
17	08
18	07

Coffee Break Area

Coffee Break Area

01
02
03
04
05
06

R1 | N3
 R2 | N4
 R3 | N5
 R4 | N6
 O15 | N7
 O14 | N8
 O13 | N9
 O12 | N10
 O11 | N11

N1 | K1
 N2 | K2
 M12 | K3
 M11 | K4
 M10 | K5
 M9 | K6
 M8 | K7
 M7 | K8
 M6 | K9

O10 | N12
 O9 | N13
 O8 | N14
 O7 | N15
 O6 | N16
 O5 | N17
 O4 | O1
 O3 | O2

M5 | K10
 M4 | K11
 M3 | K12
 M2 | L1
 M1 | L2
 L9 | L3
 L8 | L4
 L7 | L5
 L6

Q5 | P1
 Q4 | P2
 Q3 | P3
 Q2 | P4
 Q1 | P5
 P11 | P6
 P10 | P7
 P9 | P8

WEDNESDAY POSTER SESSION FLOOR PLAN

The Wednesday poster session floor plan shows the position of each numbered poster. The three letter and number prefix of each poster has been omitted from this diagram. The following groups, or tracks, are featured in this poster session:

J= 1 Modeling
K= 2 Chemical and Gas
L= 3 Bio (and Medical)
M= 4 Optical
N= 5 Physical and Mechanical
O= 6 Sensor/ Actuator
P= 7 Sensor Network
Q= 8 Applications/ Others
R= 9 Special Session

Exhibitors are listed below as of October 11, 2012. The Exhibitor booth numbers in the center are as follows:

Booth # 1 - GSDTEC International Inc.
Booth # 2 - Pentad Scientific
Booth # 3 - Domintech, Co. Ltd.
Booth # 4 - UniSense Microsystems Technology Co., Ltd.
Booth # 5 - Asia Pacific Microsystems, Inc.
Booth # 6 - National Nano Device Laboratories, National Applied
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Booth # 8 - Miradia
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Booth # 11 - Wiley-Blackwell
Booth # 12 - Sinodynamics Enterprise Co., Ltd
Research Laboratories
Booth # 13 -National Applied Research Laboratories National Chip
Implementation Center
Booth # 14 - Evabiotech Ltd.
Booth # 15 - STMicroelectronics

WEDNESDAY POSTER SESSION - ROOM 201

R4 J1						O15 M10	M9 K1
R3 J2						O14 N1	M8 K2
R2 J3						O13 N2	M7 K3
R1 J4						O12 N3	M6 K4
Q14 J5						O11 N4	M5 K5
Q13 J6						O10 N5	M4 K6
Q12 J7						O9 N6	M3 K7
Q11 P1						O8 N7	M2 K8
Q10 P2						O7 N8	M1 K9
Q9 P3						O6 N9	L13 K10
Q8 P4						O5 N10	L12 K11
Q7 P5						O4 N11	L11 K12
Q6 P6						O3 N12	L10 K13
Q5 P7						O2 N13	L9 K14
Q4 P8						O1 N14	L8 L1
Q3 P9						N18 N15	L7 L2
Q2 P10						N17 N16	L6 L3
Q1							L5 L4

Coffee Break Area

Coffee Break Area

KEYNOTE SPEAKERS

Professor Kiyoshi Toko

"Biochemical Sensors for Mimicking Gustatory and Olfactory Senses"

Dr. Toko is a Distinguished Professor of the Graduate School of Information Science and Electrical Engineering, Kyushu University, and a dean for 2008-2011. He received his PhD from Kyushu University in the study of self-organization in biomembranes and biological systems. He continued this work during a period as Research Associate and Associate Professor in the same laboratory. During that time he proposed a concept "to measure the taste" and succeeded in developing the first-ever taste sensor using lipid membranes, i.e. the electronic tongue. At present, this taste sensor is sold commercially in Japan and all over the world. He is now one of the leading scientists in the field of bioelectronics, which deals with devices and phenomena related to both electronics and biology. He has published more than 500 papers in well-respected journals on the subject of taste and odor sensors and the application of lipid membranes. He has directed and continues several government projects in food, nanotechnology, and integrated sensing technology using biosensors and the taste/odor sensor. Due to these results, he won many prizes such as Prize for Science and Technology (MEXT), Fire Defense Agency Commendation Encouragement Prize, Japan Society of Applied Physics Fellow Commendation, Momofuku Ando Prize, Harushige Inoue Prize (JST) and Tateishi Prize. His research results are frequently on air in TV broadcast. He is a member of professional associations of applied physics, taste and smell, membrane, food science and technology, and electrical engineering, and is an Editor of an international journal, Sensors and Materials.

Professor Gian-Luca Bona

"Material Challenges and Opportunities for Sensor Applications"

Gian-Luca Bona studied physics at ETH Zurich, Switzerland, where he received a Ph.D. degree in 1987 for his investigations of surface magnetic structures with short pulsed laser excitation. Subsequently, he joined the IBM Zurich Research Laboratory and first conducted research in optical sampling of ultra-fast opto-electronic devices and later shifted his focus to the design and characterization of intense, high-speed quantum-well semiconductor lasers. In 1994, he initiated work on integrated optical devices with high index contrast which led to a series of reconfigurable planar lightwave circuits and later on expanded to photonic bandgap concepts for high speed interconnects in computer applications. From 2004 to 2008, he led as department group manager the Science & Technology function in the IBM Almaden Research Center in San Jose, CA, with a strong focus on advanced materials for the next generation semiconductor industry as well as on expanding CMOS fabrication methods and on the development of nonvolatile memory devices. From mid 2008 until mid 2009, he was director Tape Storage Solutions in the IBM Systems and Technology Group, located in Tucson, AZ and responsible for the development of magnetic tape media, heads and tape drives as well as storage subsystems which include tape automation, interconnects and

KEYNOTE SPEAKERS

controllers. Gian-Luca Bona is currently CEO of EMPA the Swiss Materials Science & Technology Laboratory and Professor for Photonics at the Swiss Federal Institutes of Technology ETH & EPFL. His personal scientific interest focuses on photonic materials and its testing for novel applications such as for communication, interconnects and sensors.

Professor Khalil Najafi

"Biomimetic Hair Sensors: Utilizing the Third Dimension"

Khalil Najafi is the Schlumberger Professor of Engineering and the Chair of Electrical and Computer Engineering, University of Michigan. He served as the Director of the Solid-State Electronics Laboratory from 1998-2005, has been the director of NSF's National Nanotechnology Infrastructure Network (NNIN) since 2004, and served as the deputy director of the NSF Engineering Research Center (ERC) on Wireless Integrated Microsystems (WIMS) from 2000-2008. He received the B.S., M.S., and the Ph.D. degree in 1980, 1981, and 1986 respectively, all in Electrical Engineering from the University of Michigan. His research interests include: micromachining technologies, micromachined sensors, actuators, and MEMS; analog integrated circuits; microsystems and micromachined sensors and actuators for biomedical applications; hermetic and vacuum packaging technologies; and low-power wireless sensing/actuating systems. Dr. Najafi has been active in the field of solid-state sensors and actuators for thirty years. He has been involved in several conferences and workshops dealing with micro sensors, actuators, and microsystems, including the International Conference on Solid-State Sensors and Actuators, the Hilton-Head Solid-State Sensors and Actuators Workshop, and the IEEE/ASME Micro Electromechanical Systems (MEMS) Conference. He has served as associate editor or editor of several journals, including IEEE J. of Micro Electromechanical Systems (JMEMS), J. of Micromechanics & Microengineering, J. of Sensors and Materials, IEEE J. of Solid-State Circuits, IEEE Trans. on Electron Devices, and IEEE Trans. Biomedical Engineering. He is a Fellow of the IEEE and the AIBME.

MONDAY, OCTOBER 29

8:00 AM - 8:20 AM

Plenary Hall

OPENING REMARKS

8:20 AM - 9:05 AM

A0L-A: Plenary - KEYNOTE - PROFESSOR KIYOSHI TOKO

Plenary Hall

Session Chair: Masayoshi Esashi (Tohoku University, Japan)

BIOCHEMICAL SENSORS FOR MIMICKING GUSTATORY AND OLFACTORY SENSES

9:15 AM - 10:30 AM

A1L-A: Phenomena and Modeling I

Room 101A

Session Chairs: Mustafa Ilker Beyaz (Antalya International University, Turkey), Wen-Pin Shih (National Taiwan University, Taiwan)

9:15 AM

PASSIVE WIRELESS IRREVERSIBLE HUMIDITY THRESHOLD SENSOR EXPLOITING THE DELIQUESCENT BEHAVIOR OF SALTS

Sebastian Sauer, Wolf-Joachim Fischer

Technische Universität Dresden, Germany

9:30 AM

IMPLICATIONS OF A LOW STIFFNESS SUBSTRATE IN LAMB WAVE GAS SENSING APPLICATIONS

Christoph Sielmann, Boris Stoeber, Konrad Walus

University of British Columbia, Canada

9:45 AM

FEASIBILITY OF WIRELESS SENSORS USING AMBIENT 2.4GHZ RF ENERGY

Kenneth Gudan², Sergey Chemishkian², Jonathan Hull², Matthew Reynolds¹, Stewart Thomas¹

¹Duke University, USA; ²Ricoh Innovations Inc., USA

10:00 AM

ASPHERIC SINGLE-ELEMENT LENS USING BIREFRINGENT MATERIAL FOR MINIATURIZED IMAGING SYSTEM

Yupeng Zhang, Toshitsugu Ueda

Waseda University, Japan

10:15 AM

MICRO-PLASMA FIELD-EFFECT TRANSISTORS

Mingming Cai, Faisal Chowdhury, Massood Tabib-Azar

University of Utah, USA

MONDAY, OCTOBER 29

9:15 AM - 10:30 AM

A1L-B: Biosensors I

Room 101B

Session Chairs: V.R. Singh (National Physical Lab, India), Jiri Homola (Institute of Photonics and Electronics, Czech Republic)

9:15 AM

**SUPRAMOLECULAR FUNCTIONALIZED SI NANOWIRE FETS -
TOWARDS REGENERATIVE ELECTRONIC BIOSENSORS**

Xuexin Duan², Nitin Rajan², Jurriaan Huskens¹, Mark Reed²

¹Universiteit Twente, Netherlands; ²Yale University, USA

9:30 AM

**A NEW INTACT IMMOBILIZATION OF LIPOSOME AS SENSING
BIO NANO-PARTICLE ON OXIDIZED METAL ELECTRODE
SURFACE**

Minoru Noda¹, Keisuke Takada¹, Mariko Nakai¹, Kaoru Yamashita¹,
Toshinori Shimanouchi², Hiroshi Umakoshi²

¹Kyoto Institute of Technology, Japan; ²Osaka University, Japan

9:45 AM

**LOW POWER TEXTILE-BASED WEARABLE SENSOR PLATFORM
FOR PH AND TEMPERATURE MONITORING WITH WIRELESS
BATTERY RECHARGE**

Michele Caldara², Claudio Colleoni², Michael Galizzi², Emanuela
Guido², Valerio Re², Giuseppe Rosace², Andrea Vitali¹

¹STMicroelectronics, Italy; ²Università degli studi di Bergamo, Italy

10:00 AM

**REAGENTLESS DETECTION OF URIC ACID BASED ON IRON
DOPED ZINC OXIDE MATRIX**

Kashima Arora, Vinay Gupta, Monika Tomar

University of Delhi, India

10:15 AM

**WIRELESS MEASUREMENT OF SYMPATHETIC NERVOUS
ACTIVITY USING PLANAR NANO-ELECTRODE ARRAYS**

Aamer Mahmood², Peng-Sheng Chen¹, A George Akingba¹

¹Indiana University-Purdue University Indianapolis, USA; ²Purdue University,
USA

MONDAY, OCTOBER 29

9:15 AM - 10:30 AM

A1L-C: Strain / Force Sensors

Room 102

Session Chairs: Oliver Paul (IMTEK, Germany), Kazusuke Maenaka (University of Hyogo, Japan)

9:15 AM

A NOVEL INTEGRATED TACTILE IMAGE SENSOR FOR DETECTION OF SURFACE FRICTION AND HARDNESS USING THE REFERENCE PLANE STRUCTURE

Yusaku Maeda, Kyohei Terao, Takaaki Suzuki, Fusao Shimokawa, Hidekuni Takao

Kagawa University, Japan

9:30 AM

FLEXIBLE TACTILE SENSOR WITH HIGH SENSITIVITY UTILIZING BOTANICAL EPIDERMAL CELL NATURAL MICRO-STRUCTURES

Chien-Chun Chen, Pen-Zen Chang, Wen-Pin Shih

National Taiwan University, Taiwan

9:45 AM

FLEXIBLE PACKAGING FOR TYRE INTEGRATED SHEAR FORCE SENSOR

Sandor Kulinyi⁴, Richard Vegvari⁴, Anita Pongracz², Attila Nagy², Tamas Karpati¹, Marika Adam², Gabor Battistig¹, Istvan Bársony³

¹*Institute of Technical Physics and Materials Science, RCNS, HAS, Hungary;*

²*Research Center for Natural Sciences, HAS, Hungary;* ³*Research Center for Natural Sciences, HAS / University of Pannonia, Hungary;* ⁴*WESZTA-T Industrial and Commercial Ltd,*

10:00 AM

TRANSVERSE FORCE SENSITIVITY OF JOINT PHOTONIC CRYSTAL FIBRES

Mohammad Karimi¹, Matthias Fabian¹, Tong Sun¹, Kenneth Grattan¹, Kay Schuster², Leszek R. Jaroszewicz⁴, Pawel Mergo³

¹*City University London, United Kingdom;* ²*Institut für Photonische Technologien, Germany;* ³*Maria Curie Skłodowska University, Poland;* ⁴*Military University of Technology, Poland*

10:15 AM

A TACTILE MICRO TRANSCIEVER FOR FINGERTIP TOUCH AND MOVEMENT RECOGNITION WITH TEXTURE EXPRESSION

Sechan Youn, Dae Geon Seo, Young-Ho Cho

Korea Advanced Institute of Science and Technology, Korea, South

MONDAY, OCTOBER 29

9:15 AM - 10:30 AM

A1L-D: Sensor Networks I

Room 101C

Session Chairs: Hidekuni Takao (Kagawa University, Japan), Yu Chuan Su (National Tsing Hua University, Taiwan)

9:15 AM

NANOTECHNOLOGY BASED CELL-ALL PHONE-SENSORS FOR EXTENDED NETWORK CHEMICAL SENSING

Jing Li¹, George Yu³, Yijiang Lu¹, Chang Hsiung¹, Ami Hannon¹, Daniel Kim¹, Steve Dennis²

¹NASA Ames Research Center, USA; ²USA Department of Homeland Security, USA; ³Variable Technologies, USA

9:30 AM

A LOW-COST SYSTEM FOR REAL TIME MONITORING AND ASSESSMENT OF POTABLE WATER QUALITY AT CONSUMER SITES

Theofanis Lambrou², Christos Panayiotou², Christos Anastasiou¹

¹Frederick University, Cyprus; ²University of Cyprus, Cyprus

9:45 AM

A WIRELESS SURFACE ELECTROMYOGRAPHY (SEMG) PROBE WITH 4 HIGH-SPEED CHANNELS

Giona Imperatori¹, Diego Barrettino²

¹Phonak AG, Switzerland; ²University of Applied Sciences of Southern Switzerland, Switzerland

10:00 AM

ON DETECTING MOBILE TARGET WITH DEADLINE CONSTRAINT IN MOBILE SENSOR NETWORKS

Yu-Yi Chen², Chih-Cheng Hsu², Cheng-Fu Chou², Ching-Ju Lin¹

¹Academia Sinica, Taiwan; ²National Taiwan University, Taiwan

10:15 AM

A COLUMN-PARALLEL SA ADC WITH LINEARITY CALIBRATION FOR CMOS IMAGERS

Shan-Ju Tsai², Yen-Chun Chen², Chih-Cheng Hsieh², Wen-Hsu Chang¹, Hann-Huei Tsai¹, Chin-Fong Chiu¹

¹National Applied Research Laboratories, Taiwan; ²National Tsing Hua University, Taiwan

MONDAY, OCTOBER 29

9:15 AM - 10:30 AM

A1L-E: Miscellaneous Sensors I

Room 101D

Session Chairs: Christopher Salthouse (University of Massachusetts Amherst, USA), Hiroki Suzuki (University of Tsukuba, Japan)

9:15 AM

SENSOR SYSTEM FOR VAPOR TRACE DETECTION OF EXPLOSIVES

Drago Strle², Janez Trontelj², Bogdan Stefane², Igor Musevic¹

¹*Institute Josef Stefan, Slovenia;* ²*University of Ljubljana, Slovenia*

9:30 AM

A LOW COST MINIATURE VORTEX SENSOR FOR TURBULENCE MEASUREMENT

Jianguo Zhao³, Dara Feili³, Henning Völm³, Thrassos Panidis², Binghe Ma¹, Helmut Seidel³

¹*Northwestern Polytechnical University, China;* ²*University of Patras, Greece;*

³*Universität des Saarlandes, Germany*

9:45 AM

ADHESION AND MOISTURE BARRIER CHARACTERISTICS OF ROLLER-CAST POLYDIMETHYLSILOXANE ENCAPSULANTS FOR IMPLANTABLE MICROSYSTEMS

Shem Lachhman, Wen Ko, Christian Zorman

Case Western Reserve University, USA

10:00 AM

DESIGN OF A BIO-INSPIRED WHISKER SENSOR FOR UNDERWATER APPLICATIONS

Pablo Valdivia Y Alvarado², Vignesh Subramaniam², Michael Triantafyllou¹

¹*Massachusetts Institute of Technology, USA;* ²*Singapore-MIT Alliance for Research and Technology, Singapore*

10:15 AM

A NOVEL SENSOR DESIGN FOR BREAST CANCER SCANNER BASED ON ELECTRICAL CAPACITANCE VOLUME TOMOGRAPHY (ECVT)

Warsito P. Taruno¹, Marlin R. Baidillah¹, Rommy I. Sulaiman¹, Arbai Yusuf¹, Wahyu Widada¹, Habib Alzufri¹, Muhammed Aljohani²

¹*Edwar Technology, Indonesia;* ²*King Abdulaziz University, Saudi Arabia*

MONDAY, OCTOBER 29

9:15 AM - 10:30 AM

**A1L-F: Magnetic Sensors for Low Invasive Diagnosis and Therapy
Room 103**

Session Chairs: Yasushi Takemura (Yokohama National University, Japan), Chao-Ming Fu (National Taiwan University, Taiwan)

9:15 AM

**RESONANT CIRCUITS FOR THERMAL THERAPY EXCITED BY RF
MAGNETIC FIELD FROM MRI**

Yasushi Takemura

Yokohama National University, Japan

9:30 AM

**MAGNETIC SENSOR FOR SENTINEL LYMPH NODE BIOPSY
USING SUPERPARAMAGNETIC BEADS**

Yoshitaka Kitamoto, Takaaki Masaki, Suko Bagus Trisnanto, Tomoaki Ueda, Masanori Abe

Tokyo Institute of Technology, Japan

9:45 AM

**WIRELESS MAGNETIC SENSING SYSTEM FOR BIOENGINEERING
APPLICATION**

Shuichiro Hashi, Kazushi Ishiyama

Tohoku University, Japan

10:00 AM

**BIO-MECHANICAL PROPERTIES OF HUMAN RENAL CANCER
CELLS PROBED BY MAGNETO-OPTICAL TWEEZERS**

Chao-Ming Fu, Chang-Mu Han, Chao-Weng Cheng, Chan-Shin Chou

National University of Taiwan, Taiwan

10:00 AM - 11:00 AM

Room 201

COFFEE BREAK

MONDAY, OCTOBER 29

11:00 AM - 12:30 PM

A2L-A: Chemical and Gas Sensors I

Room 101A

Session Chairs: H. Troy Nagle (North Carolina State University, USA), Marina Cole (University of Warwick, UK)

11:00 AM

NANOGAPS FOR HYDROGEN SENSING

Fred Favier

Université Montpellier II, France

11:15 AM

**NOVEL LAYER-BY-LAYER SILICA NANOPARTICLES AS AN
ADSORBENT BED FOR MICRO-FABRICATED
PRECONCENTRATORS**

Dong Wang, Akbar Muhammad, James Heflin, Masoud Agah

Virginia Polytechnic Institute and State University, USA

11:30 AM

**GAS THERMAL CONDUCTIVITY MEASUREMENT BASED ON THE
THREE-OMEGA METHOD**

Sébastien Gauthier, Philippe Combette, Alain Giani

Université Montpellier II - CNRS UMR 5214, France

11:45 AM

**RESONANT MICRO-CANTILEVER CHEMICAL SENSOR WITH
ONESTEP SYNTHESIS OF -COOH FUNCTIONALIZED
MESOPOROUS-SILICA NANOPARTICLES FOR DETECTION OF
TRACE-LEVEL ORGANOPHOSPHORUS PESTICIDE**

Xiaoyuan Xia, Pengcheng Xu, Haitao Yu, Xinxin Li

Shanghai Institute of Microsystem And Information Technology, CAS, China

12:00 PM

**LAYER-BY-LAYER STRUCTURED AU NPS SENSORS FOR
TERPENE VAPORS DETECTION**

Bin Chen, Chuanjun Liu, Kenshi Hayashi

Kyushu University, Japan

MONDAY, OCTOBER 29

11:00 AM - 12:30 PM

A2L-B: Optical Sensing Systems

Room 101B

Session Chairs: Hengky Chandralalim (University of Michigan, USA), Patrick Ruther (IMTEK, Germany)

11:00 AM

ION IMAGE SENSORS BASED ON CCD/CMOS TECHNOLOGY

Kazuaki Sawada

Toyohashi University of Technology, Japan

11:15 AM

TRANSVERSE FORCE SENSITIVITY OF PHOTONIC CRYSTAL FIBRES

Mohammad Karimi¹, Matthias Fabian¹, Tong Sun¹, Kenneth Grattan¹, Kay Schuster², Leszek R. Jaroszewicz⁴, Pawel Mergo³

¹City University London, United Kingdom; ²Institut für Photonische Technologien, Germany; ³Maria Curie Skłodowska University, Poland; ⁴Military University of Technology, Poland

11:30 AM

REAL-TIME MULTIDIRECTIONAL MODAL PARAMETER ESTIMATION OF BEAM-SHAPED OBJECTS USING HIGH-SPEED STEREO VISION

Hua Yang, Takeshi Takaki, Idaku Ishii

Hiroshima University, Japan

11:45 AM

THERMO-OPTOFLUIDICS - ON-CHIP LIGHT MODULATION AS AN APPLICATION

Emanuel Weber¹, Michael Vellekoop²

¹Technische Universität Wien, Austria; ²Universität Bremen, Germany

12:00 PM

DEVELOPMENT OF 3D HYPERSPECTRAL CAMERA USING COMPRESSIVE SENSING

King Wai Chiu Lai¹, Ning Xi², Hongzhi Chen², Liangliang Chen², Bo Song²

¹City University of Hong Kong, Hong Kong; ²Michigan State University, USA

MONDAY, OCTOBER 29

11:00 AM - 12:30 PM

A2L-C: Inertia Sensors

Room 102

Session Chairs: Dong-Weon Lee (Chonnam National University, Korea), Eugene Hwang (Analog Devices, USA)

11:00 AM

USING NONLINEARITY TO ENHANCE MICRO/NANOSENSOR PERFORMANCE

Kimberly Turner², Christopher B. Burgner², Zi Yie², Ellen Holtoff¹

¹Army Research Laboratory, USA; ²University of California, Santa Barbara, USA

11:15 AM

A BULK-MICROMACHINED FULLY-DIFFERENTIAL MEMS ACCELEROMETER WITH INTERDIGITATED FINGERS

Osman Aydin, Tayfun Akin

METU-MEMS Research and Applications Center, Turkey

11:30 AM

AN INTEGRATED RESONATOR-BASED THERMAL COMPENSATION FOR VIBRATING BEAM ACCELEROMETERS

Raphael Levy, Olivier Le Traon, Steve Masson, Olivier Ducloux, Denis Janiaud, Jean Guérard, Vincent Gaudineau, Claude Chartier

ONERA, France

11:45 AM

CMOS-MEMS ACCELEROMETER WITH DIFFERENTIAL LC-TANK OSCILLATORS

Yi Chiu, Hao-Chiao Hong, Po-Chih Wu

National Chiao Tung University, Taiwan

12:00 PM

MEMS-BASED HEMISPHERICAL RESONATOR GYROSCOPES

Pradeep Pai, Faisal Chowdhury, Carlos Mastrangelo, Massood Tabib-Azar

University of Utah, USA

MONDAY, OCTOBER 29

11:00 AM - 12:30 PM

A2L-D: Sensing Circuits

Room 101C

Session Chairs: Yi Chiu (National Chiao Tung University, Taiwan),
Cheng-Ta Chiang (National Chiayi University, Taiwan)

11:00 AM

**CMOS-INTEGRATED FOUR-CONTACT SENSORS FOR MAGNETIC
AND MECHANICAL SIGNALS: NOVEL DEVICES, SYSTEMS, AND
APPLICATIONS**

Oliver Paul

Universität Freiburg / IMTEK, Germany

11:15 AM

**AN ULTRA-LOW NOISE SWITCHED CAPACITOR
TRANSIMPEDANCE AMPLIFIER FOR PARALLEL SCANNING
TUNNELING MICROSCOPY**

Yingying Tang, Yang Zhang, Gary Fedder, Rick Carley

Carnegie Mellon University, USA

11:30 AM

40 VOLT NMOS IN A 0.5 μ M STANDARD CMOS PROCESS

Tsung-Hsueh Lee, Pamela Abshire

University of Maryland, USA

11:45 AM

**A 300°C, SOI TRANSIMPEDANCE AMPLIFIER WITH APPLICATION
TO CAPACITIVE TEMPERATURE SENSING**

Lemi Toygur, Amita Patil, Jun Guo, Xinyu Yu, Steven Garverick

Case Western Reserve University, USA

12:00 PM

**A MEMS BASED ELECTROMETER WITH A LOW-NOISE
SWITCHED RESET AMPLIFIER FOR CHARGE MEASUREMENT**

Gerardo Jaramillo², David Horsley², Cesare Buffa¹, Giacomo
Langfelder¹

¹Politecnico di Milano, Italy; ²University of California, Davis, USA

MONDAY, OCTOBER 29

11:00 AM - 12:30 PM

A2L-E: Miscellaneous Sensors II

Room 101D

**Session Chairs: Siavash Pourkamali (University of Denver, USA),
Wensyang Hsu (National Chiao Tung University, Taiwan)**

11:00 AM

**PROBING VISCOELASTICITY OF NANOMETER THICK
SELFASSEMBLED LAYERS**

Srinivas Tadigadapa², Hwall Min², Ping Kao¹

¹Inotera Memories Inc, Taiwan; ²Pennsylvania State University, USA

11:15 AM

**A REMOTE SENSOR-BASED 6-MINUTE FUNCTIONAL WALKING
ABILITY TEST**

Jurgen Schulte, Duc Nguyen, Doan Hoang, Doug Elliott, Sharon
McKinley, Priyadarsi Nanda

University of Technology, Sydney, Australia

11:30 AM

**A MULTI-FEATURE SCHEME FOR POSTURE RECOGNITION WITH
3D TOF SENSOR**

Alessandro Leone, Giovanni Diraco, Pietro Siciliano

CNR-IMM, Italy

11:45 AM

**A HIGH-RESOLUTION FLEXIBLE TACTILE IMAGER SYSTEM
BASED ON FLOATING COMB ELECTRODES**

Rajesh Surapaneni, Yan Xie, Qingbo Guo, Darrin Young, Carlos
Mastrangelo

University of Utah, USA

12:00 PM

**NOVEL "SMART CUBE" WIRELESS SENSORS WITH EMBEDDED
PROCESSING/COMMUNICATION/POWER CORE FOR "SMART
SKINS" APPLICATIONS**

James Cooper, Manos Tentzeris

Georgia Institute of Technology, USA

MONDAY, OCTOBER 29

11:00 AM - 12:30 PM

A2L-F: Bendable / Stretchable Sensors and Systems I

Room 103

Session Chairs: T. Sekitani (University of Tokyo, Japan), R. S. Dahiya (Fond. Bruno Kessler, Italy)

11:00 AM

CHALLENGES IN VISIBLE WAVELENGTH DETECTION USING OPTICALLY TRANSPARENT OXIDE SEMICONDUCTORS

Sungsik Lee², Arokia Nathan¹, John Robertson¹

¹Cambridge University, United Kingdom; ²University College London, United Kingdom

11:15 AM

FULLY INKJET-PRINTED PARALLEL-PLATE CAPACITIVE GAS SENSORS ON FLEXIBLE SUBSTRATE

FRANCISCO MOLINA-LOPEZ¹, DANICK BRIAND¹, NICO DE ROOIJ¹, MARIA Smolander²

¹Ecole Polytechnique Fédérale de Lausanne, Switzerland; ²VTT Technical Research Centre of Finland, Finland

11:30 AM

ORGANIC BENDABLE AND STRETCHABLE FIELD EFFECT DEVICES FOR SENSING APPLICATIONS

Piero Cosseddu, Alberto Loi, Laura Basiricò, Stefano Lai, Annalisa Bonfiglio

Università degli studi di Cagliari, Italy

11:45 AM

ULTRA-FLEXIBLE, ULTRA-THIN, ULTRA-SENSITIVE ORGANIC PRESSURE SENSOR SYSTEM FOR BIOMEDICAL APPLICATIONS

Tsuyoshi Sekitani, Tomoyuki Yokota, Takao Someya

University of Tokyo, Japan

12:00 PM

BENDABLE ULTRA-THIN SILICON CHIPS ON FOIL

Ravinder Dahiya, Andrea Adami, Cristian Collini, Leandro Lorenzelli

Fondazione Bruno Kessler, Italy

12:30 PM - 1:30 PM

3F Banquet Hall

LUNCH

MONDAY, OCTOBER 29

1:30 PM - 3:00 PM

A3L-A: Optical Sensors I

Room 101A

Session Chairs: Paddy French (TU Delft, the Netherlands), Hsiao-Wen Zan (National Chiao Tung University, Taiwan)

1:30 PM

**CHEMI-LUMINESCENT VISUALIZATION SYSTEM FOR
EVALUATION OF ALCOHOL METABOLISM BASED ON
TRANSDERMAL EMISSION OF GASEOUS ETHANOL**

Takahiro Arakawa, Xing Wang, Kazutaka Kita, Kumiko Miyajima,
Hiroyuki Kudo, Kohji Mitsubayashi
Tokyo Medical and Dental University, Japan

1:45 PM

**DEVELOPMENT OF HIGH-SENSITIVITY PORTABLE OPTICALLY
PUMPED ATOMIC MAGNETOMETER WITH ORTHOGONAL PUMP
AND PROBE LASER BEAMS**

Kazuhisa Okano¹, Akira Terao¹, Kazuhiro Ban¹, Sunao Ichihara¹,
Natsuhiko Mizutani¹, Tetsuo Kobayashi²
¹Canon Inc., Japan; ²Kyoto University, Japan

2:00 PM

**OPTICAL SENSING OF MACROMOLECULES AND
MICROPARTICLES DISTRIBUTION IN TISSUES**

Kirill Larin, Shang Wang, Paul Ruchhoeft, Richard Willson, Joel
Morrisett, Mohamad Ghosn
University of Houston, USA

2:15 PM

**DIRECT LIVE CELL IMAGING USING LARGE-SCALE NANOLASER
ARRAY**

Hiroshi Abe, Tetsuhisa Furumoto, Michimasa Narimatsu, Shota Kita,
Kosuke Nakamura, Yasushi Takemura, Toshihiko Baba
Yokohama National University, Japan

2:30 PM

**HIGH PERFORMANCE SURFACE ENHANCED RAMAN
SCATTERING OPTICAL MONITORING IN HEMODIALYSIS
SYSTEM FOR QUANTATIVE ANALYSIS**

Chia-Jung Chang, Jing-Yuan Lin, Shang-Chian Su
Industrial Technology Research Institute, Taiwan

2:45 PM

**VERY LOW FREQUENCY SELF-MIXING LASER DIODE
VIBROMETER**

Giuseppe Martini, Enrico Randone, Silvano Donati
Università degli studi di Pavia, Italy

MONDAY, OCTOBER 29

1:30 PM - 3:00 PM

A3L-B: Biosensors II

Room 101B

Session Chairs: Pietro Siciliano (CNR IMM, Italy), Dae-Sik Lee (ETRI, Korea)

1:30 PM

APPLICATION OF CLOUD COMPUTING IN PHYSICAL ACTIVITY RESEARCH

I-Te Hsieh, Jia-Yi Li, Chun-Yu Chen, Chun-Ting Lai, Yu-Cheng Lin, Terry B.J. Kuo

National Yang-Ming University, Taiwan

1:45 PM

QUARTZ-BASED PHOTONIC CRYSTAL SURFACES FOR MULTIPLEXED CANCER BIOMARKER DETECTION

Cheng-Sheng Huang², Vikram Chaudhery², James Polans², Meng Lu², Brian Cunningham², Anusha Pokhriyal², Sherine George², Richard Zangar¹

¹*Pacific Northwest National Laboratory, USA;* ²*University of Illinois at Urbana-Champaign, USA*

2:00 PM

DIATOM BASED BIOSENSOR FOR HIGH SENSITIVE FLUORESCENCE DETECTION BASED ON A SPIN-ON GLASS BONDING TECHNIQUE

Junfeng Pan, Jun Cai, Deyuan Zhang, Yonggang Jiang, Yu Wang, Mingli Chen, Aobo Li

Beihang University, China

2:15 PM

DEVELOPING HIGHLY-INTEGRATED SUBCUTANEOUS BIOCHIPS FOR REMOTE MONITORING OF HUMAN METABOLISM

Sandro Carrara, Andrea Cavallini, Sara Ghoreishizadeh, Jacopo Olivo, Giovanni De Micheli

École Polytechnique Fédérale de Lausanne, Switzerland

2:30 PM

MONOLITHIC SYSTEM FEATURING A GOLD NANOWIRE ARRAY ON A CMOS CHIP FOR BIOSENSING APPLICATIONS

Paolo Livi¹, Joerg Rothe¹, Alexander Stettler¹, Yihui Chen¹, Andreas Hierlemann¹, Vitaliy Guzenko²

¹*ETH Zürich, Switzerland;* ²*Paul Scherrer Institute, Switzerland*

MONDAY, OCTOBER 29

1:30 PM - 3:00 PM

A3L-C: Resonators

Room 102

Session Chairs: Daniel Grogg (IBM, Switzerland), Sheng-Shian Li (National Tsing Hua University, Taiwan)

1:30 PM

PRECISION CURVED MICRO HEMISPHERICAL RESONATOR SHELLS FABRICATED BY POACHED-EGG MICRO-MOLDING

Yan Xie, Hao-Chieh Hsieh, Pradeep Pai, Hanseup Kim, Massood Tabib-Azar, Carlos Mastrangelo
University of Utah, USA

1:45 PM

A DIFFERENTIAL ELECTROMETER BASED ON COUPLED MICRORESONATORS

Mohamadsadegh Hajhashemi, Behraad Bahreyni
Simon Fraser University, Canada

2:00 PM

PRESSURE DEPENDENCE OF THIN POLYCRYSTALLINE SILICON CARBIDE DIAPHRAGM RESONATORS

Andrew Barnes, Jaesung Lee, Patrick Rawlinson, Philip X.-L. Feng, Christian Zorman
Case Western Reserve University, USA

2:15 PM

SELECTIVE WEIGHING OF INDIVIDUAL MICROPARTICLES USING A HYBRID MICROMANIPULATOR-NANOMECHANICAL RESONATOR SYSTEM

Bin-Da Chan, Richard Gieseck, Cagri Savran
Purdue University, USA

2:30 PM

ANTI-PHASE MODE ISOLATION IN TUNING-FORK MEMS USING A LEVER COUPLING DESIGN

Brenton Simon, Alexander Trusov, Andrei Shkel
University of California, Irvine, USA

2:45 PM

QUALITY FACTOR AND VIBRATION AMPLITUDE BASED VISCOSITY MEASUREMENTS USING SUSPENDED MICROCHANNEL RESONATORS

Il Lee, Jungchul Lee
Sogang University, Korea, South

MONDAY, OCTOBER 29

1:30 PM - 3:00 PM

A3L-D: Wireless / Microwave Technique for Sensing

Room 101C

**Session Chairs: Svetlana Tatic-Lucic (Lehigh University, USA),
Konandur Rajanna (Indian Institute of Science, India)**

1:30 PM

WIDEBAND VISIBLE WAVELENGTH RANGE MEMS FABRY-PEROT TUNABLE FILTER WITH CALIBRATION SYSTEM

Nozomu Hrokubo¹, Hiroshi Komatsu¹, Nobuaki Hashimoto¹, Makoto Sonehara², Toshiro Sato²

¹Seiko Epson Corporation, Japan; ²Shinshu University, Japan

1:45 PM

NEW MICROWAVE SENSING SYSTEM FOR BLADE TIP CLEARANCE MEASUREMENT IN GAS TURBINES

Maddalena Violetti¹, Anja Skrivervik¹, Qin Xu², Michaël Hafner²

¹École Polytechnique Fédérale de Lausanne, Switzerland; ²Meggitt Sensing Systems, Switzerland

2:00 PM

WIRELESS SELF-POWERED PLANT HEALTH-MONITORING SENSOR SYSTEM

Ami Tanaka, Toyoshi Ishihara, Fumiyasu Utsunomiya, Takakuni Douseki

Ritsumeikan University, Japan

2:15 PM

NEW MINIATURIZED MICROWAVE CAVITY FOR RUBIDIUM ATOMIC CLOCKS

Maddalena Violetti¹, Francesco Merli¹, Jean-François Zürcher¹, Anja Skrivervik¹, Matthieu Pellaton², Christoph Affolderbach², Gaetano Mileti²

¹École Polytechnique Fédérale de Lausanne, Switzerland; ²Université de Neuchâtel, Switzerland

2:30 PM

A NEW MILLIMETER-WAVE MICRO-FLUIDIC TEMPERATURE SENSOR FOR WIRELESS PASSIVE RADAR INTERROGATION

Sofiene Bouaziz², Franck Chebila², Anya Traille², Patrick Pons², Hervé Aubert², Manos Tentsiris¹

¹Georgia Institute of Technology, USA; ²LAAS CNRS / University de Toulouse, France

2:45 PM

SENSITIVITY CHARACTERISTICS IN THE PACKAGED INLINE RF MEMS POWER SENSORS UNDER DIFFERENT TEMPERATURE AND HUMIDITY ENVIRONMENTS

Zhiqiang Zhang, Xiaoping Liao

Southeast University, China

MONDAY, OCTOBER 29

1:30 PM - 3:00 PM

A3L-E: Fabrication and Material Characterization

Room 101D

Session Chairs: Christian Zorman (Case Western Reserve Univ., USA), Jerwei Hsieh (Asia Pacific Microsystems Inc., Taiwan)

1:30 PM

A NOVEL FABRICATION PROCESS TO REALISE PIEZOELECTRIC CANTILEVER STRUCTURES FOR SMART FABRIC SENSOR APPLICATIONS

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

1:45 PM

FABRICATION OF A PUSH-PULL TYPE ELECTROSTATIC COMB-DRIVE RF MEMS SWITCH

Li Feng Wang, Lei Han, Jie Ying Tang, Qing-An Huang
Southeast University, China

2:00 PM

SUBSTRATE BONDING AT LOW TEMPERATURE BY USING PLASMA ACTIVATED POROUS GOLD

Wei-Shan Wang², Yu-Ching Lin², Thomas Gessner¹, Masayoshi Esashi²

¹Fraunhofer-Institut für Elektronische Nanosysteme, Germany; ²Tohoku University, Japan

2:15 PM

RIE PATTERNING TECHNOLOGY OF ZR-BASED METALLIC GLASS FOR MEMS DEVICES FABRICATION

Yao-Chuan Tsai³, Yu-Ching Lin³, Takashi Abe², Masayoshi Esashi³, Thomas Gessner¹

¹Fraunhofer-Institut für Elektronische Nanosysteme, Germany; ²Niigata University, Japan; ³Tohoku University, Japan

2:30 PM

FABRICATION AND CHARACTERIZATION OF MINIATURIZED PHOTO-ELECTRO-CHEMICAL SOLAR CELLS

Xin Li, Amir Rahafrooz, Siavash Pourkamali
University of Denver, USA

2:45 PM

FABRICATION OF LOCALIZED PLASMA GOLD-TIP NANOPROBES WITH INTEGRATED MICROCHANNELS FOR DIRECT-WRITE NANOMANUFACTURING

Yan Xie, Rajesh Surapaneni, Faisal Chowdhury, Massood Tabib-Azar, Carlos Mastrangelo
University of Utah, USA

MONDAY, OCTOBER 29

1:30 PM - 3:00 PM

A3L-F: Material-integrated Sensing and Intelligence !V Concepts / Fundamental Technologies and Application

Room 103

Session Chairs: Matthias Busse (Ruhr University Bochum, Germany), Dirk Lehmhus (U. of Bremen, Germany)

1:30 PM

EMBEDDING WITHOUT DISRUPTION: THE BASIC CHALLENGE OF SENSOR INTEGRATION

Walter Lang, Dmitriy Boll, Elena Tolstosheeva, Azat Ibragimov, Konstantin Schubert, Christoff Brauner, Christoph Pille
Universität Bremen, Germany

1:45 PM

ACTUATOR AND SENSOR PERFORMANCE OF PIEZO-METAL-COMPOSITES

Welf-Guntram Drossel¹, Sebastian Hensel¹, Matthias Nestler¹, Reimund Neugebauer¹, Lutz Lachmann²

¹*Fraunhofer-Institut für Werkzeugmaschinen und Umformtechnik, Germany;*

²*Technische Universität Chemnitz, Germany*

2:00 PM

STATE-OF-THE-ART PIPELINE STRUCTURAL HEALTH MONITORING SYSTEMS

Irene Li, Amrita Kumar, Shawn J. Beard, David C. Zhang
Acellent Technologies, USA

2:15 PM

BIO-INSPIRED INTELLIGENT SENSING MATERIALS FOR FLY-BY-FEEL AUTONOMOUS VEHICLES

Nathan Salowitz, Zhiqiang Guo, Sang-Jong Kim, Yu-Hung Li, Giulia Lanzara, Fu-Kuo Chang
Stanford University, USA

2:30 PM

ADAPTIVE METACOMPOSITES FOR VIBROACOUSTIC CONTROL APPLICATIONS

Manuel Collet², M. Ouisse¹

¹*CNRS - FEMTO-ST Institute, France;* ²*Université de Franche-Comté / CNRS - FEMTO-ST Institute, France*

MONDAY, OCTOBER 29 - POSTER SESSION

3:00 PM - 4:50 PM

A4P-G: Monday Poster Session

Room 201

Session Chairs: Pin Chang (ITRI, Taiwan), Wen-Pin Shih (National Taiwan University, Taiwan)

A4P-J1

ADVANCED TECHNIQUE TO SUPPRESS SUBJECT VARIABILITY FOR BIO-IMPEDANCE BASED ALCOHOL-INTAKE DETECTION

Kazuma Kojima, Susumu Tamura, Yasuhisa Omura

Kansai University, Japan

A4P-J2

STUDY ON FLOW BEHAVIOR OF BCB IN ADHESIVE BONDING AIMING AT REDUCING TRANSVERSE DEFORMATION

Kangfa Deng, Huan Zheng, Shaobo Jiang, Wei Zhang

Peking University, China

A4P-J3

RF TOMOGRAPHY: SELF CALIBRATION OF DISTRIBUTED RF SENSORS

Lorenzo Lo Monte, Russell Vela, Michael Wicks

University of Dayton Research Institute, USA

A4P-J4

TEMPERATURE INFLUENCE INVESTIGATION ON HALL EFFECT SENSORS PERFORMANCE USING A LUMPED CIRCUIT MODEL

Maria-Alexandra Paun, Jean-Michel Sallese, Maher Kayal

École Polytechnique Fédérale de Lausanne, Switzerland

A4P-J5

ELECTROSTATIC LEVITATION: ANALYSIS AND DEPENDENCE ON COMB-DRIVE PARAMETERS

Anindya Lal Roy, Tarun Kanti Bhattacharyya

Indian Institute of Technology, Kharagpur, India

A4P-J6

MODELING THE SENSING BEHAVIOR OF A MEMS FIELD IONIZATION DEVICE COUPLED WITH CAPACITIVE ACTUATION

Thomas Walewyns, Laurent Francis

Université catholique de Louvain, Belgium

A4P-J7

AUTOMATED WIRE FAULT LOCATION USING IMPEDANCE SPECTROSCOPY AND GENETIC ALGORITHM

Qinghai Shi, Olfa Kanoun

Chemnitz University of Technology, Germany

A4P-J8

PROPOSAL OF CHOPPER RADAR SYSTEM ENABLING FLEXIBLE RANGE SENSITIVITY DESIGN

Hiromichi Hashizume¹, Masanori Sugimoto²

¹National Institute of Informatics, Japan; ²University of Tokyo, Japan

MONDAY, OCTOBER 29 - POSTER SESSION

A4P-K1

LOVE WAVE DEVICES WITH EXCELLENT TEMPERATURE STABILITY FOR APPLICATION IN GAS SENSOR

Wen Wang, Xiao Xie, Jiaoli Hou, Shitang He
Institute of Acoustics, Chinese Academy of Sciences, China

A4P-K2

DEVELOPMENT OF METHANOL SENSOR USING SHEAR HORIZONTAL SURFACE ACOUSTIC WAVE DEVICES FOR DIRECT METHANOL FUEL CELLS

Sabro Endo, Takuya Nozawa, Jun Kondoh
Shizuoka University, Japan

A4P-K3

HYDROGEN SENSORS BASED ON GAN DIODES: THE SENSING MECHANISM

Yoshihiro Irokawa
National Institute for Materials Science, Japan

A4P-K4

ELECTRODEPOSITED PD/NI/SI MICRO-CHANNEL PLATE ELECTRODE FOR HYDROGEN PEROXIDE DETECTION AND APPLICATION

Yuzhu Jing², Bobo Peng², Tao Liu², Fei Wang², Lianwei Wang², Paul K Chu Chu¹

¹City University of Hong Kong, Hong Kong; ²East China Normal University, China

A4P-K5

A HIGHLY FAST CAPACITIVE-TYPE HUMIDITY SENSOR USING PERCOLATING CARBON NANOTUBE FILMS AS A POROUS ELECTRODE MATERIAL

Hyun Pyo Hong², Kyung Hoon Jung², Nam Ki Min², Yong Hoon Rhee², Chan Won Park¹

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A4P-K6

DEVELOPMENT OF A MULTICHANNEL TASTE SENSOR CHIP FOR A PORTABLE TASTE SENSOR

Yusuke Tahara, Yoshihiro Maehara, Ji Ke, Akihiro Ikeda, Kiyoshi Toko
Kyushu University, Japan

A4P-K7

A CAPACITIVE RELATIVE HUMIDITY SENSOR USING POLYMER NANOPARTICLES

Yifan Wang, Mohamadsadegh Hajhashemi, Behraad Bahreyni
Simon Fraser University, Canada

A4P-K8

ETHANOL SENSING CHARACTERISTICS OF SENSORS BASED ON ZNO:AL NANOSTRUCTURES PREPARED BY THERMAL OXIDATION

Supab Choopun¹, Duangmanee Wongratanaphisan¹, Atcharawon Gardchareon¹, Ekasiddh Wongrat²

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A4P-K9

DETERMINATION OF TOTAL PHOSPHORUS IN WATER ENVIRONMENT BY THREE-DIMENSIONAL DOUBLE COILS MICROELECTRODE CHIP

Qiannan Xue², Chao Bian¹, Jianhua Tong¹, Jizhou Sun¹, Hong Zhang¹, Shanhong Xia¹

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A4P-K10

SETUP AND PROPERTIES OF A FULLY INKJET PRINTED HUMIDITY SENSOR ON PET SUBSTRATE

Eric Starke, Alexander Türke, Marion Schneider, Wolf-Joachim Fischer
Technische Universität Dresden, Germany

A4P-K11

GRAVURE PRINTED SURFACE ENHANCED RAMAN SPECTROSCOPY (SERS) SUBSTRATES FOR DETECTION OF TOXIC HEAVY METAL COMPOUNDS

Ali Eshkeiti, Avuthu Sai Guruva Reddy, Binu Baby Narakathu, Margaret K. Joyce, Bradley J. Bazuin, Massood Zandi Atashbar
Western Michigan University, USA

A4P-K12

LOW-POWER-CONSUMPTION CO₂ GAS SENSOR USING IONIC LIQUIDS FOR GREEN ENERGY MANAGEMENT

Masahito Honda¹, Yusuke Takei³, Koutarou Ishizu³, Hiroshi Imamoto², Toshihiro Itoh¹, Ryutaro Maeda¹, Kiyoshi Matsumoto³, Isao Shimoyama³

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A4P-L1

DEVELOPMENT OF AN IMPLANTABLE MICRO TEMPERATURE SENSOR FABRICATED ON THE CAPILLARY FOR BIOMEDICAL AND MICROFLUIDIC MONITORING

Zhuoqing Yang, Yi Zhang, Toshihiro Itoh

Macro BEANS Center & National Institute of Advanced Industrial Science and Technology, Japan

A4P-L2

A HIGH SENSITIVITY CHEMILUMINESCENCE-BASED CMOS IMAGE BIOSENSOR FOR THE DETECTION OF HUMAN INTERLEUKIN 5 (IL-5)

Hyou-Arm Joung, Dong-Gu Hong, Min-Gon Kim

Gwangju Institute of Science and Technology, Korea, South

A4P-L3

EVALUATION OF ANTIOXIDANT ACTIVITY USING CNT ELECTRODE BY DETECTING HYDROXYPEROXIDES ON OXIDIZED LDL

Futaba Ohkawa, Seiji Takeda, Shu-Ping Hui, Toshihiro Sakurai, Hirotooshi Fuda, Shigeki Jin, Hitoshi Chiba, Kazuhisa Sueoka
Hokkaido University, Japan

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A4P-L4

THE NOVEL RESEARCH OF INTRAOCULAR PRESSURE TONOMETER BY USING INDUCTANCE SENSOR

Yu-Shun Tang⁴, Wei-De Jeng⁴, Ting-Wei Huang⁴, Mang Ou-Yang⁴, Jin-Chern Chiou⁴, Jeng-Ren Duann¹, Ching-Hsing Luo³, Hong-Yi Huang⁵, Yi-Wu Tsai²

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³National Cheng Kung University, Taiwan; ⁴National Chiao Tung University, Taiwan; ⁵National Taipei University, Taiwan

A4P-L5

ELECTRICAL DETECTION OF NOROVIRUS CAPSID USING DIELECTROPHORETIC IMPEDANCE MEASUREMENT METHOD

Michihiko Nakano, Takafumi Hisajima, Lina Mao, Junya Suehiro
Kyushu University, Japan

A4P-L6

USING THE MODIFIED FIBER MEMBRANE TO IMPROVE THE EFFICIENCY OF THE BLOOD SEPARATION IN RAPID TEST STRIP

Chia-Hsien Yeh², Hsin-Zhan Yeh², Yu-Cheng Lin², Pi-Lan Shen¹

¹Firstep Bioresearch, Inc., Taiwan; ²National Cheng Kung University, Taiwan

A4P-L7

IMPLANTABLE FIBER-OPTIC SPR SENSOR MODIFIED WITH LPFG AND PAA-RAN-PAAPBA FOR CONTINUOUS GLUCOSE MONITORING

Dachao Li, Peng Wu, Rui Zhu, Jia Yang, Haixia Yu, Kexin Xu
Tianjin University, China

A4P-L8

INVESTIGATION OF THE BINDING AFFINITY OF C-TERMINAL DOMAIN OF SARS CORONAVIRUS NUCLEOCAPSID PROTEIN TO NUCLEOTIDE USING ALGAN/GAN HIGH ELECTRON MOBILITY TRANSISTORS

You-Ren Hsu³, Geng-Yen Lee², Jen-Inn Chyi², Chung-ke Chang¹,
Chih-Cheng Huang³, Chen-Pin Hsu³, Tai-huang Huang¹, Fan Ren⁴,
Yu-Lin Wang³

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A4P-L9

REAL-TIME BIO-SENSING USING MICRO-CHANNEL ENCAPSULATED THERMAL-PIEZORESISTIVE ROTATIONAL MODE DISK RESONATORS

Ayesha Iqbal, Jennifer Chapin, Emad Mehdizadeh, Amir Rahafrooz,
Byron Purse, Siavash Pourkamali
University of Denver, USA

A4P-L10

A DEVELOPED QUANTITATIVE MEASUREMENT USING THE ELECTRO-MICROCHIP FOR METHAMPHETAMINE DETECTION

Chia-Hsien Yeh², Wei-Ting Wang², Yu-Cheng Lin², Pi-Lan Shen¹

¹Firstep Bioresearch, Inc., Taiwan; ²National Cheng Kung University, Taiwan

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A4P-L11

SUB-POPULATION ANALYSIS OF DEFORMABILITY DISTRIBUTION IN HETEROGENEOUS CELL POPULATIONS

Il Doh², Young-Ho Cho², Won Chul Lee¹, Frans Kuypers¹, Albert
Pisano³

¹Children's Hospital Oakland Research Institute, USA; ²Korea Advanced Institute
of Science and Technology, Korea, South; ³University of California at Berkeley,
USA

A4P-L12

HIGHLY SENSITIVE MICROELECTRODE FOR GLUCOSE SENSING VIA INKJET PRINTING TECHNOLOGY

Pei-Yu Huang

National Taiwan University, Taiwan

A4P-M1

PLASTIC OPTICAL FIBER MICROBEND SENSOR USED AS BREATHING SENSOR

Zhihao Chen, Ju Teng Teo, Soon Huat Ng, Xiufeng Yang

Institute for Infocomm Research, Singapore

A4P-M2

SILICON-BASED GUIDED-WAVE OPTICAL ACCELEROMETER: EXPERIMENTAL CONSIDERATION TO ESTABLISH ITS DESIGN GUIDELINE

Natsumi Saito, Yusuke Miura, Takuya Oshima, Masashi Ohkawa,
Takashi Sato

Niigata University, Japan

A4P-M3

THIN-FILM VACUUM PACKAGING BASED ON POROUS ANODIC ALUMINA (PAA) FOR INFRARED (IR) DETECTION

Gwang-Jae Jeon, Woo Young Kim, Hee Chul Lee

Korea Advanced Institute of Science and Technology, Korea, South

A4P-M4

CHARACTERISTICS OF UV SENSORS USING ZNO NANOSTRUCTURES SYNTHESIZED BY GALVANOSTATIC ELECTROCHEMICAL DEPOSITION

Tonny Rokhsana Rashid, Duy-Thach Phan, Gwi-Yang Chung

University of Ulsan, Korea, South

A4P-M5

RECEIVER AND AMPLIFIER OPTIMIZATION FOR HYBRID MOEMS

Wilfried Hortschitz¹, Jörg Encke¹, Franz Kohl¹, Thilo Sauter¹, Harald
Steiner², Michael Stifter², Franz Keplinger²

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A4P-M6

OPTICAL FIBER BRAGG GRATING BASED CHEMICAL SENSOR

David Hsiao-Chuan Wang, Susan Hwang, Simon Maunder, Neil
Blenman, John Arkwright

CSIRO Material Science and Engineering, Australia

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A4P-M7

3D MONOLITHIC INTEGRATED THERMOELECTRIC IR SENSOR

Dehui Xu, Bin Xiong, Guoqiang Wu, Yinglei Ma, Errong Jing, Yuelin Wang

Shanghai Institute of Microsystem And Information Technology, CAS, China

A4P-M8

SENSING IN SOOTING FLAMES: THZ TIME-DOMAIN SPECTROSCOPY AND TOMOGRAPHY

Hamidreza Darabkhani², Miguel Banuelos-Saucedo², John Young², Mark Stringer¹, Paul Wright², Qian Wang³, Yang Zhang³, Bob Miles¹, Krikor Ozanyan²

¹University of Leeds, United Kingdom; ²University of Manchester, United Kingdom; ³University of Sheffield, United Kingdom

A4P-M9

SIGNAL PROCESSING OF A HIGH RESOLUTION AND LONG-RANGE DISPLACEMENT SENSOR

Neha Arora, Laurent Petit, Muneeb Ullah Khan, Frédéric Lamarque, Christine Prella

Université de Technologie de Compiègne, France

A4P-M10

NANO-SIZE STRUCTURE FORMATION ON SI SUBSTRATE FOR OPTICAL DEVICE APPLICATION

Daeyoung Kong², Junghwa Oh², Bonghwan Kim¹, ChanSeob Cho², Jonghyun Lee²

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A4P-M11

TEMPERATURE SENSORS BASED ON D-SHAPED FIBER BRAGG GRATING COATED WITH DIFFERENT THIN FILMS

Chuen-Lin Tien², Li-Chieh Chen², Hsiang-Yi Chiang², Wen-Fung Liu², Hsi-Fu Shih¹

¹Chung Hsing University, Taiwan; ²Feng Chia University, Taiwan

A4P-M12

HIGHLY SENSITIVE PRESSURE SENSOR BASED ON CASCADED LONG-PERIOD GRATINGS

Mateusz Smietana², Wojtek Bock¹, Predrag Mikulic¹, Jiahua Chen¹

¹University of Quebec, Canada; ²Warsaw University of Technology, Poland

A4P-M13

SANDWICHED MICROFLUIDIC CHIP-BASED INTERFEROMETRIC REFRACTOMETER

Sarun Sumriddetchkajorn², Kosom Chaitavon², Jiti Nukeaw¹

¹King Mongkut's Institute of Technology Ladkrabang, Thailand; ²National Electronics and Computer Technology Center, Thailand

A4P-M14

STRUCTURED COMPRESSIVE SENSING FOR ROBUST AND FAST VISUAL TRACKING

Tianxiang Bai, Youfu Li, Jianyang Liu

City University of Hong Kong, Hong Kong

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A4P-N1

ELECTROSTATICALLY LEVITATED RING-SHAPED ROTATIONAL-GYRO/ACCELEROMETER USING ALL-DIGITAL OFDM DETECTION WITH TAD

Tomohito Terasawa¹, Takamoto Watanabe¹, Takao Murakoshi²

¹Denso Corporation, Japan; ²TOKYO KEIKI Inc., Japan

A4P-N2

A NOVEL CAPACITIVE ABSOLUTE PRESSURE SENSOR USING SON TECHNOLOGY

Xiuchun Hao¹, Atuhiko Masuda¹, Kohei Higuchi¹, Sinya Tanaka⁴, Kazusuke Maenaka⁴, Hidekuni Takao², Jun Nakamura⁵, Koichi Sudoh³

¹Japan Science and Technology Agency, Japan; ²Kagawa University, Japan;

³Osaka University, Japan; ⁴University of Hyogo, Japan; ⁵Yamaha Co. Ltd., Japan

A4P-N3

INTEGRATION OF TEMPERATURE DETECTION ONTO CATHETER FLOW SENSOR FOR BRONCHOSCOPE

Yudai Yamazaki, Kazuhiro Yoshikawa, Mitsuhiro Shikida, Miyoko Matsushima, Tsutomu Kawabe

Nagoya University, Japan

A4P-N4

A NOVEL SUSPENSION DESIGN FOR MEMS SENSING DEVICE TO ELIMINATE PLANAR SPRING CONSTANTS MISMATCH

Kai-Yu Jiang², He-Ling Chen¹, Wensyang Hsu¹, Yueh-Kang Lee², Yen-Wu Miao², Yi-Chueh Shieh¹, Chen-Yuan Hung¹

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A4P-N5

SIMULATION AND OPTIMIZED DESIGN OF CAPACITANCE SENSOR FOR GAS/SOLID TWO-PHASE FLOW PHASE CONCENTRATION MEASUREMENT

Hongli Hu, Jiebing Yan, Xiaoxin Wang, Xiangxiang Gao

Xi'an Jiaotong University, China

A4P-N6

RESONANCE CHARACTERISTICS OF DIFFERENT OPERATION MODES OF AN ORBITING SPHERE VISCOMETER

Stefan Clara, Hannes Antlinger, Bernhard Jakoby

Johannes Kepler Universität in Linz, Austria

A4P-N7

MEASUREMENT OF MIXING RATIO AND VOLUME CHANGE OF ETHANOL-WATER BINARY MIXTURES USING SUSPENDED MICROCHANNEL RESONATORS

Il Lee, Jungchul Lee

Sogang University, Korea, South

A4P-N8

PIEZOELECTRIC PDMS FILMS WITH MICRO PLASMA DISCHARGE FOR ELECTROMECHANICAL SENSORS

Jhih-Jhe Wang, Yu-Chuan Su

National Tsing Hua University, Taiwan

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A4P-N9

CHARACTERIZATION OF PAPER-BASED FLEXIBLE PRESSURE SENSOR

Chao-Cheng Shiau, Kan-Chien Li, Zhen-Kai Kao, Ying-Chih Liao, Yen-Wen Lu

National Taiwan University, Taiwan

A4P-N10

NON-INTRUSIVE ELECTRIC POWER SENSORS FOR SMART GRID

Pradeep Pai, Lingyao Chen, Faisal Chowdhury, Massood Tabib-Azar

University of Utah, USA

A4P-N11

FLEXIBLE TACTILE SENSORS BASED ON NANOIMPRINTED SUB-20 NM PIEZOELECTRIC COPOLYMER NANOGRASS FILMS

Alan Chen², Kai-Lun Lin², Chien-Chong Hong², Tong-Miin Liou², Jiann Shieh³, Szu-Hung Chen¹

¹National Nano Device Laboratories, Taiwan; ²National Tsing Hua University, Taiwan; ³National United University, Taiwan

A4P-N12

CALIBRATION-FREE FORCE SENSORS USING LIQUID CRYSTAL ARRAYS

Chia-Yi Huang, Liang Lou, Chengkuo Lee

National University of Singapore, Singapore

A4P-N13

CATHETER FLOW SENSOR SYSTEM AND BREATHING MEASUREMENTS IN RABBIT

Takuya Matsuyama, Yudai Yamazaki, Takaaki Shikano, Mitsuhiro Shikida, Miyoko Matsushima, Tsutomu Kawabe

Nagoya University, Japan

A4P-N14

FABRICATION AND ELECTRICAL CHARACTERIZATION OF BOTTOM-UP SILICON NANOWIRE RESONATORS

Marc Sansa, Álvaro San Paulo, Francesc Pérez-Murano

IMB-CNM, CSIC, Spain

A4P-N15

POLY-SIGE-BASED MEMS XYLOPHONE BAR MAGNETOMETER

Véronique Rochus³, Roelof Jansen³, Harry Tilmans³, Xavier Rottenberg³, Sylvain Ranvier¹, Hervé Lamy¹, Gary Chen³, Pierre Rochus²

¹Belgian Institute for Space Aeronomy, Belgium; ²Centre Spatial de Liège, Belgium; ³Interuniversitair Micro-Electronica Centrum, Taiwan

A4P-N16

SUB-FF TRIMMABLE READOUT CIRCUIT FOR TRI-AXES CAPACITIVE MICROACCELEROMETERS

Hyun Kyu Ouh², Jungryoul Choi², Jungwoo Lee², Sangyun Han², Sungwook Kim², Jindeok Seo¹, Kyomook Lim¹, Hyoungho Ko¹

¹Chungnam National Univ., Korea, South; ²TLI Inc., Korea, South

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A4P-O1

A CMOS CAPACITIVE MICROMECHANICAL OSCILLATOR DRIVEN BY A PHASE-LOCKED LOOP

Hsin-Chih Li², Sheng-Hsiang Tseng¹, Po-Chiun Huang², Michael Lu²

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A4P-O2

A SENSITIVE INTERFACE CIRCUIT WITH WIDE DYNAMIC RANGE FOR CAPACITIVE SENSORS

Fatemeh Aezinia, Behraad Bahreyni

Simon Fraser University, Canada

A4P-O3

HIGH PERFORMANCE HUMIDITY SENSORS BASED ON DOPAMINE BIOMOLECULES COATED GOLD-NANOPARTICLES

Chun-Yi Wang, Ho-Cheng Lee, Che-Hsin Lin

National Sun Yat-Sen University, Taiwan

A4P-O4

A LEAST SQUARES APPROACH FOR LEARNING GAS DISTRIBUTION MAPS FROM A SET OF INTEGRAL GAS CONCENTRATION MEASUREMENTS OBTAINED WITH A TDLAS SENSOR

Marco Trincavelli, Victor Hernandez Bennetts, Achim Lilienthal

Örebro University, Sweden

A4P-O5

CREATING TRUE GAS CONCENTRATION MAPS IN PRESENCE OF MULTIPLE HETEROGENEOUS GAS SOURCES

Victor Hernandez Bennetts, Achim Lilienthal, Marco Trincavelli

Örebro University, Sweden

A4P-O6

A WIRELESS IRRADIANCE-TEMPERATURE-HUMIDITY SENSOR FOR PHOTOVOLTAIC PLANT MONITORING APPLICATIONS

Alessandro Lazzarini Barnabei², Marco Grassi², Enrico Dallago², Piero Malcovati², Daniele Gianluigi Finarelli², Alessandro Liberale², Fabio Quaglia¹

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A4P-O7

HOLLOW CYLINDRICAL NEAR-FIELD ELECTROSPINNING HIGH β -PHASE CRYSTALLISATION OF LARGE PVDF NANOFIBER ARRAY FOR FLEXIBLE ENERGY CONVERSION

Zong-Hsin Liu, Cheng-Teng Pan, Zong-Yu Ou, Wei-Chuan Wang

National Sun Yat-Sen University, Taiwan

A4P-O8

A COMPACT IMPACT SENSOR UTILIZING ELASTIC PIEZOELECTRIC FILMS AND WIDE-BANDWIDTH AMPLIFIER

Jui-Wei Tsai, Jhih-Jhe Wang, Yu-Chuan Su

National Tsing Hua University, Taiwan

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A4P-O9

A NOVEL N X M ARRAY OF RESONANCE-BASED ADDRESSABLE MEMS ACTUATORS

Minfeng Wang², Yang Zhang¹, Guann-Pyng Li², Mark Bachman²

¹California Institute for Telecommunications and Information Technology, USA;

²University of California, Irvine, USA

A4P-O10

CHARACTERIZATION OF ELECTRICAL INTERFERENCES FOR GROUND REACTION SENSOR CLUSTER

Qingbo Guo, Michael Suster, Rajesh Surapaneni, Carlos Mastrangelo, Darrin Young

University of Utah, USA

A4P-O11

ENCAPSULATED ALUMINUM NITRIDE SAW DEVICES FOR LIQUID SENSING APPLICATIONS

An Tran, Gregory Pandraud, Thomas Moh, Hugo Schellevis, P.M.

Sarro, Atef Akhnoukh, Agung Purniawan

Delft University of Technology, Netherlands

A4P-O12

ULTRA LOW FREQUENCY FM SENSING OF PIEZOELECTRIC STRAIN VOLTAGE

Anthony Laskovski², Mehmet Yuce¹, Reza Moheimani²

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A4P-O13

INVESTIGATION OF AN ADVANCED MICRO-INDUCTIVE SENSOR

Paul Köchert², Jens Flügge², Dragan Miletic¹, Hans-Heinrich Gatzert¹

¹Leibniz Universität Hannover, Germany; ²Physikalisch-Technische Bundesanstalt, Germany

A4P-O14

NONLINEAR DYNAMICS OF FLYING-HEIGHT DEPENDENT MAGNETIC SLIDER SENSOR SYSTEM IN HARD DISK DRIVES

Jen-Yuan Chang

National Tsing Hua University, Taiwan

A4P-O15

A PIEZOELECTRIC FAST SCANNING MICROMIRROR WITH STIFF SYMMETRICAL LATERAL-SHIFT-FREE ACTUATORS

Wenjun Liao², Wenjing Liu², Yiping Zhu², Yongming Tang¹, Baoping

Wang¹, Huikai Xie²

¹Southeast University, China; ²University of Florida, USA

A4P-P1

ROOM OCCUPANCY DETERMINATION WITH PARTICLE FILTERING OF NETWORKED PYROELECTRIC INFRARED (PIR) SENSOR DATA

Takehiro Yokoishi, Jin Mitsugi, Osamu Nakamura, Jun Murai

Auto-ID Laboratory Japan at Keio University, Japan

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A4P-P2

DESIGN OF A HIGH-LINEARITY UP-CONVERSION MIXER FOR WIRELESS BODY AREA SENSOR NETWORK APPLICATIONS

I-Yu Huang, Wen-Hui Huang

National Sun Yat-Sen University, Taiwan

A4P-P3

CONSTRAINED DECENTRALIZED ALGORITHM FOR THE RELATIVE LOCALIZATION OF WEARABLE WIRELESS SENSOR NODES

Jihad Hamie¹, Benoit Denis¹, Cedric Richard²

¹CEA LETI MINATEC, France; ²Université de Nice Sophia-Antipolis, France

A4P-P4

DEVELOPMENT OF WIRELESS COMMUNICATION METHODS FOR DECREASING THE POWER CONSUMPTION OF SENSOR NODES

Hironao Okada², Toshihiro Itoh¹, Takashi Masuda³

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A4P-P5

ULTRA-LOW-COST RADIATION MONITORING SYSTEM UTILIZING SMARTPHONE-CONNECTED SENSORS DEVELOPED WITH INTERNET COMMUNITY

Yang Ishigaki³, Ryo Ichimiya¹, Yoshinori Matsumoto², Kenji Tanaka³

¹High Energy Accelerator Research Organization, Japan; ²Keio University, Japan; ³University of Electro-Communications, Japan

A4P-P6

MOBILE SENSING SYSTEMS BASED ON IMPROVED GDOP FOR TARGET LOCALIZATION AND TRACKING

Chin-Der Wann

National Kaohsiung First University of Science and Technology, Taiwan

A4P-P7

RSSI-BASED LOCALIZATION FOR WIRELESS SENSOR NETWORKS WITH A MOBILE BEACON

Chin-Wei Fan, Yao-Hung Wu, Wei-Mei Chen

National Taiwan University of Science and Technology, Taiwan

A4P-P8

LOCALIZATION USING DUAL ORTHOGONAL STEREO ACOUSTIC SENSOR METHOD IN UNDERWATER SENSOR NETWORKS

Yeon-Mo Yang, Daehee Lee

Kumoh Nation Inst. of Tech., Korea, South

A4P-P9

BULK SOIL MOISTURE ESTIMATION USING COSMOZ COSMIC RAY SENSOR AND ANFIS

Ritaban Dutta¹, Andrew Terhorst¹, Aaron Hawdon¹, Bill Cotching²

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A4P-Q1

FABRICATION OF MICROFLUIDIC NEURAL PROBES WITH IN-CHANNEL ELECTRODES

Dominik Moser, Karsten Seidl, Oliver Paul, Patrick Ruther
Universität Freiburg / IMTEK, Germany

A4P-Q2

FULLY BACK-END TSV PROCESS BY CU ELECTRO-LESS PLATING FOR 3D SMART SENSOR SYSTEMS

Fabio Santagata¹, Giuseppe Fiorentino¹, Meng Nie², Catello Farriciello¹, Rene Poelma¹, Guo Qi Zhang¹, P.M. Sarro¹
¹*Delft University of Technology, Netherlands;* ²*Southeast University & Delft University of Technology, China*

A4P-Q3

ASSEMBLY OF GOLD NANORODS FOR HIGHLY SENSITIVE DETECTION OF HEAVY METALS

Tiziana Placido⁴, Roberto Comparelli², Marinella Striccoli², Angela Agostiano⁴, Arben Merkoçi¹, Maria Lucia Curri³
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A4P-Q4

FPGA IMPLEMENTATION OF A LOW-COST METHOD FOR TRACKING THE RESONANCE FREQUENCY AND THE QUALITY FACTOR OF MEMS SENSORS

Farbod Ghassemi¹, Maira Possas¹, Gilles Amendola¹, Jérôme Juillard²
¹*ESIEE, France;* ²*SUPELEC, France*

A4P-Q5

ALL DIGITAL CONTROL SYSTEM FOR A NOVEL HIGH FREQUENCY FORCE SENSOR IN NON CONTACT ATOMIC FORCE MICROSCOPY

Jeremy Boulloc, Laurent Nony, Christian Loppacher, Wenceslas Rahajandraibe, Franck Bocquet, Lakhdar Zaid
IM2NP, France

A4P-Q6

STRUCTURAL HEALTH MONITORING BASED ON AR MODELS AND PZT SENSORS

Mario Anderson de Oliveira¹, Jozué Vieira Filho²
¹*Federal Institute of Education, Science and Technology of Mato Grosso, Brazil;* ²*Universidade Estadual Paulista, Brazil*

A4P-Q7

PATCH TYPE SENSOR MODULE FOR DIAGNOSIS OF ACUTE MYOCARDIAL INFARCTION

Jihwan Lee, Jaehyo Jung, Donghyuk Shin, Youn Tae Kim
Chosun University, Korea, South

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A4P-Q8

PHYSICAL ACTIVITY ESTIMATION METHOD BY USING WIRELESS PORTABLE SENSOR

Koichi Kurita

Kinki University, Japan

A4P-Q9

INVESTIGATING ARM SYMMETRY IN SWIMMING USING INERTIAL SENSORS

Andy Stamm, Daniel A. James, Rabee M. Hagem, David V. Thiel

Griffith University, Australia

A4P-Q10

ECG Denoise Method Based on Wavelet Function Learning

Won-Seok Kang, Sanghun Yun, Kookrae Cho

Daegu Gyeongbuk Institute of Science & Technology, Korea, South

A4P-Q11

INTEGRATED HORIZONTAL ZNO NANOWIRES FOR SENSOR APPLICATIONS

Nguyen Quoc Khanh¹, István Lukács¹, Sándor Kurunczi¹, György Sáfrán¹, Zoltán Szabó¹, János Volk¹, K. Kubina², Róbert Erdélyi³

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³University of Pannonia, Hungary

A4P-Q12

APPLICATION OF KNN CLASSIFIER FOR ACOUSTIC BASED PIPE CONDITION CLASSIFICATION

Zao Feng, Muhammad Tareq Bin Ali, Kirill V. Horoshenkov, Simon Tait

University of Bradford, United Kingdom

A4P-Q13

A HIGH PERFORMANCE MICROWAVE EQUALIZER BASED ON MEMS TECHNOLOGY

Lei Han, Lei Dong, Yan-Qing Zhu, Li-Feng Wang

Key Laboratory of MEMS of Ministry of Education, China

A4P-R1

A TEST STRUCTURE FOR IN-SITU DETERMINATION OF RESIDUAL STRESS

Akshdeep Sharma¹, Deepak Bansal¹, Kamaljit Rangra¹, Dinesh Kumar²

¹Central Electronics Engineering Research Institute, India; ²Kurukshetra University Kurukshetra, India

A4P-R2

PEDESTRIAN ACTIVITY DETECTION IN A MULTI-FLOOR ENVIRONMENT BY A SMART PHONE

Chi-Chung Lo², Yi-Hsiu Chen², Yu-Chee Tseng², Shang-Ming Huang¹, Yu-Neng Hung¹, Chiu-Mei Tseng¹, Yeh-Chin Ho¹

¹Chunghwa Telecom Co., Ltd., Taiwan; ²National Chiao Tung University, Taiwan



MONDAY, OCTOBER 29 - POSTER SESSION

A4P-H1

TACTILE SENSE MEASUREMENT BASED ON VIBRATION INFORMATION OBTAINED DURING ACTIVE TOUCH

Emi Asaga

Keio University, Japan

A4P-H2

THE DEVELOPMENT OF A SENSITIVE THUMBSTALL WITH A HETERO-CORE FIBER-OPTIC SENSOR FOR A NEW SENSITIVE GLOVE

Hiroshi Yamazaki, Yuya Koyama, Kazuhiro Watanabe

SOKA University, Japan

A4P-H3

PERSPECTIVES IN HOLOGRAFIC INTERFEROMETRY

¹Vit Ledl, ¹Roman Dolecek, ¹Pavel Psota, Tomas Vit²

¹*Toptec - IPP, Czech Republic;* ²*TUL, Czech Republic*

A4P-H4

MULTI-POINT LIQUID DETECTION USING A HETERO-CORE STRUCTURED FIBER OPTIC SPR SENSOR WITH MULTIPLE

Masashiro Shiraishi, Ai Hosoki, Kazuhiro Watanabe

SOKA University, Japan

A4P-H5

COST ACTION TD1001: NOVEL AND RELIABLE OPTICAL FIBRE SENSOR SYSTEMS FOR FUTURE SECURITY AND SAFETY APPLICATIONS

Sinead O'Keeffe

University of Limerick, Ireland

TUESDAY, OCTOBER 30

8:00 AM - 8:45 AM

Plenary Hall

B0L-A: Plenary - KEYNOTE - PROFESSOR GIAN-LUCA BONA

Session Chair: Juergen Brugger (École Polytechnique Fédérale de Lausanne, Switzerland)

MATERIAL CHALLENGES AND OPPORTUNITIES FOR SENSOR APPLICATIONS

8:50 AM - 10:20 AM

B1L-A: Chemical and Gas Sensors II

Room 101A

Session Chairs: Takamichi Nakamoto (Tokyo Institute of Technology, Japan), Marco Petrovich (Univ. Southampton, UK)

8:50 AM

METAMATERIAL-INSPIRED MICROFLUIDIC-BASED SENSOR FOR CHEMICAL DISCRIMINATION

Kata Jaruwongrungrsee¹, Withawat Withayachumnankul², Anurat Wisitsoraat¹, Derek Abbott², Christophe Fumeaux², Adisorn Tuantranont¹

¹National Electronics and Computer Technology Center, Thailand; ²University of Adelaide, Australia

9:05 AM

A WIRELESS PASSIVE PH SENSOR FOR REAL-TIME IN VIVO MILK QUALITY MONITORING

Sharmistha Bhadra, Douglas Thomson, Greg Bridges
University of Manitoba, Canada

9:20 AM

SELECTIVE HYDROGEN DETECTION OF PD/ALGAN/GAN HEMT-TYPE SENSORS BY TEMPERATURE SWEEP OPERATION

Akifumi Watanabe, Seiji Nakamura, Tsugunori Okumura
Tokyo Metropolitan University, Japan

9:35 AM

GRAPHENE ENHANCED WIRELESS SENSORS

Taoran Le, Trang Thai, Vasileios Lakafosis, Manos Tentzeris, Ziyin Lin, Yunnan Fang, Kenneth Sandhage, Chingping Wong
Georgia Institute of Technology, USA

9:50 AM

CONTROLLED RELEASE OF DRUGS WITH NANOSTRUCTURED CAPSULES IN MICRODROPLETS

Yuan He, Wen-Chuan Cheng, Yafei Zhao, Yuri Lvov, Long Que
Louisiana Tech University, USA

10:05 AM

GEOGRAPHICAL CLASSIFICATION OF VIRGIN OLIVE OILS BY COMBINING THE ELECTRONIC NOSE AND TONGUE

Zouhair Haddi², Madiha Boughrini², S. Ihlou², Aziz Amari⁵, S. Mabrouk¹, Houcine Barhoumi¹, Abderrazak Maaref¹, Nezha El Bari², Eduard Llobet³, Nicole Jaffrezic-Renault⁴, Benachir Bouchikhi²

¹Faculté des Sciences de Monastir, Tunisia; ²Moulay Ismail University, Morocco;

³Universitat Rovira i Virgili, Spain; ⁴Université Claude Bernard-Lyon1, France;

⁵University Mohamed V, Morocco

TUESDAY, OCTOBER 30

8:50 AM - 10:20 AM

B1L-B: Biosensors III

Room 101B

Session Chairs: Kohji Mitsubayashi (Tokyo Medical and Dental University, Japan), Mona Zaghloul (George Washington University, USA)

8:50 AM

INTEGRATED LONG-RANGE THERMAL BIMORPH ACTUATORS FOR PARALLELIZABLE BIO-AFM APPLICATIONS

Jonas Henriksson, Maurizio Gullo, Juergen Brugger
École Polytechnique Fédérale de Lausanne, Switzerland

9:05 AM

IMPACT OF SELECTIVE ABLATION OF SELF-ASSEMBLY MONOLAYER BY LOCALIZED JOULE HEATING ON SILICON NANO-ELECTRONIC SENSORS

Hao Heng Liu, Tzung Han Lin, Jeng Tzong Sheu
National Chiao Tung University, Taiwan

9:20 AM

NONINVASIVE AND CONTINUOUS MEASUREMENT OF BODY TEMPERATURE VARIATIONS BASED ON CW-PA PROTOCOL

Serge Camou, Yuko Ueno, Emi Tamechika
NTT Corporation, Japan

9:35 AM

CALORIMETRIC SENSING SYSTEM FOR REAL-TIME UREA AND CREATININE MEASUREMENTS

Son Vu Hoang Lai, Srinivas Tadigadapa
Pennsylvania State University, USA

9:50 AM

ELUCIDATION OF DISSOCIATION CONSTANTS AND BINDING SITES OF ANTIBODY-ANTIGEN COMPLEX USING ALGAN/GAN HIGH ELECTRON MOBILITY TRANSISTORS

Chih-Cheng Huang³, Chen-Pin Hsu³, You-Ren Hsu³, Yu-Lin Wang³, Geng-Yen Lee¹, Jen-Inn Chyi¹, Hui-Teng Cheng², Fan Ren⁴
¹National Central University, Taiwan; ²National Taiwan University Hospital, Taiwan; ³National Tsing Hua University, Taiwan; ⁴University of Florida, USA

10:05 AM

A SIMPLE, COMPETITIVE BIOSENSOR FOR RAPID DETECTION OF AFLATOXIN B1 BASED ON AGGREGATION OF GOLD NANORODS

Xia Xu¹, Yibin Ying¹, Yanbin Li²
¹Zhejiang University, China; ²Zhejiang University & University of Arkansas, USA

TUESDAY, OCTOBER 30

8:50 AM - 10:20 AM

B1L-C: Acoustic/Resonant Sensors

Room 102

Session Chairs: Oliver Brand (Georgia Institute of Technology, USA), Hong Yu (Arizona State University, USA)

8:50 AM

DIAPHRAGM-BASED MICROSYSTEMS USING THIN FILM SILICON CARBIDE

Christian Zorman, Andrew Barnes, Philip X.-L. Feng

Case Western Reserve University, USA

9:05 AM

WIDE-BAND PIEZORESISTIVE MICROPHONE FOR AERO-ACOUSTIC APPLICATIONS

Zhijian Zhou¹, Man Wong¹, Libor Rufer³, Edouard Salze², Petr Yuldashev², Sébastien Ollivier²

¹Hong Kong University of Science and Technology, Hong Kong; ²Laboratoire de Mécanique des Fluides et d'Acoustique, France; ³TIMA Laboratory, France

9:20 AM

PIEZOELECTRIC SENSOR ARRAY FOR PASSIVE FISH-LIKE UNDERWATER SENSING

Ajay Giri Prakash Kottapalli², Mohsen Asadnia², Zhiyuan Shen², Jianmin Miao², Michael Triantafyllou¹

¹Massachusetts Institute of Technology, USA; ²Nanyang Technological University, Singapore

9:35 AM

HIGH-FREQUENCY CMUT ARRAYS WITH PHASE-STEERING FOR IN VIVO ULTRASOUND IMAGING

Kjersti Midtbø¹, Arne Rønnekleiv¹, Kjell Arne Ingebrigtsen¹, Jon Due-Hansen², Erik Poppe², Dag Wang², Geir Uri Jensen², Kari Schjølberg-Henriksen²

¹Norwegian University of Science and Technology, Norway; ²SINTEF, Norway

9:50 AM

APPLICATION OF AN ALL-POLYMER FLEXURAL PLATE WAVE SENSOR TO POLYMER/SOLVENT MATERIAL CHARACTERIZATION

Christoph Sielmann, John Berring, Konrad Walus, Boris Stoeber
University of British Columbia, Canada

TUESDAY, OCTOBER 30

8:50 AM - 10:20 AM

B1L-D: Sensor Networks II

Room 101C

Session Chairs: Hiroki Kuwano (Tohoku Univesity, Japan),
Pamela Abshire (University of Maryland, USA)

8:50 AM

**AN INTEGRAL AND DIFFERENTIAL GEOMETRIC APPROACH TO
BEHAVIORAL INFORMATION ACQUISITION AND INTEGRATION
VIA BINARY SENSOR NETWORKS**

Qi Hao

University of Alabama, USA

9:05 AM

**A RECONFIGURABLE HARDWARE PLATFORM FOR COGNITIVE
SENSOR NETWORKS TOWARDS BEHAVIORAL BIOMETRICS**

Jiaqi Gong, Lei Zhao, Qi Hao, Fei Hu, Xiaoyan Hong

University of Alabama, USA

9:20 AM

**ARCHITECTURE AND EVALUATION OF INGA AN INEXPENSIVE
NODE FOR GENERAL APPLICATIONS**

Felix Büsching, Ulf Kulau, Lars Wolf

Technische Universität Braunschweig, Germany

9:35 AM

TRUSS: TRACKING RISK WITH UBIQUITOUS SMART SENSING

Brian Mayton², Gershon Dublon², Sebastian Palacios¹, Joseph
Paradiso²

¹Georgia Institute of Technology / MIT Media Lab, USA; ²Massachusetts Institute
of Technology, USA

9:50 AM

**LOG-LOGISTIC MODELING OF SENSORY FLOW DELAYS IN
NETWORKED TELEROBOTS**

Ana Gago-Benítez, Juan-Antonio Fernández-Madrigal, Ana Cruz-
Martín

Universidad de Málaga, Spain

10:05 AM

**A REAL-TIME EMPIRICAL STUDY OF BIOSARP BASED
WIRELESS SENSOR NETWORK TESTBED**

Kashif Saleem¹, Norsheila Fisal², M. Ariff Baharudin²

¹King Saud University, Saudi Arabia; ²Universiti Teknologi Malaysia, Malaysia

TUESDAY, OCTOBER 30

8:50 AM - 10:20 AM

B1L-E: Optical Fiber Sensors

Room 101D

Session Chairs: Ignacio R. Matias (Public University of Navarra, Spain), Hung-Yi Lin (Qualcomm (Taiwan), Taiwan)

8:50 AM

OPTICAL FIBRE RADIATION DOSIMETER FOR RADIOTHERAPY APPLICATIONS

Denis McCarthy³, Sinead O'Keeffe³, Elfed Lewis³, Dan Sporea², Adelina Sporea², Ion Tiseanu², Peter Woulfe¹, John Cronin¹

¹Galway Clinic, Ireland; ²National Institute for Laser, Plasma and Radiation Physics, Romania; ³University of Limerick, Ireland

9:05 AM

FIBER GRATING-ASSISTED INVESTIGATION ON SURFACE PLASMON RESONANCE OF FIBER CLADDING MODES

Tobias Schuster¹, Christian G. Schäffer¹, Michael Mertig², Martin Bönsch², Dirk Plettemeier²

¹Helmut Schmidt Universität, Germany; ²Technische Universität Dresden, Germany

9:20 AM

EFFECTS OF THERMAL FIBER ANNEALING ON THE TEMPERATURE COMPENSATION OF INTERFEROMETRIC FIBER-OPTIC CURRENT SENSORS

Miklós Lenner, Robert Wüest, Andreas Frank, Klaus Bohnert
ABB Switzerland Ltd., Switzerland

9:35 AM

DISTRIBUTED OPTICAL-FIBER VIBRATION SENSING SYSTEM BASED ON DIFFERENTIAL DETECTION OF DIFFERENTIAL COHERENT-OTDR

Chao Pan, Hui Zhu, Bin Yu, Zhu Zhu, Xiaohan Sun
Southeast University, China

9:50 AM

PIXEL-BASED OPTICAL FIBER TACTILE FORCE SENSOR FOR ROBOT MANIPULATION

Hui Xie, Allen Jiang, Lakmal Seneviratne, Kaspar Althoefer
King's College London, United Kingdom

10:05 AM

MINIATURE OPTICAL FIBER COMBINED PRESSURE- AND TEMPERATURE SENSOR FOR MEDICAL APPLICATIONS

Sven Poeggel², Gabriel Leen², Kort Bremer¹, Elfed Lewis²
¹City University London, Germany; ²University of Limerick, Ireland

TUESDAY, OCTOBER 30

8:50 AM - 10:20 AM

B1L-F: Bendable / Stretchable Sensors and Systems II

Room 103

Session Chairs: Zeynep Celik-Butler (U. of Texas at Arlington, USA), Sungsik Lee (University College London, UK)

8:50 AM

MEMS SENSORS ON FLEXIBLE SUBSTRATES TOWARDS A SMART SKIN

Moinuddin Ahmed, Ismail Gonenli, Gaviraj Nadvi, Rohit Kilaru, Donald Butler, Zeynep Celik-Butler

University of Texas at Arlington, USA

9:05 AM

BENDING RESPONSE OF PVDF PIEZOELECTRIC SENSORS

Lucia Seminara, Maurizio Valle, Marco Capurro

Università degli Studi di Genova, Italy

9:20 AM

PIEZOELECTRIC POLYMER TRANSDUCER ARRAYS FOR FLEXIBLE TACTILE SENSORS

Lucia Seminara³, Luigi Pinna³, Maurizio Valle³, Laura Basiricò², Alberto Loi², Piero Cosseddu², Annalisa Bonfiglio², Alberto Ascia¹, Maurizio Biso¹, Alberto Ansaldo¹, Davide Ricci¹, Giorgio Metta¹

¹*Istituto Italiano di Tecnologia, Italy*; ²*Università degli studi di Cagliari, Italy*;

³*Università degli Studi di Genova, Italy*

9:35 AM

STRETCHABLE ELECTRODES FOR NEUROPROSTHETIC INTERFACES

Anna Cyganowski, Ivan Minev, Nicolas Vachicouras, Katherine Musick, Stephanie Lacour

École Polytechnique Fédérale de Lausanne, Switzerland

9:50 AM

A SOFT MULTI-AXIS FORCE SENSOR

Daniel Vogt, Yong-Lae Park, Rob Wood

Harvard, USA

10:05 AM

CHARACTERIZATION OF VON KARMAN STREET WITH SEAL WHISKER-LIKE SENSOR

Hendrik Hans², Jianmin Miao², Michael Triantafyllou¹

¹*Massachusetts Institute of Technology, USA*; ²*Nanyang Technological University, Singapore*

10:20 AM - 10:50 AM

Room 201

COFFEE BREAK

TUESDAY, OCTOBER 30

10:50 AM - 12:20 PM

B2L-A: Gas Sensors I

Room 101A

Session Chairs: Massood Zandi Atashbar (Western Michigan University, USA), Boris Stoeber (Univ. of British Columbia, Canada)

10:50 AM

ULTRA-SENSITIVE NO₂ DETECTION WITH ALGAN/GAN 2DEG CHANNELS FOR AIR QUALITY MONITORING

Peter Offermans, Roman Vitushinsky, Mercedes Crego-Calama, Sywert Brongersma

Holst Centre / IMEC-nl, Netherlands

11:05 AM

DETECTING BREATH AMMONIA FOR NON-INVASIVE DIAGNOSTIC BASED ON LOW-COST ORGANIC DIODE WITH VERTICAL NANOJUNCTIONS

Ming-Zhi Dai¹, Yi-Lo Lin², Hong-Cheng Lin¹, Hsiao-Wen Zan¹, Kai-Ting Chang³, Hsin-Fei Meng¹, Jiunn-Wang Liao², May-Jywan Tsai³, Henrich Cheng³

¹National Chiao Tung University, Taiwan; ²National Chung Hsing University, Taiwan; ³Taipei Veterans General Hospital, Taiwan

11:20 AM

INVESTIGATING THE GAS SENSING MECHANISM OF THE VERTICAL POLYMER SPACE-CHARGE-LIMITED TRANSISTOR

Chang-Hung Li, Hsiao-Wen Zan, Chih-Kuan Yu, Hsin-Fei Meng

National Chiao Tung University, Taiwan

11:35 AM

A CASCADED MICRO PRECONCENTRATION APPROACH FOR EXTRACTION OF VOLATILE ORGANIC COMPOUNDS IN WATER

Muhammad Akbar, Masoud Agah

Virginia Polytechnic Institute and State University, USA

11:50 AM

NADH-FLUOROMETRIC BIOCHEMICAL GAS SENSOR (BIO-SNIFFER) FOR ASSESSMENT OF INDOOR AIR QUALITY

Hiroyuki Kudo, Toshifumi Yamashita, Ming Ye, Kumiko Miyajima, Takahiro Arakawa, Kohji Mitsubayashi, Tomoko Gessei

Tokyo Medical and Dental University, Japan

12:05 PM

A NOVEL MAGNETIC-CATALYTIC CMOS MEMS COMPATIBLE GAS SENSOR WITH ULTRA LOW POWER CONSUMPTION

Chih-Jen Cheng, Chih-Hsiung Shen, Shu-Jung Chen

National Changhua University of Education, Taiwan

TUESDAY, OCTOBER 30

10:50 AM - 12:20 PM

B2L-B: Biosensors IV

Room 101B

Session Chairs: Lucia Curri (CNR IPCF Bari, Italy), Carrara Sandro (EPFL, Switzerland)

10:50 AM

BIOLOGICAL AGENT SENSING INTEGRATED CIRCUIT (BASIC): A NEW CMOS MAGNETIC BIOSENSOR SYSTEM

Yi Zheng, Joseph Tront

Virginia Polytechnic Institute and State University, USA

11:05 AM

USING THE NANOIMPRINT-IN-METAL METHOD TO PREPARE CORRUGATED METAL STRUCTURES FOR PLASMONIC BIOSENSORS THROUGH BOTH SURFACE PLASMON RESONANCE AND INDEX-MATCHING EFFECTS

Chen-Chieh Yu, Hsuen-Li Chen, Kuan-Hung Ho, Shang-Yu Chuang, Shao-Chin Tseng, Wei-Fang Su

National Taiwan University, Taiwan

11:20 AM

A NEW BIOSENSING BY DIELECTRIC DISPERSION ANALYSIS OF INTERACTION BETWEEN LIPID MEMBRANE OF LIPOSOME AND TARGET BIOMOLECULES UP TO 20 GHZ RANGE

Keisuke Takada¹, Kaoru Yamashita¹, Minoru Noda¹, Toshinori Shimanouchi², Hiroshi Umakoshi²

¹Kyoto Institute of Technology, Japan; ²Osaka University, Japan

11:35 AM

DIRECT DETECTION OF BIOMOLECULES IN LIQUID MEDIA USING PIEZOELECTRIC ROTATIONAL MODE DISK RESONATORS

Emad Mehdizadeh², Jennifer Chapin², Jonathan Gonzales¹, Amir Rahafrooz², Reza Abdolvand¹, Byron Purse², Siavash Pourkamali²

¹Oklahoma State University, USA; ²University of Denver, USA

11:50 AM

NEURON ACTION POTENTIAL DETECTION WITH TUNNEL DIODE OSCILLATION CIRCUIT

Lingyao Chen, Massood Tabib-Azar

University of Utah, USA

12:05 PM

SINGLE NUCLEOTIDE POLYMORPHISM (SNP) GENOTYPING METHODS USING BEAD-BASED MICROFLUIDICS WITH DASH TECHNOLOGY

Pei-Chun Kao, Kan-Chien Li, Shih-Torng Ding, En-Chung Lin, Lon Wang, Yen-Wen Lu

National Taiwan University, Taiwan

TUESDAY, OCTOBER 30

10:50 AM - 12:20 PM

B2L-C: Pressure Sensors

Room 102

**Session Chairs: Mitsuhiro Shikida (Nagoya University, Japan),
Bassam Alfeeli (Kuwait Institute for Scientific Research, Kuwait)**

10:50 AM

MEMS FOR TPMS AND EXHAUST OF AUTOMOBILES

Kukjin Chun², H. C. Kim³, S. Kim², Y. Kim², S. Lee², K. Min², S. Lim¹, J. Lee¹

¹Hyundai Motors Company, Korea, South; ²Seoul National University, Korea, South; ³University of Ulsan, Korea, South

11:05 AM

**THE INVERSE MAGNETIC SHAPE MEMORY EFFECT IN
MEMBRANES FOR PRESSURE SENSOR APPLICATIONS**

Jochen Stephan¹, Kyle Retan², Patrick Ruther³, Oliver Paul³

¹Albert-Ludwigs-Universität Freiburg, IMTEK, Germany; ²Universität Freiburg, Germany; ³Universität Freiburg / IMTEK, Germany

11:20 AM

**LIQUID-FREE, PIEZORESISTIVE, SOI-BASED PRESSURE
SENSOR FOR HIGH TEMPERATURE MEASUREMENTS UP TO 400
°C**

Ha-Duong Ngo², Biswajit Mukhopadhyay², Vu Cong Thanh², Peter Mackowiak², Volker Schlichting², Ernst Obermeier², Klaus-Dieter Lang², Andrea Giuliani¹, Lionello Drera¹, Domenico Arancio¹

¹Gefran SpA, Italy; ²Technische Universität Berlin, Germany

11:35 AM

**DIFFERENT SCALE CONFINEMENTS OF PVDF-TRFE AS
FUNCTIONAL MATERIAL OF PIEZOELECTRIC SENSOR DEVICES**

Giancarlo Canavese², Stefano Stassi², Valentina Cauda², Alessio Verna², Angelica Chiodoni², Simone Marasso³, Matteo Cocuzza¹

¹CNR-IMEM, Italy; ²Istituto Italiano di Tecnologia, Italy; ³Politecnico di Torino, Italy

11:50 AM

**MEASUREMENT OF THE PRESSURE DISTRIBUTION DURING THE
ONSET OF SLIP**

Nguyen Thanh-Vinh, Hidetoshi Takahashi, Nguyen Binh-Khiem,
Kiyoshi Matsumoto, Isao Shimoyama

University of Tokyo, Japan

TUESDAY, OCTOBER 30

10:50 AM - 12:20 PM

B2L-D: Actuators

Room 101C

Session Chairs: Jong-Uk Bu (SenPlus Inc., Korea), Jen-Yuan Chang (National Tsing Hua University, Taiwan)

10:50 AM

NEM SWITCH TECHNOLOGIES FOR LOW-POWER LOGIC APPLICATIONS

Daniel Grogg, Yu Pu, Armin Knoll, Urs Duerig, Ute Drechsler, Christoph Hagleitner, Michel Despont
IBM Zurich Research Laboratory, Switzerland

11:05 AM

CHARACTERIZATION OF A 2-DOF MEMS NANOPositionER WITH INTEGRATED ELECTROTHERMAL ACTUATION AND SENSING

Micky Rakotondrabe¹, Anthony Fowler², Reza Moheimani²
¹FEMTO-ST Institute, Université de Franche-Comté Besançon, France;
²University of Newcastle, Australia

11:20 AM

A MAGNETIC MEMBRANE ACTUATOR UTILIZING DIAMAGNETIC LEVITATION

Wolfgang Hilber, Bernhard Jakoby
Johannes Kepler Universität in Linz, Austria

11:35 AM

A LOW-ACTUATION VOLTAGE DESIGN FOR RF CMOSMEMS SWITCHES

Hong-Hsiang Lai, Wen-Chien Chen, Sheng-Shian Li
National Tsing Hua University, Taiwan

11:50 AM

LORENTZ FORCE TORSIONAL ACTUATOR WITH EMBEDDED NICKEL STRUCTURES

Wei-Lun Sung¹, Tsung-Lin Tang¹, Feng-Yu Lee¹, Ching-Chen Tu², Ching-Han Huang², Rongshun Chen¹, Weileun Fang¹
¹National Tsing Hua University, Taiwan; ²Touch Micro-System Technology Corp, Taiwan

TUESDAY, OCTOBER 30

10:50 AM - 12:20 PM

B2L-E: Energy Harvesting / Converter

Room 101D

Session Chairs: Libor Rufer (TIMA Lab, France), Luc Hebrard (InESS Strasbourg, France)

10:50 AM

DETERMINATION OF THE THERMOELECTRIC FIGURE OF MERIT OF DOPED POLYSILICON THIN FILMS BY MICROMACHINED TEST STRUCTURES

Dominik Moser², Derya Ilkaya¹, Daniel Kopp¹, Oliver Paul²

¹Universität Freiburg, Germany; ²Universität Freiburg / IMTEK, Germany

11:05 AM

A HIGH VOLTAGE GENERATOR UTILIZING A SINGLE PZT ELEMENT WITH SERIES-CONNECTED ELECTRODES

Xin Luo, Yogesh Gianchandani

University of Michigan, Ann Arbor, USA

11:20 AM

NOVEL SIC SELF STARTING DC-DC CONVERTER FOR HIGH TEMPERATURE WIRELESS SENSOR NODES

Daniel Brennan, Omid Mostaghimi, K.V. Vassilevski, Nicholas Wright, Alton Horsfall

Newcastle University, United Kingdom

11:35 AM

DIELECTRIC ELASTOMER GENERATORS FOR FOOT PLANTAR PRESSURE BASED ENERGY SCAVENGING

Vishwa Goudar, Miodrag Potkonjak

University of California, Los Angeles, USA

11:50 AM

THERMOELECTRIC ENERGY HARVESTERS FOR POWERING WEARABLE SENSORS

Vladimir Leonov

Imec, Belgium

12:05 PM

A 3-DOF MEMS ULTRASONIC ENERGY HARVESTER

Anthony Fowler², Reza Moheimani², Sam Behrens¹

¹CSIRO Energy Technology, Australia; ²University of Newcastle, Australia

TUESDAY, OCTOBER 30

10:50 AM - 12:20 PM

B2L-F: Odor Sensing and Olfactory Display

Room 103

Session Chairs: Takamichi Nakamoto (Tokyo Institute of Technology, Japan), Hyung-Gi Byun (Kangwon National University, Korea)

10:50 AM

A SURVEY OF OLFACTORY DISPLAYS: MAKING AND DELIVERING SCENTS

Yasuyuki Yanagida

Meijo University, Japan

11:05 AM

IMPLEMENTATION OF OLFACTORY INTERACTION BETWEEN IMAGES AND SMELLS

Hyung-Gi Byun⁴, Jeong-Do Kim³, Sang-Goong Lee¹, Hae-Ryong Lee²

¹Catholic University of Korea, Korea, South; ²Electronics and

Telecommunications Research Institute, Korea, South; ³Hoseo University, Korea,

South; ⁴Kangwon National University, Korea, South

11:20 AM

SENSOR FAILURE MITIGATION BASED ON MULTIPLE KERNELS

Jordi Fonollosa, Alexander Vergara, Ramon Huerta

University of California San Diego, USA

11:35 AM

IMPROVEMENT OF ODOR BLENDER USING ELECTROOSMOTIC PUMPS AND SAW ATOMIZER FOR LOW-VOLATILE SCENTS

Yossiri Ariyakul, Yushi Hosoda, Takamichi Nakamoto

Tokyo Institute of Technology, Japan

11:50 AM

FRAGRANT MULTIMEDIA DISPLAY SYSTEM: PRESENTING ODOR DISTRIBUTION ON DISPLAY SCREEN

Haruka Matsukura, Tatsuhiko Yoneda, Hiroshi Ishida

Tokyo University of Agriculture and Technology, Japan

12:20 PM - 1:10 PM

3F Banquet Hall

LUNCH

TUESDAY, OCTOBER 30 - POSTER SESSION

1:10 PM - 3:00 PM

B3P-G: Tuesday Poster Session

Room 201

Session Chairs: C.-P. Chao (National Chiao Tung University, Taiwan), Sheng-Shian Li (National Tsing Hua University, Taiwan)

B3P-J1

ADVANCED METHOD TO MASK SMOKING EFFECT ON ALCOHOLIC INTAKE DETECTION BASED ON PHOTOPLETHYSMOGRAM SIGNAL ANALYSIS

Yoshihiro Izawa, Susumu Tamura, Yasuhisa Omura
Kansai University, Japan

B3P-J2

DATA VALIDATION AND CONFIDENCE OF SELF-VALIDATING MULTIFUNCTIONAL SENSOR

Zhengguang Shen, Qi Wang
Harbin Institute of Technology, China

B3P-J3

A MEMORY AND COMPUTATION EFFICIENT THREE-DIMENSIONAL SIMULATION SYSTEM FOR THE UV LITHOGRAPHY OF THICK SU-8 PHOTORESISTS

Zai-Fa Zhou, Li-Li Shi, Qing-An Huang, Heng Zhang, Wei-Hua Li, Dang Wu, Qian Yu
Southeast University, China

B3P-J4

COMBINED SIMULATION-BASED CORRECTION FACTORS FOR RELUCTANCES OF PLANAR COIL SUBSTRATES

Uwe Marschner, Yunpeng Feng, Eric Starke, Sebastian Sauer, Wolf-Joachim Fischer
Technische Universität Dresden, Germany

B3P-J5

FIRST-PRINCIPLES STUDY ON THE PIEZORESISTIVE EFFECT OF GE/SI CORE/SHELL NANOWIRES

Lei Li, Shuang-Ying Lei, Hong Yu, Qing-An Huang
Southeast University, China

B3P-J6

DESIGN AND MODELING OF A PASSIVE WIRELESS SAW TRANSPONDER

Chi-Jung Cheng³, Chen-Tung Feng³, Massood Zandi Atashbar³, Kapseong Ro³, Jai-Chul Song¹, Dongdoo Lee², Changwha Lee²
¹Admotech Inc., Korea, South; ²Induk Institute of Technology, Korea, South;
³Western Michigan University, USA

B3P-J7

3-DIMENSIONAL AND DAMAGE-FREE NEUTRAL BEAM ETCHING FOR MEMS APPLICATIONS

Akira Wada², Tomohiro Kubota², Yuuki Yanagisawa², Batnasan Altansukh², Seiji Samukawa², Takahito Ono², Kazuhiro Miwa¹
¹BEANS Laboratory, Japan; ²Tohoku University, Japan

TUESDAY, OCTOBER 30 - POSTER SESSION

B3P-J8

MEASUREMENT OF MATERIAL PROPERTIES FOR POLYSILICON THIN FILMS BY AN ELECTROSTATIC FORCE METHOD

Wei-Qing Zhang², Wei-Hua Li¹, Zai-Fa Zhou¹, Min-xia Jiang¹, Hai-Yun Liu¹, Qing-An Huang¹

¹Southeast University, China; ²Southeast University & XiDian University, China

B3P-J9

TOWARDS A REAL TIME SENSOR FOR FOCUSING THROUGH SCATTERING MEDIA

Timothé Laforest¹, Arnaud Verdant¹, Antoine Dupret¹, Sylvain Gigan², François Ramaz²

¹CEA, DRT, LETI, France; ²Institut Langevin, ESPCI ParisTech, CNRS UMR 7587, France

B3P-K1

A MULTICHANNEL CHEMICAL SENSING METHOD USING SINGLE QUARTZ RESONATOR AND MICRO FLOW CHANNEL

Shinjiro Toyama, Takashi Abe

Niigata University, Japan

B3P-K2

FABRICATION OF THIN-FILM WO₃ SENSORS AND THEIR SENSING PROPERTIES TO DILUTE NO₂

Zhicong Meng², Takeshi Hashishin¹, Jun Tamaki², Kazuo Kojima²

¹Osaka University, Japan; ²Ritsumeikan University, Japan

B3P-K3

ODOR SENSOR SYSTEM USING MOLECULAR IMPRINTING FILTER

Masahiro Imahashi, Kouichi Nakano, Kenshi Hayashi

Kyushu University, Japan

B3P-K4

A NEW SENSOR FOR HEAVY METALS DETECTION IN AQUEOUS MEDIA

Mohamed Shaban, Mohamed Serry

American University in Cairo, Egypt

B3P-K5

DESIGN AND FABRICATION OF MICROMACHINED LPD-BASED SNO₂ GAS SENSOR INTEGRATED TAN WITH MICRO-HOTPLATE

Jin-Chern Chiou, Chia-Yang Lin, Shang-Wei Tsai, Wei-Che Hong

National Chiao Tung University, Taiwan

B3P-K6

A NANOPARTICLES BASED CATALYTIC GAS SENSOR WITH IMPROVED STABILITY

Eike Brauns, Walter Lang, Eva Morsbach, Günter Schnurpfeil, Marcus Bäumer

Universität Bremen, Germany

TUESDAY, OCTOBER 30 - POSTER SESSION

B3P-K7

INCREASING THE SENSITIVITY AND SELECTIVITY OF METAL OXIDE GAS SENSORS BY CONTROLLING THE SENSITIVE LAYER POLARIZATION

Nicolas Dufour⁴, Yoan Veyrac², Philippe Menini³, Frederic Blanc², Chabane Talhi², Bernard Franc², Christian Ganibal², P. Menini⁵, N. Dufour⁶, Corinne Wartelle⁶, Khalifa Aguir¹

¹IM2NP-CNRS, France; ²LAAS-CNRS, France; ³LAAS-CNRS / Paul Sabatier University, France; ⁴LAAS-CNRS / Renault S.A.S., France; ⁵Paul Sabatier University, France; ⁶Renault S.A.S., France

B3P-K8

SIMULTANEOUS DETECTION OF PURINE BASES ON CU2O NANOPARTICLES BASED ELECTROCHEMICAL BIOSENSOR

Jana Chomoucka, Jan Prasek, Petra Businova, Jana Drbohlavova, Jan Pekarek, Radim Hrdy, Jaromir Hubalek, Libuse Trnkova
Brno University of Technology, Czech Republic

B3P-K9

MULTI-COLORIMETRIC SENSOR ARRAY FOR DETECTION OF ILLEGAL MATERIALS

Natalie Kotesha, Anja Boisen, Mogens Jakobsen, Tommy Alstrøm, Jan Larsen
Technical University of Denmark, Denmark

B3P-K10

HIGH FIELD EFFECT OF A NEW TIP TYPE CMOS MEMS GAS SENSOR

Zong-Han Liu, Chih-Hsiung Shen, Shu-Jung Chen
National Changhua University of Education, Taiwan

B3P-K11

PLATINUM SURFACE ADDITIVE BASED NANOSTRUCTURED CUO FILMS FOR ETHANOL SENSING

Mitesh Parmar, Konandur Rajanna
Indian Institute of Science, Bangalore, India

B3P-K12

A HIGH-PERFORMANCE TCD MONOLITHICALLY INTEGRATED WITH A GAS SEPARATION COLUMN

Shree Narayanan, Masoud Agah
Virginia Tech, USA

B3P-L1

STUDY OF THE EFFECT OF FABRICATION CONDITIONS OF POROUS GOLD ELECTRODES ON SENSITIVITY OF POLYMER-ENZYME COMPOSITE GLUCOSE SENSORS

Bo Liang, Yichuan Hu, Lu Fang, Guang Yang, Keda Shi, Xuesong Ye
Zhejiang University, China

B3P-L2

AN INTEGRATED MICROMANIPULATION AND BIOSENSING PLATFORM BUILT IN GLASS-BASED LTPS TFT TECHNOLOGY

Lei-Guang Chen, Dong-Yi Wu, Michael Lu
National Tsing Hua University, Taiwan

TUESDAY, OCTOBER 30 - POSTER SESSION

B3P-L3

DEEP-BRAIN SILICON MULTIELECTRODES WITH SURFACE-MODIFIED PT RECORDING SITES

Gergely Márton⁴, Zoltán Fekete⁴, István Bakos⁴, Gábor Battistig³, Anita Pongrácz⁴, Gábor Juhász², Péter Baracska¹, István Bársony⁵

¹Erawatch Bay Zoltán Nonprofit Ltd, Hungary; ²Eötvös Loránd University, Hungary; ³Institute of Technical Physics and Materials Science, RCNS, HAS, Hungary; ⁴Research Center for Natural Sciences, HAS, Hungary; ⁵Research Center for Natural Science

B3P-L4

NOVEL DESIGN AND APPLICATIONS OF COPLANAR WAVEGUIDE ANTENNA BIOSENSOR

You-Zheng Yin, Fu-Chieh Chang, Chii-Wann Lin

National Taiwan University, Taiwan

B3P-L5

A HIGH SENSITIVITY CMOS COMPATIBLE UREA ENZYME FIELD EFFECT TRANSISTOR WITHOUT ENZYME IMMOBILIZATION

Chen-Fu Lin¹, Ying-Zong Juang¹, Hann-Huei Tsai¹, Hsin-Hao Liao¹, Ping-Hong Chen², Mei-Jywan Syu², Chien-Cheng Fu³, Ruey-Lue Wang³

¹National Applied Research Laboratories, Taiwan; ²National Cheng Kung University, Taiwan; ³National Kaohsiung Normal University, Taiwan

B3P-L6

A MODULAR AND WIRELESS EXG SIGNAL ACQUISITION SYSTEM WITH A DENSE ARRAY OF DRY ELECTRODES

Unmesh Ghoshdastider, Christian Lange, Reinhard Viga, Anton Grabmaier

Universität Duisburg-Essen, Germany

B3P-L7

ON APPLICATION OF POSITIVE DIELECTROPHORESIS AND MICROSTRUCTURE CONFINEMENT ON MULTIELECTRODE ARRAY WITH SENSORY APPLICATIONS

Tianyi Zhou, Svetlana Tatic-Lucic

Lehigh University, USA

B3P-L8

A DIFFERENTIAL FREQUENCY DETECTOR USING SINGLE PLL FOR SENSING A DUAL-CHANNEL QUARTZ CRYSTAL MICROBALANCE IN LIQUIDS

Chien-Chi Lu, Yung-Chin Wang, Hung-Wei Chiu

National Taipei University of Technology, Taiwan

B3P-L9

A SIMPLE WRISTBAND BASED ON CAPACITIVE SENSORS FOR RECOGNITION OF COMPLEX HAND MOTIONS

Jingyuan Cheng², Gernot Bahle¹, Paul Lukowicz¹

¹DFKI Kaiserslautern, France; ²University of Passau, Germany

TUESDAY, OCTOBER 30 - POSTER SESSION

B3P-M1

DEVELOPMENT OF CESIUM DETECTION SYSTEM USING LASER-INDUCED BREAKDOWN SPECTROSCOPY

Satoshi Ikezawa, Muneaki Wakamatsu, Toshitsugu Ueda

Waseda University, Japan

B3P-M2

OPTICAL MEASUREMENTS AND PATTERN RECOGNITION TECHNIQUES FOR AUTHENTICATING TOP-FERMENTED AND BOTTOM-FERMENTED BEERS AND PREDICTING THE ALCOHOLIC STRENGTH

Anna Grazia Mignani¹, Leonardo Ciaccheri¹, Andrea Azelio Mencaglia¹, Heidi Ottevaere², Edgar Eugenio Samano Baca², Hugo Thienpont²

¹CNR IFAC, Italy; ²Vrije Universiteit Brussel, Belgium

B3P-M3

HIGHLY SENSITIVE REFRACTIVE INDEX SENSOR BASED ON STRUCTURE MODULATION OF DIGITAL VERSATILE DISCS

Jung-Po Chen, Yi-Ping Chen, Ding-Zheng Lin

Industrial Technology Research Institute, Taiwan

B3P-M4

SIMULTANEOUS MEASUREMENT OF DISPLACEMENT AND VELOCITY USING WHITE LIGHT EXTRINSIC FABRY-PEROT INTERFEROMETRY

Michael Todd², Erik Moro¹, Anthony Puckett¹

¹Los Alamos National Laboratory, USA; ²University of California San Diego, USA

B3P-M5

PARYLENE-C ENCAPSULATED TiO₂/GLYCEROL UV SENSOR IMPLEMENTED ON SILICON CHIP USING LOW TEMPERATURE PROCESS

Fu-Ming Hsu, Chih-Chun Lee, Feng-Yu Li, Weileun Fang

National Tsing Hua University, Taiwan

B3P-M6

THROMBIN DETECTION BY MEANS OF AN APTAMER BASED SENSITIVE COATING FABRICATED ONTO LMR-BASED OPTICAL FIBER REFRACTOMETER

Luis Razquin¹, Carlos Ruiz Zamarrero¹, Francisco Muñoz², Ignacio Matias¹, Francisco Arregui¹

¹Universidad Pública de Navarra, Spain; ²Universidad Pública de Navarra / Agrobiotechnology Institute CSIC/GN, Spain

B3P-M7

OPTIMIZED HYBRID MOEMS SENSORS BASED ON NOISE CONSIDERATIONS

Wilfried Hortschitz¹, Jörg Encke¹, Franz Kohl¹, Thilo Sauter¹, Harald Steiner², Michael Stifter², Franz Keplinger²

¹Austrian Academy of Sciences, Austria; ²Technische Universität Wien, Austria

TUESDAY, OCTOBER 30 - POSTER SESSION

B3P-M8

ADAPTIVE FUSION OF INFRA-RED AND VISIBLE SPECTRA CAMERA DATA FOR PARTICLE FILTER TRACKING OF MOVING TARGETS

Mohammed Talha, Rustam Stolkin
University of Birmingham, United Kingdom

B3P-M9

HIGH-DYNAMIC-RANGE BINARY PIXEL PROCESSING USING NON-DESTRUCTIVE READS AND VARIABLE OVERSAMPLING AND THRESHOLDS

Thomas Vogelsang, David Stork
Rambus Inc., USA

B3P-M10

LIGHT DETECTION BY CARBON NANOTUBE CIRCUIT WITH STRONG INTERTUBE CONDUCTION

Jingyu Lu, Zhiyuan Shen, Jianmin Miao, Ajay G.P. Kottapalli, Xianglin Li, Hongjin Fan
Nanyang Technological University, Singapore

B3P-M11

FIBER PH SENSOR BASED ON LONG PERIOD GRATINGS

Jiang-Chiou Mau³, Guei-Ru Lin³, Ming-Yue Fu¹, Wen-Fung Liu²
¹Air Force Academy, Taiwan; ²Feng Chia University, Taiwan; ³Feng-Chia University, Taiwan

B3P-M12

IMPROVEMENT OF OPTICAL PROPERTIES OF PH- SENSITIVE NANOLAYERS COATING DEPOSITED USING LAYER-BY-LAYER TECHNIQUE

Nahid Raoufi, Frederic Surre, Tong Sun, Kenneth Grattan, Muttukrishnan Rajarajan
City University London, United Kingdom

B3P-N1

MEASUREMENT OF A VEHICLE MOTION USING A NEW 6-DOF ACCELEROMETER

Ryoji Onodera², Nobuharu Mimura¹
¹Niigata University, Japan; ²Tsuruoka National College of Technology, Japan

B3P-N2

A NOVEL GUIDING DEVICE FOR DISTAL LOCKING OF INTRAMEDULLARY NAILS

Meng-Shiue Lee¹, Sung-Yueh Wu¹, Tze-Hong Wong², Wensyang Hsu¹, Tien-Kan Chung¹
¹National Chiao Tung University, Taiwan; ²National Taiwan University Hospital, Taiwan

B3P-N3

A REVERSIBLE MICRO MECHANICAL-LATCH SHOCK SWITCH BY EXTERNAL MAGNETIC FIELD

Yi-Chueh Shieh², Ruei-Pin Ma², Wensyang Hsu², Yu-Hsin Lin¹, Yu-Hsiang Tang¹
¹National Applied Research Laboratories, Taiwan; ²National Chiao Tung University, Taiwan

TUESDAY, OCTOBER 30 - POSTER SESSION

B3P-N4

ACTIVE THERMAL COMPENSATION OF MEMS BASED GYROSCOPE

Sheng-Ren Chiu¹, Chung-Yang Sue¹, Chih-Hsiou Lin¹, Li-Tao Teng¹, Lu-Pu Liao¹, Yu-Wen Hsu¹, Yan-Kuin Su²

¹Industrial Technology Research Institute, Taiwan; ²National Cheng Kung University, Taiwan

B3P-N5

NATURE LIKE ACCELERATION SENSOR / INCLINOMETER OF ORGANIC POLYMERS

Soeren Michel, Enrico Bischur, Norbert Schwesinger
Technische Universität München, Germany

B3P-N6

A MEMS CAPACITIVE PRESSURE SENSOR COMPATIBLE WITH CMOS PROCESS

Hui-Yang Yu, Ming Qin, Jian-Qiu Huang, Qing-An Huang
Southeast University, China

B3P-N7

DESIGN OF A TRIPLE-AXIS MEMS-BASED FLUIDIC GYROSCOPE

Thien Dinh, Yoshifumi Ogami
Ritsumeikan University, Japan

B3P-N8

A RING-SHAPED LTCC/HTCC SENSOR FOR DETECTION OF FINGER FORCES IN CLARINET PLAYING

Michael Weilguni¹, Walter Smetana¹, Goran Radosavlevic¹, Johann Nicolics¹, Alex Hofmann², Werner Goebel²

¹Technische Universität Wien, Austria; ²University of Music and Performing Arts Vienna, Austria

B3P-N9

PROPRIOCEPTIVE SENSING SYSTEM FOR THERAPY ASSESSMENT USING TEXTILE-BASED BIOMEDICAL MICRO ELECTRO MECHANICAL SYSTEM (MEMS)

Yuen Aoi Chee, Azam Ahmad Bakir, Dedy H. B. Wicaksono
Universiti Teknologi Malaysia, Malaysia

B3P-N10

UTILIZING THE TRANSIENT RESPONSE OF AN ACOUSTIC TRANSMISSION SETUP UTILIZING PRESSURE WAVES TO DETERMINE PHYSICAL LIQUID PARAMETERS

Hannes Antlinger², Stefan Clara², Bernhard Jakoby², Roman Beigelbeck¹, Samir Cerimovic³, Franz Keplinger³

¹Austrian Academy of Sciences, Austria; ²Johannes Kepler Universität in Linz, Austria; ³Technische Universität Wien, Austria

B3P-N11

PROPERTIES OF THERMAL DEVICES AND SENSORS ON POROUS SILICON SUBSTRATES

Frieder Lucklum², Bernhard Jakoby², Alexander Schwaiger¹

¹E plus E Elektronik Ges.m.b.H., Austria; ²Johannes Kepler Universität in Linz, Austria

TUESDAY, OCTOBER 30 - POSTER SESSION

B3P-N12

NEW TUNING FORK CORROSION SENSOR WITH HIGH SENSITIVITY

H. Alan Wolf, Manny S. Alvarez, H. Alan Schilowitz
ExxonMobil Research and Engineering Company, USA

B3P-N13

A WIRELESS AND POWER-FREE MICRO SENSOR ENABLING GASTROINTESTINAL PRESSURE MONITORING

Qiang Shi, Junbo Wang, Jian Chen, Deyong Chen
Institute of Electronics, Chinese Academy of Sciences, China

B3P-N14

THIN-FILM-BASED THERMOELECTRIC ENERGY GENERATOR DEVICE WITH A CARD STRUCTURE

Xiao Yu, Yanxiang Liu, Tie Li, Hong Zhou, Xiuli Gao, Fei Feng, Yuelin Wang
Shanghai Institute of Microsystem And Information Technology, CAS, China

B3P-N15

STUDY AND CHARACTERIZATION OF PLASTIC ENCAPSULATED PACKAGE FOR A THREE—AXIS PIEZORESISTIVE ACCELEROMETER WITH GUARD-RING STRUCTURE

Hsieh-Shen Hsieh, Heng-Chung Chang, Chih-Fan Hu, Chao-Lin Cheng, Weileun Fang
National Tsing Hua University, Taiwan

B3P-N16

PIEZORESISTIVE PRESSURE SENSOR WITH LADDER SHAPE DESIGN OF PIEZORESISTOR

Heng-Chung Chang, Hsieh-Shen Hsieh, Sung-Cheng Lo, Chih-Fan Hu, Weileun Fang
National Tsing Hua University, Taiwan

B3P-N17

HEATER POWER AND THERMAL GYROSCOPE SENSITIVITY

Nilgoon Zarei, Albert Leung, John Jones
Simon Fraser University, Canada

B3P-O1

CONTENT-EXTRACTION-BASED COMPRESSION OF ACCELERATION DATA FOR MOBILE WIRELESS SENSORS

Zhibo Pang¹, Qiang Chen¹, Lirong Zheng²
¹KTH Royal Institute of Technology, Sweden; ²KTH Royal Institute of Technology & Fudan University, Sweden

B3P-O2

FLEXIBLE SOUND GENERATOR BASED ON THERMOACOUSTIC EFFECT

Yoshiki Nakajima, Takehiro Sugimoto
Japan Broadcasting Corporation, Japan

TUESDAY, OCTOBER 30 - POSTER SESSION

B3P-O3

ULTRASONIC FLOW METER WITH PIEZOELECTRIC TRANSDUCER ARRAYS INTEGRATED IN THE WALLS OF A FIBER-REINFORCED COMPOSITE DUCT

Andreas Kunadt, Günther Pfeifer, Wolf-Joachim Fischer
Technische Universität Dresden, Germany

B3P-O4

HIGH PERFORMANCE BULK SILICON COMB-DRIVE ACTUATOR BASED ON POST-CMOS PROCESS

Chun-Hua Cai, Ming Qin
Southeast University, China

B3P-O5

IMPLEMENTATION AND EXPERIMENT OF DUAL-MASS VIBRATORY GYROSCOPE WITH HIGH QUALITY FACTOR

Fangxiu Jia, Anping Qiu, Qin Shi, Yan Su
Institute Nanjing University of Science and Technology, China

B3P-O6

PIEZOELECTRIC D33 MODE DIAPHRAGM ENERGY HARVESTER FOR SELF-POWERED SENSOR APPLICATION

Zhiyuan Shen, Shuwei Liu, Haobing Liu, Kottapalli Ajay Giri Prakash, Jianmin Miao, Lye Sun Woh
Nanyang Technological University, Singapore

B3P-O7

SENSING TFT VTH BY AN EXTERNAL ALGORITHM TO COMPENSATE NON-UNIFORMITY ON AMOLED PANEL

Kuei-Yu Lee, Paul C.-P. Chao
National Chiao Tung University, Taiwan

B3P-O8

DESIGN AND ANALYSIS OF MEMS STEP UP VOLTAGE CONVERTERS

Rachel Gleeson, Michael Kraft, Neil White
University of Southampton, United Kingdom

B3P-O9

SPATIOTEMPORAL ASSIGNMENT OF ENERGY HARVESTERS ON A SELF-SUSTAINING MEDICAL SHOE

James Bradley Wendt, Vishwa Goudar, Hyduke Noshadi, Miodrag Potkonjak
University of California, Los Angeles, USA

B3P-O10

A 16PPM/°C ROIC FOR CAPACITIVE-SENSOR SIGNAL-ACQUISITION APPLICATIONS

Raul Aragonés, Joan Oliver, Carles Ferrer
Universitat Autònoma de Barcelona, Spain

TUESDAY, OCTOBER 30 - POSTER SESSION

B3P-O11

PIEZOELECTRIC ENERGY DROPLET HARVESTING AND MODELING

Tasneem Alkhaddeim, Boshra AlShujaa, Waad AlBeiey, Fatima AlNeyadi, Mahmoud Al Ahmad
United Arab Emirates University, U.A.E.

B3P-O12

MICRO FABRICATION DEVELOPMENT OF A VIBRATION-BASED SPUTTERED PZT THIN FILM MICRO ENERGY HARVESTER

Kazumasa Shibata, Shinya Ishikawa, Kazuhiro Tanaka, Sumito Nagasawa, Ziping Cao, Hiroyuki Oguchi, Motoaki Hara, Hiroki Kuwano
Tohoku University, Japan

B3P-O13

A MONOLITHIC CMOS MEMS ACCELEROMETER WITH LOW NOISE GAIN TUNABLE INTERFACE IN 0.18 μ m CMOS MEMS TECHNOLOGY

Yi-Da Lin, Jian-Yuan Lin, Chun-Kai Wang, Long-Sheng Fan, Kuei-Ann Wen
National Chiao Tung University, Taiwan

B3P-O14

QUANTIFYING THE PERFORMANCE OF A BOWLER WITH AN INSTRUMENTED BOWLING BALL

Darwin Gouwanda, Patmapriyan Nathan
Monash University Sunway campus, Malaysia

B3P-O15

ACCURATE CALIBRATION OF TILT AND AZIMUTH FOR MEMS-BASED INCLINOMETER

Weibin Yang¹, Bin Fang¹, Yuan Yan Tang¹, Jiye Qian¹, Xudong Qin³, Wenhua Yao²

¹College of Computer Science, China; ²No. 22 Research Institute China Electronics Technology Group Corporation, China; ³Zhengzhou Horizon Electronics Science & Technology Co. Ltd, China

B3P-P1

PROTOTYPE WIRELESS SENSOR NETWORK NODE FOR NOVEL ASYNCHRONOUS RF TIME-OF-FLIGHT RANGING

Thanh Hong, Shinji Ohyama
Tokyo Institute of Technology, Japan

B3P-P2

DEVELOPMENT OF A 5 GHZ BAND REALTIME WIRELESS SENSING SYSTEM WITH LOW POWER CONSUMPTION FOR SENSOR NETWORKS

Hitoshi Kitayoshi, Kunio Sawaya, Hiroki Kuwano
Tohoku University, Japan

TUESDAY, OCTOBER 30 - POSTER SESSION

B3P-P3

MEASURING THE EFFECTIVENESS OF BEACON LOCATION BY DISTRIBUTION-ADAPTED GRID MEASUREMENT

Yuan-Chao Chou², Te-Chih Wang², Chao-Lung Ting², Ray-I Chang², Chia-Hui Wang¹

¹Ming Chuan University, Taiwan; ²National Taiwan University, Taiwan

B3P-P4

A FUZZY-GOSSIP ROUTING PROTOCOL FOR AN ENERGY EFFICIENT WIRELESS SENSOR NETWORKS

Imad Alshawi, Lianshan Yan, Wei Pan, Bin Luo

Southwest Jiaotong University, China

B3P-P5

TDOA-BASED DISTANCE ESTIMATION FOR MOBILE BEACON-ASSISTED LOCALIZATION IN LARGE-SCALE SENSOR NETWORKS

Eunchan Kim¹, Cheoloh Kang¹, Hui-Sok Jung², Yeon-Mo Yang²

¹Attached Institute of Electronics & Telecommunication Research Institute, Korea, South; ²Kumoh National Institute of Technology, Korea, South

B3P-P6

LIGHTWEIGHT SPATIAL IP ADDRESS CONFIGURATION FOR IPV6-BASED WIRELESS SENSOR NETWORKS IN SMART GRID

Chih Yung Cheng, Chi Cheng Chuang, Ray-I Chang

National Taiwan University, Taiwan

B3P-P7

KEY RENEWAL SCHEME FOR CLUSTERING ROUTING PROTOCOLS IN WIRELESS SENSOR NETWORKS

Saewoom Lee, Kiseon Kim

Gwangju Institute of Science and Technology, Korea, South

B3P-P8

3D LOCALIZATION WITH A MOBILE BEACON IN WIRELESS SENSOR NETWORKS

Sangho Lee, Kiseon Kim

Gwangju Institute of Science and Technology, Korea, South

B3P-P9

DEVICE-BASED SECURE TWO-WAY RANGING AND NODE IDENTIFICATION FOR WIRELESS SENSOR NETWORKS

Shih-Chang Lin, Chih-Yu Wen

National Chung Hsing University, Taiwan

B3P-P10

2-HOP SCHEME FOR MAXIMUM LIFETIME IN WIRELESS SENSOR NETWORKS

Azman Osman Lim, An Hong Vuong, Zuan Chen, Yasuo Tan

Japan Advanced Institute of Science and Technology, Japan

TUESDAY, OCTOBER 30 - POSTER SESSION

B3P-P11

UTILIZING A NETWORK OF FREQUENCY DISTURBANCE MONITORING SENSORS FOR LARGE DYNAMIC SYSTEM SYNTHESIS

Yin Lei², Reynaldo Nuqui¹, Yilu Liu²

¹ABB Inc. USCRC, USA; ²University of Tennessee, USA

B3P-Q1

LOW TEMPERATURE DEPOSITION OF DOPED POLYCRYSTALLINE SILICON AT ATMOSPHERIC PRESSURE AND ITS APPLICATION TO A STRAIN GAUGE

Teruki Naito¹, Nobuaki Konno¹, Takashi Tokunaga¹, Toshihiro Itoh²

¹BEANS Laboratory, Japan; ²Macro BEANS Center & National Institute of
Advanced Industrial Science and Technology, Japan

B3P-Q2

AN IN-CHANNEL MICRO CHECK VALVE FABRICATED USING A SIMPLE TWO-MASK PROCESS

Hongen Tu, Eric Kim, Yong Xu

Wayne State University, USA

B3P-Q3

FABRICATION OF SUPERHYDROPHOBIC SURFACE USING SURFACE TEXTURING WITH NANO-SIZED STRUCTURE AND PTFE FILM

Junghwa Oh², Daeyoung Kong², Seongbo Seo¹, Dongyoung Kim¹,
Hwamin Kim¹, ChanSeob Cho², Jonghyun Lee², Bonghwan Kim¹

¹Catholic University of Daegu, Korea, South; ²Kyungpook National University,
Korea, South

B3P-Q4

DESIGN AND ANALYSIS OF A WIDE BANDWIDTH IMMERSION MEMS TRANSDUCER ARRAY FOR FAULT DETECTION IN POWER CABLES

Tahereh Arezoo Emadi, Gabriel Thomas, Stephen Pistorius, Douglas
Buchanan

University of Manitoba, Canada

B3P-Q5

POSITION-DEPENDENT CHARACTERIZATION OF BONE TISSUE WITH ELECTRICAL IMPEDANCE SPECTROSCOPY

Stefan Schaur², Bernhard Jakoby², Gernot Kronreif¹

¹Austrian Center for Medical Innovation and Technology, Austria; ²Johannes
Kepler Universität in Linz, Austria

B3P-Q6

INERTIAL REFERENCE UNIT IN A DIRECTIONAL GYRO MODE OF OPERATION

Jan Rohac, Martin Sipos, Jakub Simanek, Ondrej Teren

Czech Technical University in Prague, Czech Republic

B3P-Q7

SALIENCY-BASED DATA COMPRESSION FOR IMAGE SENSORS

Tien Ho-Phuoc, Antoine Dupret, Laurent Alacoque

CEA LETI MINATEC, France

TUESDAY, OCTOBER 30 - POSTER SESSION

B3P-Q8

CONCENTRATION OF ACOUSTIC WAVE BY MENTAL BACKING LAMINATION LAYERED ON EMBEDDED PZT*

Yu Chen², Nina Chen¹, Pengcheng Li², Bin Tan²

¹Chongqing Nanfang Translators College Of SISU, China; ²Sichuan University, China

B3P-Q9

ELECTROSTATIC FORCE DETECTION DURING ANODIC WAFER BONDING

Tamás Kárpáti¹, Andrea Edit Pap¹, Mária Ádám¹, János Ferencz¹, Péter Fürjes¹, Gábor Battistig¹, István Bársony²

¹Institute of Technical Physics and Materials Science, RCNS, HAS, Hungary;

²Research Center for Natural Sciences, HAS / University of Pannonia, Hungary

B3P-Q10

REDUCING THE FAILURE RISK OF PORTABLE ELECTRONIC DEVICES UNDER FIELD USE CONDITIONS THROUGH TRIAXIAL STRAIN GAGE ARRAY TECHNOLOGY

Hongbin Shi, Cuihua Tian, Satoshi Ikezawa, Toshitsugu Ueda
Waseda University, Japan

B3P-Q11

A NEMS VIBRATION ENERGY HARVESTER USING ORDERED PIEZOELECTRIC ZINC OXIDE NANOWIRE ARRAYS

Bhargav Nabar, Zeynep Celik-Butler, Donald Butler
University of Texas at Arlington, USA

B3P-Q12

APPLICATION OF DECONVOLUTION FOR WIRE FAULT LOCATION USING TIME DOMAIN REFLECTOMETRY

Qinghai Shi², Olfa Kanoun¹

¹Chemnitz University of Technology, Germany; ²Technische Universität Chemnitz, Germany

B3P-Q13

PBS COLLOIDAL QUANTUM DOT PHOTODIODES FOR MONOLITHICAL INTEGRATION TO READ-OUT ELECTRONICS

Emre Heves, Y. Gurbuz
Sabanci University, Turkey

B3P-Q14

LLOYD'S MIRROR INTERFERENCE LITHOGRAPHY USING A SINGLE MODE FIBER SPATIAL FILTER

En-Chiang Chang, Yi-Lin Sun, Pao-Te Lin, David G. Mikolas, Chien-Chung Fu
National Tsing Hua University, Taiwan

B3P-R1

COMPUTING PERCEPTION FROM SENSOR DATA

Payam Barnaghi¹, Frieder Ganz¹, Cory Henson², Amit Sheth²

¹University of Surrey, United Kingdom; ²Wright State University, USA

TUESDAY, OCTOBER 30 - POSTER SESSION

B3P-R2

PERFORMANCE OF LONG-WAVELENGTH QUANTUM WELL INFRARED PHOTODETECTOR FOCAL PLANE ARRAYS USING SIMPLIFIED BACKSIDE SELECTIVELY WET-ETCHING PROCESS

Shiang-Feng Tang¹, Ping-Kuo Weng¹, Yao-Tang Gao¹, Cheng Yuan Wu¹, Tzu-Chiang Chen², Yi-Lin Lu², Chia-Chia Huang²

¹Chung-Shan Institute of Science and Technology, Taiwan; ²National Defense University, Taiwan

B3P-R3

DESIGN AND FABRICATION OF A BIOMIMETIC GYROSCOPE INSPIRED BY THE FLY'S HALTERE

Harmen Droogendijk, Robert Brookhuis, Meint de Boer, Remco Sanders, Gijs Krijnen

Universiteit Twente, Netherlands

B3P-R4

A NOVEL SECURE DATA AGGREGATION MODEL FOR WIRELESS SENSOR NETWORKS USING FUZZY LOGIC

Balasubramanian Paramasivan¹, K. Mohaideen Pitchai², Madasamy Kaliappan², Madasamy Bhuvaneswari²

¹Anna University, India; ²National Engineering College, India

3:15 PM - 6:15 PM

Tour - National Palace Museum

**Bus transportation leaves TICC between 2:30 PM and 3:30 PM*

6:30 PM - 9:30 PM

Grand Hotel

Banquet Dinner

**Bus transportation leaves Grand Hotel between 9:00 PM and 10:00 PM to return attendees to the TICC following event*

WEDNESDAY, OCTOBER 31

8:00 AM - 8:45 AM

C0L-A: PLENARY - KEYNOTE - PROFESSOR KHALIL NAJAFI
Plenary Hall

Session Chair: Reza Ghodssi (University of Maryland, College Park)

BIOMIMETIC HAIR SENSORS: UTILIZING THE THIRD DIMENSION

8:50 AM - 10:20 AM

C1L-A: Phenomena and Modeling II
Room 101A

Session Chairs: Hans JFL Goosen, (Delft University of Technology, the Netherlands), Guo-Ming Sung (National Taipei University of Technology, Taiwan)

8:50 AM

THERMO-FLUID DYNAMIC TIME-OF-FLIGHT FLOW SENSOR SYSTEM

Okan Ecin, Runtian Zhao, Bedrich Hosticka, Anton Grabmaier
Universität Duisburg-Essen, Germany

9:05 AM

METHOD FOR PERFORMANCE IMPROVEMENT AND SIZE SHRINKAGE OF A THREE—AXIS PIEZORESISTIVE ACCELEROMETER WITH GUARD-RING STRUCTURE

Hsieh-Shen Hsieh, Heng-Chung Chang, Chih-Fan Hu, Chao-Lin Cheng, Weileun Fang
National Tsing Hua University, Taiwan

9:20 AM

STUDIES ON THE STRESS DEPENDENCE OF FLEXIBLE INTEGRATED CAPACITIVE PRESSURE SENSORS FOR MINIMALLY INVASIVE BIOMEDICAL APPLICATIONS

Jutta Müntjes, Roland Fischer, Joachim Häfner, Wilfried Mokwa
RWTH Aachen University, Germany

9:35 AM

SELF-SUSTAINED MICROMECHANICAL RESONANT PRESSURE SENSORS

Xiaobo Guo, Amir Rahafrooz, Yun-Bo Yi, Siavash Pourkamali
University of Denver, USA

9:50 AM

SUPPRESSION OF SPURIOUS SIGNALS IN THERMAL MEMS GYROSCOPE

Pooneh Shooshtari, Albert Leung, John Jones
Simon Fraser University, Canada

10:05 AM

AN EQUIVALENT-CIRCUIT METHOD FOR COUPLED-FIELD MODELING OF DISTRIBUTED RF MEMS DEVICES AND PACKAGES

Cheng Zhao, Jing Song, Lei Han, Qing-An Huang
Southeast University, China

WEDNESDAY, OCTOBER 31

8:50 AM - 10:20 AM

C1L-B: Electrochemical and pH Sensors

Room 101B

Session Chairs: Anna Grazia Mignani (CNR IFAC, Italy), I-Yu Huang (National Sun-Yet-Sen University, Taiwan)

8:50 AM

MEASUREMENT OF ENZYME ACTIVITY USING A PLUG-BASED ELECTROCHEMICAL MICRODEVICE

Zhi Cai, Shohei Kimura, Masatoshi Yokokawa, Hiroaki Suzuki
University of Tsukuba, Japan

9:05 AM

MICROFLUIDIC DEVICE FOR FRESHNESS OR AGEING DETERMINATION OF FOOD MATERIALS

Daisuke Itoh², Eri Koyachi², Hiroaki Suzuki², Yuko Murata¹, Masakazu Murata¹

¹National Research Institute of Fisheries Science, Japan; ²University of Tsukuba, Japan

9:20 AM

DIRECTED ENZYME DEPOSITION VIA ELECTROACTIVE POLYMERBASED NANOMATERIALS FOR MULTI-ANALYTE AMPEROMETRIC BIOSENSORS

Rajtarun Madangopal, Matthew Charles Stensberg, David Marshall Porterfield, Jenna Leigh Rickus, Nicholas Pulliam
Purdue University, USA

9:35 AM

ELECTROCHEMICAL MICRODEVICE FOR THE DETERMINATION OF THE MINIMUM INHIBITORY CONCENTRATION OF ANTIBIOTICS

Rika Takagi, Junji Fukuda, Hiroaki Suzuki, Keiji Nagata, Nobuhiko Nomura
University of Tsukuba, Japan

9:50 AM

MOLECULAR WEIGHT EFFECTS OF POLYETHYLENE GLYCOL ON THE MICROSTRUCTURE OF METALLIC BISMUTH FOR ELECTROCHEMICAL SENSING OF Sn^{2+}

Yung-Yi Wu, Chein-Hung Lien, Yi-Da Tsai, Chi-Chang Hu
National Tsing Hua University, Taiwan

10:05 AM

HIGH TEMPORAL RESOLUTION ELECTROCHEMICAL BIOSENSOR USING NITROGEN-INCORPORATED NANODIAMOND ULTRA-MICROELECTRODE ARRAY

Weng Kang², Supil Raina², Jim Davidson², Jin Hua Huang¹
¹National Tsing Hua University, Taiwan; ²Vanderbilt University, USA

WEDNESDAY, OCTOBER 31

8:50 AM - 10:20 AM

C1L-C: CMOS Light / Image Sensors

Room 102

Session Chairs: Elfed Lewis (Univ. of Limerick, Ireland), Hao-Chiao Hong (National Chiao Tung University, Taiwan)

8:50 AM

DUAL-LAYER METAL-GRID POLARIZER FOR POLARIZATION IMAGE SENSOR IN 65-NM CMOS TECHNOLOGY

Kiyotaka Sasagawa, Norimitsu Wakama, Daisuke Okabayashi, Toshihiko Noda, Takashi Tokuda, Jun Ohta
Nara Institute of Science and Technology, Japan

9:05 AM

A 143DB 1.96% FPN LINEAR-LOGARITHMIC CMOS IMAGE SENSOR WITH THRESHOLD-VOLTAGE CANCELLATION AND TUNABLE LINEAR RANGE

Wei-Fan Chou, Shang-Fu Yeh, Chih-Cheng Hsieh
National Tsing Hua University, Taiwan

9:20 AM

LINEAR CMOS IMAGE SENSOR WITH TIME-DELAY INTEGRATION AND INTERLACED SUPER-RESOLUTION PIXEL

Jui-Hsin Chang², Kuo-Wei Cheng², Chih-Cheng Hsieh², Wen-Hsu Chang¹, Hann-Huei Tsai¹, Chin-Fong Chiu¹
¹National Applied Research Laboratories, Taiwan; ²National Tsing Hua University, Taiwan

9:35 AM

A SINGLE-PHOTON AVALANCHE DIODE IN CMOS 0.5 μ M N-WELL PROCESS

Bowei Zhang, Zhenyu Li, Mona Zaghloul
George Washington University, USA

9:50 AM

LARGE-AREA LOW-NOISE SINGLE-PHOTON AVALANCHE DIODES IN STANDARD CMOS

Babak Nouri, Marc Dandin, Pamela Abshire
University Of Maryland, USA

10:05 AM

CMOS INTEGRATED HIGH SPEED LIGHT SENSORS FOR OPTICAL WIRELESS COMMUNICATION APPLICATIONS

Behrooz Nakhoob, Sagar Ray, Mona Hella
Rensselaer Polytechnic Institute, USA

WEDNESDAY, OCTOBER 31

8:50 AM - 10:20 AM

C1L-D: Low Power / Self-Powered Sensor Network

Room 101C

Session Chairs: Walter Lang (Univ. Bremen, Germany), Kukjin Chun (Seoul National University, Korea)

8:50 AM

A WSN SYSTEM POWERED BY VIBRATIONS TO IMPROVE SAFETY OF MACHINERY WITH TRAILER

Denis Dondi, Giacomantonio Napoletano, Alessandro Bertacchini, Luca Larcher, Paolo Pavan

Università degli studi di Modena e Reggio Emilia, Italy

9:05 AM

DENSE, LOW-POWER SENSOR NETWORK FOR THREE-DIMENSIONAL THERMAL CHARACTERIZATION OF LARGE-SCALE ATRIA SPACES

Nan-Wei Gong¹, Laura Ware¹, Steve Ray¹, Gary Ware², Brett Leida², Tim Ren², Phil London², Ashley Turza¹, David Way¹, Leon Glicksman¹, Joseph Paradiso¹

¹Massachusetts Institute of Technology, USA; ²Schneider Electric, USA

9:20 AM

ENERGY-EFFICIENT SAMPLING SCHEDULES FOR BODY AREA NETWORKS

Vishwa Goudar, Miodrag Potkonjak

University of California, Los Angeles, USA

9:35 AM

AMBIENT-RF-ENERGY-HARVESTING SENSOR NODE WITH CAPACITOR-LEAKAGE-AWARE DUTY CYCLE CONTROL

Ryo Shigeta², Tatsuya Sasaki², Duong Minh Quan², Yoshihiro Kawahara², Rushi Vyas¹, Manos Tentzeris¹, Tohru Asami²

¹Georgia Institute of Technology, USA; ²University of Tokyo, Japan

9:50 AM

DESIGN, DEVELOPMENT, AND EVALUATION OF A SELF-POWERED GPS TRACKING SYSTEM FOR VEHICLE SECURITY

Ian Christopher Tolentino, Marc Caesar Talampas

University of the Philippines, Singapore

10:05 AM

LOW ENERGY TRUSTED PRIVATE SENSING USING SHARED HARDWARE RANDOM NUMBER GENERATORS

Saro Meguerdichian, Miodrag Potkonjak

University of California, Los Angeles, USA

WEDNESDAY, OCTOBER 31

8:50 AM - 10:20 AM

C1L-E: Biosensors for Food and Agriculture

Room 101D

Session Chairs: Bryan A. Chin (Auburn University, USA), Richard Cernosek (Sandia National Laboratories, USA)

8:50 AM

BIOSENSING TYPOLOGIES FOR AGRICULTURAL ROBOTICS

Daniel Schmoldt

National Institute of Food & Agriculture, USA

9:05 AM

DIRECT AND DISCRIMINATIVE DETECTION OF ORGANOPHOSPHATE NEUROTOXINS FOR FOOD AND AGRICULTURE PRODUCTS

Jeffrey Kirsch, Virginia Davis, Aleksandr Simonian

Auburn University, USA

9:20 AM

REAGENTLESS AND MEDIATOR-BASED ELECTROCHEMICAL BIOSENSORS FOR FOOD INDUSTRY AND MEDICINE

Valdas Laurinavicius, Julija Razumiene, Bogumila Kurtinaitiene, Jonita Stankeviciute, Rolandas Meskys

Vilnius University, Lithuania

9:35 AM

BIOSENSOR PLATFORM BASED ON STRESS-IMPROVED PIEZOELECTRIC MEMBRANE

Xu Lu², Zhuo Xu², Zhongyang Cheng¹

¹*Auburn University, USA;* ²*Xi'an Jiaotong University, China*

9:50 AM

BIOSENSOR FOR DIRECT DETECTION OF PATHOGENS ON FRESH PRODUCE

Zhongyang Cheng, Kewei Zhang, S.Q. Li

Auburn University, USA

WEDNESDAY, OCTOBER 31

8:50 AM - 10:20 AM

C1L-F: Quasi One Dimensional Nanostructures for Sensing Applications

Room 103

Session Chairs: Hsin-Fei Meng (National Chiao Tung University, Taiwan), Aylin Karakuscu (University of Brescia, Italy)

8:50 AM

AUGMENTED ONE DIMENSIONAL NANOSTRUCTURED SENSOR ELEMENTS

Pooi See Lee, Nandan Singh

Nanyang Technological University, Singapore

9:05 AM

SURFACE IONIZATION BASED GAS DETECTION

Angelika Hackner, Gerhard Müller

EADS Innovation Works, Germany

9:20 AM

A POLARIMETRIC SENSOR BASED ON NANOPOROUS FREE STANDING MEMBRANES

Paolo Bettotti¹, Neeraj Kumar¹, Lorenzo Pavesi¹, Jesus Alvarez², Daniel Hill²

¹Università degli Studi di Trento, Italy; ²Universitat de València, Spain

9:35 AM

PDCS FUNCTIONALIZED CARBON NANOSTRUCTURE FOR GAS SENSING APPLICATION

Lung-Hao Hu⁴, Rishi Raj⁴, Aylin Karakuscu², Andrea Ponzoni¹, Giorgio Sberveglieri¹, Riccardo Ceccato³

¹Università degli Studi di Brescia, Italy; ²Università degli Studi di Brescia and CNR-IDASC, Italy; ³Università degli Studi di Trento, Italy; ⁴University of Colorado, USA

9:50 AM

ELECTROPHORETIC DEPOSITION OF SNO₂ NANOPARTICLES IN NON-AQUEOUS MEDIUM FOR SENSOR APPLICATIONS

Goktug Gunkaya¹, Mevlut Gurbuz², Aydin Dogan¹

¹Anadolu University, Turkey; ²Ondokuz Mayıs University, Turkey

WEDNESDAY, OCTOBER 31 - POSTER SESSION

10:20 AM - 12:10 PM

C2P-G: Wednesday Poster Session

Room 201

Session Chairs: Yu-Cheng Lin (National Cheng Kung University, Taiwan), Shiang-Cheng Lu (National Tsing Hua University, Taiwan)

C2P-J1

MICRO-ROTATING STRUCTURES FOR DETERMINING THERMAL EXPANSION COEFFICIENTS OF POLYSILICON THIN FILMS

Hai-Yun Liu, Wei-Hua Li, Feng-Liang Yuan, Ming-Xia Jiang, Qing-An Huang

Southeast University, China

C2P-J2

STUDIES ON THERMALLY INDUCED PACKAGING EFFECTS OF SURFACE ACOUSTIC WAVE DEVICES: SIMULATION AND EXPERIMENT VERIFICATION

Zheng-dong Liu², Cheng Zhao², Ren Liu¹

¹Huakai Electronics Co. LTD., China; ²Yangzhou University, China

C2P-J3

MODELING OF H₂O ADSORPTION-INDUCED CURVATURE OF A NANOCANTILEVER

Bing Li, Hong Yu, Qing-An Huang

Southeast University, China

C2P-J4

MODELING AND DATA ANALYSIS OF A MULTIMODE RESONATOR SENSOR LOADED WITH VISCOUS AND VISCOELASTIC FLUIDS

Erwin K. Reichel³, Martin Heinisch¹, Bernhard Jakoby¹, Jan Vermant², Christine E.A. Kirschhock²

¹Johannes Kepler Universität in Linz, Austria; ²Katholieke Universiteit Leuven, Belgium; ³University of Leuven, Belgium

C2P-J5

MEASUREMENT OF ELASTIC MODULUS AND RESIDUAL STRESS OF INDIVIDUAL LAYERS FOR COMPOSITE FILMS BY RESONANT FREQUENCY OF MEMS STRUCTURES

Chao Sun, Zai-Fa Zhou, Wei-Hua Li, Qing-An Huang

Southeast University, China

C2P-J6

EVALUATION OF LOW-VOLTAGE CMOS DIFFERENTIAL AMPLIFIER FOR SMARTPHONE SENSING

Kyohei Kawamura, Yoshinori Matsumoto

Keio University, Japan

C2P-J7

A COMPARISON OF IR STEREO VISION AND LIDAR FOR USE IN FIRE ENVIRONMENTS

Joseph Starr, Brian Lattimer

Virginia Tech Department of Mechanical Engineering, USA

WEDNESDAY, OCTOBER 31 - POSTER SESSION

C2P-K1

A METHANOL CONCENTRATION SENSOR USING A QUARTZ RESONATOR CONNECTED IN SERIES TO INTERDIGITAL CAPACITOR

Shunpei Ishii, Keito Emura, Takashi Abe
Niigata University, Japan

C2P-K2

GATED LATERAL BJT GAS SENSOR FOR TOLUENE GAS DETECTION UNDER ROOM TEMPERATURE CONDITION

Heng Yuan², Se-Hyuk Yeom², Jae-Sung Lee², Hyun-Min Jeong²,
Byoung-Ho Kang², Md. Rajibur Rahaman Khan², Dae-Hyuk Kwon¹,
Shin-Won Kang²
¹Kyungil University, Korea, South; ²Kyungpook National University, Korea, South

C2P-K3

A NEW HYDROGEN SENSOR BASED ON A NI/AL₂O₃/NI/N-SI MAGNETIC TUNNELING TRANSISTOR

Vahdat Nazerian, Alireza Salehi
K.N. Toosi University of Technology, Iran

C2P-K4

EFFECTS OF OXYGEN-FUNCTIONAL GROUPS ON HUMIDITY SENSOR BASED GRAPHENE OXIDE THIN FILMS

Duy-Thach Phan, Gwi-Sang Chung
University of Ulsan, Korea, South

C2P-K5

AN EXPERIMENTAL ANALYSIS OF THICK-FILM SOLID-STATE REFERENCE ELECTRODES

Marios Sophocleous², Monika Glanc-Gostkiewicz², John Atkinson²,
Eduardo Garcia-Breijo¹
¹Universidad de Valencia, Spain; ²University of Southampton, United Kingdom

C2P-K6

SENSITIVITY OF SURFACE ACOUSTIC WAVE NO₂ GAS SENSOR BASED ON RR-P3HT AT ROOM TEMPERATURE

Shengfa Liang¹, Dongmei Li¹, Xin Chen¹, Xiaojing Li¹, Ming Liu¹,
Shuang Zhan²
¹Institute of Microelectronics, Chinese Academy of Sciences, China; ²Qingdao University of Science and Technology, China

C2P-K7

CMOS COMPATIBLE GAS SENSOR ARRAYS FOR HOSTILE ENVIRONMENTS

Benjamin Furnival, Sandip Roy, Konstantin Vassilevski, Nicholas Wright, Alton Horsfall, Christopher O'Malley
Newcastle University, United Kingdom

C2P-K8

AN INKJET-PRINTED HUMIDITY SENSOR BASED ON SiO₂ NANO PARTICLE BLENDED PEDOT:PSS FILMS

Wen Yu Chuang, Chang-Hung Lee, Chih-Ting Lin, Shih-Hui Lin, Wen-Jong Wu
National Taiwan University, Taiwan

WEDNESDAY, OCTOBER 31 - POSTER SESSION

C2P-K9

SYNTHESIS AND HYDROGEN GAS SENSING PROPERTIES OF PURE NIS AND AU-COATED NIS

Ella C. Linganis¹, Bonex W. Mwakikunga¹, Sabelo D. Mhlana⁴, Neil Coville⁴, B.T. Sone², M. Maaza³

¹Council for Scientific and Industrial Research, South Africa; ²Ithemba LABS-National Research Foundation, South Africa; ³University of South Africa, South Africa; ⁴University of the Witwatersrand, South Africa

C2P-K10

DEVICE FOR DETERMINING GAS SOURCE DIRECTION THAT USES PELTIER ELEMENTS TO COLLECT GAS SAMPLES

Takuho Midoro, Hiroshi Ishida

Tokyo University of Agriculture and Technology, Japan

C2P-K11

HIGH SENSITIVITY, SUPRAMOLECULAR THIN FILMS FOR SENSING OF METHANE

Amir Hossein Khoshaman², Paul Li¹, Behraad Bahreyni¹

¹Simon Fraser University, Canada; ²University of British Columbia, Canada

C2P-K12

CALIBRATION OF MOX GAS SENSORS IN OPEN SAMPLING SYSTEMS BASED ON GAUSSIAN PROCESSES

Javier Gonzalez Monroy¹, Achim Lilienthal², Jose Luis Blanco¹, Javier González-Jimenez¹, Marco Trincavelli²

¹Universidad de Málaga, Spain; ²Örebro University, Sweden

C2P-K13

SENSOR RESPONSE TIME EVALUATIONS OF TRACE HYDROGEN GASEOUS SPECIES WITH PLATINUM USING KELVIN PROBE

Golla Eranna¹, Roman Paris², Theodor Doll³

¹CEERI Pilani, India; ²TU-Ilmenau, Germany; ³University of Mainz, Germany

C2P-K14

COLORIMETRIC OXYGEN IMAGING AND QUANTIFICATION WITH EASILY ACCESSIBLE OPTICAL DEVICES

Satya Achanta, Sanghan Park, Chang-Soo Kim

Missouri University of Science and Technology, USA

C2P-L1

SIMPLE FABRICATION OF GLUCOSE BIOSENSOR BASED ON GRAPHENE-NAFION COMPOSITE BY AMPEROMETRIC DETECTIONS

Wei-Che Lee, Chun-Chuan Kuo, Nan-Fu Chiu

National Taiwan Normal University, Taiwan

C2P-L2

DESIGN AND FABRICATE A CONTACT LENS SENSOR WITH A MICRO-INDUCTOR EMBEDDED FOR INTRAOCULAR PRESSURE MONITORING

Chien-Kai Tseng, Yu-Chieh Huang, Shang-Wei Tsai, Guan-Ting Yeh, Chung-Hao Chang, Jin-Chern Chiou

National Chiao Tung University, Taiwan

WEDNESDAY, OCTOBER 31 - POSTER SESSION

C2P-L3

A DIGITAL RADIOGRAPHY READOUT SYSTEM FOR LOW DOSE AND HIGH RESOLUTION AMPLIFIED PIXEL SENSOR

Bo-Wen Xiao, Cheng-Wei Sun, Heng-Yin Chen, Chin-Yuan Ho, Isaac Wing-Tak Chan, Ming-Hua Yeh

Display Technology Center, Industrial Technology Research Institute, Taiwan

C2P-L4

OFF-CHIP ELECTRODE INSULATOR BASED DIELECTROPHORESIS

Phillip Zellner, Tyler Shake, Masoud Agah, Ali Sahari, Bahareh Behkam

Virginia Polytechnic Institute and State University, USA

C2P-L5

MICRO-APERTURE CHIP SYSTEM FOR HIGH-THROUGHPUT IMMUNOMAGNETIC CELL DETECTION

Chun-Li Chang², Cagri Savran², Shadia Jalal¹, Daniela Matei¹

¹Indiana University-Purdue University Indianapolis, USA; ²Purdue University, USA

C2P-L6

DETECTION OF ANTI-IGG USING CANTILEVER-TYPE RESONANT MICROSTRUCTURES VIBRATING IN IN-PLANE FLEXURAL MODES

Luke Beardslee⁴, Shyam Aravamudhan³, Christopher Carron¹, Paul Joseph¹, Oliver Brand¹, Stephen Heinrich², Fabien Josse²

¹Georgia Institute of Technology, USA; ²Marquette University, USA; ³North Carolina A&T State University, USA; ⁴University at Albany-SUNY, USA

C2P-L7

LOW-POWER MAGNETICALLY-ACTUATED MICROVALVES FOR HIGHLY PARALLEL MICROFLUIDIC AUTOMATION

Pauline Jojo Chang, Yung-Yuan Kao, Mei-Lin Chan, Mischa Megens, David Horsley

University of California, Davis, USA

C2P-L8

MEMBRANE SIEVE USING STOICHIOMETRIC AND STRESS-REDUCED SIN/SIO/SIN MULTILAYER FILMS AND APPLICATIONS TO PLASMA SEPARATION

Dae-Sik Lee², Yo Han Choi², Mun Yeon Jung³, Yong Duk Han¹, Hyun C. Yoon¹, Shuichi Shoji⁴

¹Ajou University, Korea, South; ²Electronics and Telecommunications Research Institute, Korea, South; ³Electronics and Telecommunications Research Institute ETRI (ETRI), Korea, South; ⁴Waseda University, Korea, South

C2P-L9

PEPTIDE INHIBITOR BASED QCM BIOSENSOR FOR RAPIDLY DETECTING PROTEIN KINASE ACTIVITY

Xiahong Xu², Yanbin Li³, Jiang Zhou¹, Zhou Nie¹, Shouzhao Yao¹

¹Hunan University, China; ²Zhejiang University, China; ³Zhejiang University & University of Arkansas, China

WEDNESDAY, OCTOBER 31 - POSTER SESSION

C2P-L10

COLORIMETRIC ASSAY FOR AMPLIFICATION AND DETECTION OF ESCHERICHIA COLI BACTERIA ON FLEXIBLE SUBSTRATE

Mohammadali Safavieh, Minhaz Uddin Ahmed, Mohammed Zourab
INRS-EMT / Université du Québec, Canada

C2P-L11

SIMULTANEOUS DETECTION OF ASCORBIC ACID AND SULFUR DIOXIDE ON A POLY(3,4-ETHYLENEDIOXYTHIOPHENE) COVERED GOLD ELECTRODE

Marion Schneider¹, Alexander Türke¹, Wolf-Joachim Fischer¹, Paul Kilmartin²

¹*Technische Universität Dresden, Germany;* ²*University of Auckland, New Zealand*

C2P-L12

APPLICATION OF KELVIN FORCE MICROSCOPY FOR EVALUATION OF OXIDIZED LOW-DENSITY LIPOPROTEIN

Seiji Takeda, Futaba Ohkawa, Toshihiro Sakurai, Shigeki Jin, Hirotochi Fuda, Shu-Ping Hui, Hitoshi Chiba, Kazuhisa Sueoka
Hokkaido University, Japan

C2P-L13

A FLUORESCENT SENSOR WITH A SEPARATION MECHANISM FOR EXCITING LIGHT

Chen-Fu Lin¹, H.-H. Tsai¹, Y.-Z. Juang¹, Ruey-Lue Wang³, H.-W. Chu³, Mei-Jywan Syu², Z.-K. Lin²

¹*National Applied Research Laboratories, Taiwan;* ²*National Cheng Kung University, Taiwan;* ³*National Kaohsiung Normal University, Taiwan*

C2P-M1

SENSITIVITY IMPROVEMENT OF INTEGRATED OPTICAL E-FIELD SENSOR BASED ON COMMON PATH INTERFEROMETER

Bo Wang, Rong Zeng, Ben Niu, Chanxiao Li, Junjie Yu
Tsinghua University, China

C2P-M2

FIBER LOOP RING-DOWN REFRACTIVE INDEX SENSOR BASED ON HIGH-Q PHOTONIC CRYSTAL CAVITY

Yong Zhao, Ya-Nan Zhang, Di Wu, Qi Wang
Northeastern University, China

C2P-M3

PORTABLE NONINVASIVE SYSTEM FOR ORAL CANCER DIAGNOSIS

Chin-Siang Yang³, Mang Ou-Yang³, Yao-Fang Hsieh², Yu-Ta Chen², Jin-Chern Chiou³, Jeng-Ren Duann¹, Ming-Hsui Tsai¹, Shun-De Wu⁴, Cheng-Chung Lee²

¹*China Medical University, Taiwan;* ²*National Central University, Taiwan;*

³*National Chiao Tung University, Taiwan;* ⁴*Taiwan Normal University, Taiwan*

WEDNESDAY, OCTOBER 31 - POSTER SESSION

C2P-M4

SMART OPTICAL WIRELESS SENSOR FOR REAL TIME SWIMMERS FEEDBACK

Rabee M. Hagem¹, David V. Thiel¹, Steven O'Keefe¹, Nicholas Dahm¹, Andy Stamm¹, Thomas Fickenscher²

¹Griffith University, Australia; ²University of the Federal Armed Force, Germany

C2P-M5

OIL SPILL DETECTION SENSOR USING ARTIFICIAL ILLUMINATION WITH BLUE LEDS

Sangwoo Oh, Moonjin Lee

Korea Institute of Ocean Science & Technology, Korea, South

C2P-M6

BAYESIAN FUSION OF THERMAL AND VISIBLE SPECTRA CAMERA DATA FOR MEAN SHIFT TRACKING WITH RAPID BACKGROUND ADAPTATION

Rustam Stolkin², David Rees², Mohammed Talha², Ionut Florescu¹

¹Stevens Institute of Technology, USA; ²University of Birmingham, United Kingdom

C2P-M7

STUDY ON REFLECTION SPECTRUM AREAS OF AN FBG FOR STRAIN GRADIENT MEASUREMENTS

Gwo-Shyang Hwang, Chien-Ching Ma, Ding-Wei Huang, Liang Liao

National Taiwan University, Taiwan

C2P-M8

A FIBER VOLUME STRAIN SENSOR BASED ON MACH-ZEHNDER INTERFEROMETER

Zhilin Xu, Qizhen Sun, Jianghai Wo, Ruibing Liang, Deming Liu

Huazhong University of Science and Technology, China

C2P-M9

EFFICIENCY ENHANCEMENT AND 0.25V ULTRA LOW BIAS VOLTAGE OF INTEGRATED OPTICAL SENSOR IN STANDARD CMOS TECHNOLOGY

Yuh-Hui Lai, Cheng-Chung Lee

National Central University, Taiwan

C2P-M10

CONSIDERATION OF PHOTONIC AND MASS-TRANSFER ASPECTS ON THE PERFORMANCE OF A BIOSENSOR BASED ON LOCALIZED SURFACE PLASMONS ON AN ARRAY OF GOLD CYLINDERS

Barbora Spacková², Nicholas Lynn Jr.², Jiri Homola², Pavel Kwiecien¹, Ivan Richter¹

¹Czech Technical University in Prague, Czech Republic; ²Institute of Photonics and Electronics, Czech Republic

C2P-N1

AIR FLOW SENSOR USING MICROCANTILEVER EMBEDDED WITH PIEZORESISTIVE SILICON NANOWIRES

Songsong Zhang, Liang Lou, Chengkuo Lee

National University of Singapore, Singapore

WEDNESDAY, OCTOBER 31 - POSTER SESSION

C2P-N2

A COMPACT FIBER-OPTIC PROBE FOR TWO-DIMENSIONAL VECTOR VIBRATION MEASUREMENT

Tuan Guo², Jun Yi², Libin Shang², Fu Liu², Bai-Ou Guan², Jacques Albert¹

¹Carleton University, Canada; ²Jinan University, China

C2P-N3

DESIGN, FABRICATION AND PERFORMANCE CHARACTERIZATIONS OF AN INTEGRATED DUAL-AXIS TUNING FORK GYROSCOPE

Sheng-Ren Chiu¹, Chung-Yang Sue¹, Chih-Hsiou Lin¹, Shih-Ting Lin¹, Shih-Chieh Lin¹, Yu-Wen Hsu¹, Yan-Kuin Su²

¹Industrial Technology Research Institute, Taiwan; ²National Cheng Kung University, Taiwan

C2P-N4

TWO-CHIP MEMS CAPACITIVE MICROPHONE WITH CMOS ANALOG AMPLIFIER

Shin Hur, Youngdo Jung, Younghwa Lee, Junhyuk Kwak
Korea Institute of Machinery & Materials, Korea, South

C2P-N5

AN ELECTROMAGNETIC-INDUCTION APPROACH FOR SCREW-HOLE TARGETING IN INTERLOCKING-NAIL SURGERY

Tien-Kan Chung¹, Hou-Jen Chu¹, Tze-Hong Wong², Wensyang Hsu¹, Meng-Shiue Lee¹, Wen-Tuan Lo¹, Chia-Yuan Tseng¹

¹National Chiao Tung University, Taiwan; ²National Taiwan University Hospital, Taiwan

C2P-N6

THIRD-ORDER INTERMODULATION DISTORTION OF THE CAPACITIVE MICROWAVE POWER SENSOR USING MEMS CLAMPED BEAM

Yan Cui, Xiaoping Liao
Southeast University, China

C2P-N7

A NOVEL APPROACH FOR PIEZORESISTIVITY CHARACTERIZATION OF SILICON NANOWIRES

Meng Nie³, Fabio Santagata¹, Thomas Moh¹, P.M. Sarro¹, Qing-An Huang²

¹Delft University of Technology, Netherlands; ²Southeast University, China;

³Southeast University & Delft University of Technology, China

C2P-N8

VIBRATION MODE DESIGN FOR PRECISION IMPROVEMENT OF TRIAXIAL TACTILE MEASUREMENT USING INDIVIDUAL VIBRATORY MICROCANTILEVER SENSOR

Yi Yang, Kaoru Yamashita, Mari Oshibuchi, Takanori Nishimoto, Kazuya Furukawa, Minoru Noda
Kyoto Institute of Technology, Japan

WEDNESDAY, OCTOBER 31 - POSTER SESSION

C2P-N9

TWO-DIMENSIONAL FOLDED HALL SENSOR FABRICATED IN STANDARD CMOS TECHNOLOGY

Guo-Ming Sung, Wen-Sheng Lin, Chih-Ping Yu
National Taipei University of Technology, Taiwan

C2P-N10

EDDY CURRENT CRACK EXTENSION DIRECTION EVALUATION BASED ON NEURAL NETWORK

Xu Peng
Nanjing University of Aeronautics and Astronautics, China

C2P-N11

A GAAS MMIC-BASED DUAL CHANNEL MICROWAVE PHASE DETECTOR AT X-BAND

Di Hua, Xiaoping Liao, Jianqiu Huang
Southeast University, China

C2P-N12

EFFICIENCY ENHANCEMENT AND SENSITIVE BROADBAND 1HZ ~ 1KHZ OF POWER GENERATOR BY RECYCLING VIBRATION ENERGY ON AUTOMOBILE

Mao-Qugn Wei⁴, Fu-Hsiang Ko³, Tai-Ping Sun², Hsuen-Li Chen⁵, Yung-Bin Lin¹, Meng-Huang Gu¹, Chun-Chung Chen¹, Meiyi Li⁴, Szu Ching Liu⁴, Cho-Lun Hsu⁴, Wen-Cheng Chiu⁴, Jui-Min Liu⁴, Yu-Sheng Lai³, Chiahua Ho⁴

¹National Center for Research on Earthquake Engineering, Taiwan; ²National Chi Nan University, Taiwan; ³National Chiao Tung University, Taiwan; ⁴National Nano Device Laboratories, Taiwan; ⁵National Taiwan University, Taiwan

C2P-N13

WAVELENGTH-SELECTIVE OPTOMECHANICAL SENSOR BASED ON INTERPENETRATING POLYMER NETWORK

Cheng-Hsi Weng, Yu-Jhih Wang, Pei-Zen Chang, Chi-An Dai, Wen-Pin Shih
National Taiwan University, Taiwan

C2P-N14

ELECTRON PATH DETECTION BY ELECTRO-SPRAYING METHODS

Nilgoon Zarei, John Jones, Albert Leung
Simon Fraser University, Canada

C2P-N15

INTEGRATED ACCELEROMETER WITH CAPACITANCE TO DIGITAL INTERFACE CIRCUIT DESIGN BASED ON MONOLITHIC 0.18 μ M CMOS MEMS TECHNOLOGY

Chun-Chieh Wang, Long-Sheng Fan, Kuei-Ann Wen
National Chiao Tung University, Taiwan

WEDNESDAY, OCTOBER 31 - POSTER SESSION

C2P-N16

A NOVEL FULLY PRINTED AND FLEXIBLE CAPACITIVE PRESSURE SENSOR

Binu Baby Narakathu, Ali Eshkeiti, Avuthu Sai Guruva Reddy, Marian Rebros, Erika Rebrosova, Margaret K. Joyce, Bradley J. Bazuin, Massood Zandi Atashbar
Western Michigan University, USA

C2P-N17

A NOVEL LOW PRESSURE SENSOR WITH FIN-STRUCTURES

Kai-Chih Liang¹, Chun-Wen Cheng³, Chung-Hsien Lin², Weileun Fang¹
¹National Tsing Hua University, Taiwan; ²Taiwan Semiconductor Manufacturing Company Ltd., Taiwan; ³Taiwan Semiconductor Manufacturing Company Ltd. / National Tsing Hua University, Taiwan

C2P-N18

ULTRA-FAST AND HIGH RESOLUTION NEMS THERMAL DETECTOR BASED ON A NANO-AIR-GAP PIEZOELECTRIC RESONANT STRUCTURE

Yu Hui, Matteo Rinaldi
Northeastern University, USA

C2P-O1

MAGNETIC FLUX ANALYSIS ON MAGNETORHEOLOGICAL ACTUATORS CAN DETECT EXTERNAL FORCE VARIATION

Carlos Rossa, José Lozada, Alain Micaelli
CEA, France

C2P-O2

FINE PATTERNING OF ELECTRETS FOR SENSORS AND ENERGY HARVESTERS

Vladimir Leonov², Martijn Goedbloed¹, Christine de Nooijer¹, Rob van Schaijk¹
¹Holst Centre / IMEC-nl, Netherlands; ²Imec, Belgium

C2P-O3

A LOW VOLTAGE CMOS-BASED CAPACITIVE MICROMACHINED ULTRASONIC SENSORS DEVELOPMENT

Yu-Shen Tien, Po-Chih Ku, Fang-Yu Lin, Pai-Chi Li, Liang-Hung Lu, Po-Ling Kuo, Wei-Cheng Tian
National Taiwan University, Taiwan

C2P-O4

MEMS HETERODYNE AMF DETECTION WITH CAPACITIVE SENSING

Michael Stifter¹, Thilo Sauter¹, Wilfried Hortschitz¹, Franz Keplinger², Harald Steiner²
¹Austrian Academy of Sciences, Austria; ²Technische Universität Wien, Austria

C2P-O5

R.E.S.T. - A FLEXIBLE, SEMI-PASSIVE PLATFORM FOR DEVELOPING RFID TECHNOLOGIES

Christopher Valenta, Gregory Durgin
Georgia Institute of Technology, USA

WEDNESDAY, OCTOBER 31 - POSTER SESSION

C2P-O6

RECONFIGURABLE INTEGRATED WIDE-DYNAMIC-RANGE READ-OUT CIRCUIT FOR MOX GAS-SENSOR GRIDS PROVIDING LOCAL TEMPERATURE REGULATION

Fabrizio Conso², Marco Grassi², Piero Malcovati², Andrea Baschiroto¹
¹Università degli Studi di Milano-Bicocca, Italy; ²Università degli studi di Pavia, Italy

C2P-O7

BULK-SI WITH POLY BUMP PROCESS SCHEME FOR MEMS SENSORS

Chun-Wen Cheng³, Kai-Chih Liang³, Chia-Hua Chu², Te-Hao Lee², Jiou-Kang Lee², Chung-Hsien Lin², Hsiao Chin Tuan², Alex Kalnitsky², Weileun Fang¹, David A Horsley⁴
¹National Tsing Hua University, Taiwan; ²Taiwan Semiconductor Manufacturing Company Ltd., Taiwan; ³Taiwan Semiconductor Manufacturing Company Ltd. / National Tsing Hua University, Taiwan; ⁴University of California, Davis, USA

C2P-O8

MINIATURIZED CORTEX COOLING DEVICE AND SYSTEM FOR HYPOTHERMIA THERAPY APPLICATION ON FREELY MOVING RAT

Chih-Wei Chang³, Kuan-Chou Hou³, Lei-Chun Chou³, Jin-Chern Chiou³, Jeng-Ren Duann¹, Yun-Wen Tsai²
¹China Medical University, Taiwan; ²National Cheng Kung University, Taiwan; ³National Chiao Tung University, Taiwan

C2P-O9

AFM CANTILEVER WITH INTEGRATED PIEZOELECTRIC THIN FILM FOR MICRO-ACTUATION

Leema Rose Viannie¹, Sudeep Joshi¹, G.R. Jayanth¹, Konandur Rajanna¹, V. Radhakrishna²
¹Indian Institute of Science, Bangalore, India; ²Space and Astronomy Instrumentation Division, ISAC, Indian Space Research Organization, Bangalore, India

C2P-O10

ENVIRONMENTAL CONTROL SYSTEM FOR SPINAL CORD INJURED

Haruo Nakashima, Masatomo Shibata, Motohiro Tanaka, Shunji Moromugi, Takakazu Ishimatsu
Nagasaki University, Japan

C2P-O11

FLEXIBLE PHYNIX ALLOY WITH INTEGRATED PIEZOELECTRIC THIN FILM FOR MICRO ACTUATION APPLICATION

Sudeep Joshi, Manjunatha Nayak, Konandur Rajanna
Indian Institute of Science, Bangalore, India

C2P-O12

A NOVEL PIEZOELECTRIC ZNO NANOGENERATOR ON FLEXIBLE METAL ALLOY SUBSTRATE

Venkateswarlu Gaddam, Sudeep Joshi, Mitesh Parmar, Konandur Rajanna, Manjunatha Nayak
Indian Institute of Science, Bangalore, India

WEDNESDAY, OCTOBER 31 - POSTER SESSION

C2P-O13

ENERGY HARVESTING BY ROTATION OF WHEEL FOR TIRE MONITORING SYSTEM

Kyoung Il Lee¹, Byung Jik Lim¹, Seong Hyun Kim¹, Yongtaek Hong²

¹Korea Electronics Technology Institute, Korea, South; ²Seoul National University, Korea, South

C2P-O14

WAFER LEVEL VACUUM PACKAGED RESONATOR WITH IN-SITU AU-AL EUTECTIC RE-DISTRIBUTION LAYER

Guoqiang Wu, Dehui Xu, Bin Xiong, Errong Jing, Yuelin Wang
Shanghai Institute of Microsystem and Information Technology, Chinese Academy of Sciences, China

C2P-O15

RFID-BASED THERMAL CONVECTION ACCELEROMETER

Jium-Ming Lin, Chia-Hsien Lin
Chung-Hua University, Taiwan

C2P-P1

DEVELOPMENT OF SIGNAL READOUT AND REAL TIME MONITOR SYSTEM FOR BIOSENSOR

Chun-Ying Kan², Jie-Ting Chen², Jung-Chuan Chou², Yi-Hung Liao³, Shu-Ying Yang¹

¹Fortune Institute of Technology, Taiwan; ²National Yunlin University of Science and Technology, Taiwan; ³Transworld University, Taiwan

C2P-P2

A NEW APPROACH OF DOUBLE-LEVEL GRID-BASED TARGET LOCALIZATION IN WIRELESS SENSOR NETWORKS

Daifei Wang, Guoming Tang, Yi Xie, Weidong Xiao, Zang Yuan, Wei Zhang
National University of Defense Technology, China

C2P-P3

DYNAMIC BOUNDED-ERROR DATA COMPRESSION AND AGGREGATION IN WIRELESS SENSOR NETWORK

Yu Hao Chen², Niang-Ying Huang², Yu-Hsien Chu Chu², Meng-Han Li Li², Ray-I Chang², Chia-Hui Wang¹

¹Ming Chuan University, Taiwan; ²National Taiwan University, Taiwan

C2P-P4

2.4 GHZ IEEE 802.15.4 CHANNEL INTERFERENCE CLASSIFICATION ALGORITHM RUNNING LIVE ON A SENSOR NODE

Sven Zacharias, Thomas Newe, Sinead O'Keeffe, Elfed Lewis
University of Limerick, Ireland

C2P-P5

ENERGY ANALYSIS OF INDUSTRIAL SENSORS IN NOVEL WIRELESS SHM SYSTEMS

David Boyle, Bruno Sbrinowski, Emanuel Popovici, Brendan O'Flynn
University College Cork, Ireland

WEDNESDAY, OCTOBER 31 - POSTER SESSION

C2P-P6

BLUETOOTH LOW ENERGY (BLE) BASED WIRELESS SENSORS

Elke Mackensen¹, Matthias Lai¹, Thomas M. Wendt²

¹Hochschule Offenburg, Germany; ²NewTec System-Entwicklung und Beratung, Germany

C2P-P7

A SIMPLE TIME SHIFT SCHEME FOR BEACON BROADCASTING BASED ON CLUSTER-TREE IEEE 802.15.4 LOW-RATE WPANS

Chi-Ming Wong, Ming-Hua Chang

Jinwen University of Science and Technology, Taiwan

C2P-P8

ADHOP: AN ENERGY AWARE ROUTING ALGORITHM FOR MOBILE WIRELESS SENSOR NETWORKS

Alexandre Massayuki Okazaki, Antônio Augusto Fröhlich

Universidade Federal de Santa Catarina, Brazil

C2P-P9

A SMART SENSOR FOR THE CONDITION MONITORING OF INDUSTRIAL ROTATING MACHINERY

Francisco Cardoso², Sérgio Faria¹, José Oliveira¹

¹Eneida, SA, Portugal; ²University of Coimbra, Portugal

C2P-P10

ON THE RELATIONSHIP BETWEEN CUMULATIVE MOVEMENT, CLINICAL SCORES AND CLINICAL OUTCOMES

Michael Walsh, John Barton, Brendan O'Flynn, Cian O'Mathuna

Tyndall National Institute, Ireland

C2P-Q1

ENERGY HARVESTING DERIVED FROM MAGNETIZATION REVERSAL IN FECOV WIRE

Ryohei Serizawa³, Tsutomu Yamada³, Sumio Masuda³, Susumu Abe¹, Shiro Kohno², Fumio Kaneko², Yasushi Takemura³

¹Kanagawa University, Japan; ²Nikkoshi Co., Ltd, Japan; ³Yokohama National University, Japan

C2P-Q2

POWER DENSITY IMPROVEMENT OF A PIEZOELECTRIC ENERGY HARVESTER THROUGH USE OF A MICROPOWER SWITCH-MODE INTERFACE

Alwyn Elliott, Paul Mitcheson

Imperial College London, United Kingdom

C2P-Q3

INTEGRATED MULTI-SENSOR CIRCUIT FOR ENVIRONMENTAL DATA TRACING IN SAFE FOOD STORAGE AND DELIVERY: THE SLICED EMMENTAL CHEESE CASE STUDY

Marco Grassi¹, Luca Piccoli¹, Fabrizio Conso¹, Piero Malcovati¹, Gian Franco Regnicoli², Giuseppe Perretti²

¹Università degli studi di Pavia, Italy; ²Università degli Studi di Perugia, Italy

WEDNESDAY, OCTOBER 31 - POSTER SESSION

C2P-Q4

LOW-COST SENSOR TAPE FOR ENVIRONMENTAL SENSING BASED ON ROLL-TO-ROLL MANUFACTURING PROCESS

Nan-Wei Gong¹, Chiu-Yen Wang², Joseph Paradiso¹

¹Massachusetts Institute of Technology, USA; ²National Tsing Hua University, Taiwan

C2P-Q5

MINIMIZE DISTORTION IN FREE-STANDING SENSOR PLATES USING ELECTROFORMED REINFORCED BEAM

Pooneh Shooshtari, Kourosh Khosraviani, John Jones, Albert Leung
Simon Fraser University, Canada

C2P-Q6

A MOBILE, NON-INTRUSIVE, CARDIAC MONITOR FOR PATIENT POST-OPERATIVE CARE MANAGEMENT

Paul Fortier, Benjamin Viall, Stephen Shannon, Patrick Dasilva,
Alexander Ekholm

University of Massachusetts Dartmouth, USA

C2P-Q7

MODELING AND MEASUREMENT OF DIELECTROPHORETIC FORCE AND 2-D TRAJECTORIES OF MICROSPHERES IN QUADRUPOLE ELECTRODE CONFIGURATION

Negar Moghimi, D. Richard Decker, Svetlana Tatic-Lucic

Lehigh University, USA

C2P-Q8

STUDY OF CIGS PHOTOVOLTAIC PROCESSING WITH FEMTOSECOND LASER PULSES AT IR WAVELENGTH

Jong-Zen Huang¹, Ting-Kai Tsai¹, Chih-Wei Hsieh²

¹Huafan University, Taiwan; ²Industrial Technology Research Institute, Taiwan

C2P-Q9

A CMOS MONOLITHIC DIGITIZED LIGHT TRANSDUCER WITH CALIBRATION CIRCUITS FOR AMBIENT LIGHT SENSOR APPLICATIONS

Cheng-Ta Chiang

National Chiayi University, Taiwan

C2P-Q10

A HIGH C-AXIAL ZNO THIN-FILM FOR PIEZOELECTRIC SENSOR APPLICATION

I-Yu Huang, Je-Wei Lan, Chang-Yu Lin

National Sun Yat-Sen University, Taiwan

C2P-Q11

GROWTH OF ELECTRODEPOSITED ZNO NANOWIRES

Joshua Sunday, Kweku Amoah, Gymama Slaughter

University of Maryland Baltimore County, USA

C2P-Q12

THE DESIGN AND THE CLOUD APPLICATION OF PLANTAR PRESSURE SENSOR COMBINED WITH BLUETOOTH 4.0

Jung-Tang Huang, Sheng-Bin Chen, Chia-Hsiang Lee

National Taipei University of Technology, Taiwan

WEDNESDAY, OCTOBER 31 - POSTER SESSION

C2P-Q13

INSULATION FAULT DETECTION CIRCUIT FOR UNGROUNDED DC POWER SUPPLY SYSTEMS

Yow-Chyi Liu, Chen-You Lin
Kao Yuan University, Taiwan

C2P-Q14

A 69 UW CMOS SMART TEMPERATURE SENSOR WITH AN INACCURACY OF $\pm 0.8^{\circ}\text{C}$ (3 SIGMA) FROM -50°C TO 150°C

Shen-Cheng Lee, Herming Chiueh
NCTU, Taiwan

C2P-R1

DIRECT DETECTION OF SALMONELLA TYPHIMURIUM ON FRESH SPINACH LEAVES USING PHAGE-BASED MAGNETOELASTIC BIOSENSORS

Shin Horikawa, Suiqiong Li, Yating Chai, Bryan A. Chin
Auburn University, USA

C2P-R2

A NOVEL MAGNETIC-INDUCED CAPACITIVE-SENSING ROTATION SENSOR

Fu-Ming Hsu¹, Wen-Chien Chen¹, Ching-Chen Tu¹, Ching-Han Huang², Weileun Fang¹

¹National Tsing Hua University, Taiwan; ²Touch Micro-System Technology Corp, Taiwan

C2P-R3

ON THE TRADE-OFF OF POWER CONSUMPTION AND TIME SYNCHRONIZATION QUALITY IN WIRELESS SENSOR NETWORKS

Pablo Briff², Ariel Lutenberg², Leonardo Rey Vega², Fabian Vargas¹

¹Pontificia Universidade Católica do Rio Grande do Sul, Brazil; ²University of Buenos Aires, Argentina

C2P-R4

FABRICATION OF THROUGH-SILICON-VIA (TSV) FOR ULTRA-HIGH VACUUM ATOM-OPTICS CELL

Ho-Chiao Chuang², Hsiang-Fu Li², Yun-Siang Lin², Yu-Hsin Lin¹

¹National Applied Research Laboratories, Taiwan; ²National Taipei University of Technology, Taiwan

WEDNESDAY, OCTOBER 31

12:10 PM - 1:10 PM

3F Banquet Hall

LUNCH

1:10 PM - 2:40 PM

C3L-A: Gas Sensors II

Room 101A

Session Chairs: Yong Xu (Wayne State University, USA), Golla Eranna (Central Electronics Eng. Res. Inst. (CEERI), India)

1:10 PM

NOVEL APPROACH TO SENSE OXYGEN IN SOLUTION USING SHORT MEASUREMENT TIMES

Fleur van Rossem², Tom Kamperman², Johan Bomer², Albert van Den Berg², Séverine Le Gac², Michele Boiani¹

¹Max-Planck-Institut für molekulare Biomedizin, Germany; ²Universiteit Twente, Netherlands

1:25 PM

MEMS RESONANT HUMAN BREATH SENSORS FOR SURVIVOR DETECTION IN DISASTER AREAS

Arash Hajjam, Yedan Guo, Kristine Dietrich, Siavash Pourkamali

University of Denver, USA

1:40 PM

PULSED OPERATION OF INGAZNO TFTS FOR VOC SENSING APPLICATIONS

Spyridon Pavlidis², Jin-Jyh Su², Luke Beardslee³, Oliver Brand², Josh Hagen¹, Nancy Kelley-Loughnane¹, Paul Leclaire⁴

¹Air Force Research Laboratory, USA; ²Georgia Institute of Technology, USA;

³University at Albany-SUNY, USA; ⁴University of Lille 1, France

1:55 PM

APPLICATION OF IONIC LIQUID DOPED IONOMERS FOR ORGANIC VAPOR SENSING

Hwall Min², Gokhan Hatipoglu², Srinivas Tadigadapa², Dean Tigelaar¹

¹NASA Glenn Research Center, USA; ²Pennsylvania State University, USA

2:10 PM

SEMIPACKED SEPARATION COLUMNS WITH MONOLAYER PROTECTED GOLD STATIONARY PHASES FOR MICROGAS CHROMATOGRAPHY

Hamza Shakeel, Masoud Agah

Virginia Polytechnic Institute and State University, USA

2:25 PM

IMPROVEMENT OF ODOR APPROXIMATION USING MASS SPECTROMETRY

Yasunori Nihei, Takamichi Nakamoto

Tokyo Institute of Technology, Japan

WEDNESDAY, OCTOBER 31

1:10 PM - 2:40 PM

C3L-B: Sensing of Bacteria and Cells

Room 101B

Session Chairs: Michael Vellekoop (University of Bremen, Germany), Anpan Han (University of Aarhus, Denmark)

1:10 PM

DETERMINATION OF CELL CONCENTRATION IN 3D CELL CULTURE CONSTRUCT BASED ON ELECTRICAL IMPEDANCE MEASUREMENT BY ON-CHIP VERTICAL ELECTRODES

Kin Fong Lei, Che-Wei Hsu, Shing-I Yang, Cheng-Yuan Lin, Min-Hsien Wu

Chang Gung University, Taiwan

1:25 PM

MINIATURIZED ON-SENSOR FLUORESCENCE FLOW CYTOMETER

Askshaya Shanmugam, Christopher Salthouse

University of Massachusetts, Amherst, USA

1:40 PM

CMOS CHIP FOR ELECTROCHEMICAL MONITORING OF THE METABOLIC ACTIVITY OF BIOLOGICAL CELLS

Joerg Rothe, Olivier Frey, Alexander Stettler, Yihui Chen, Andreas Hierlemann

ETH Zürich, Switzerland

1:55 PM

FABRICATION OF SINGLE BACTERIUM SENSING CHIP VIA SILVER DEPOSITED CORRUGATED POLYSTYRENE NANOBEAD ARRAY

Hsin-Yi Hsieh, Chun-Wei Lee, Hung-Yao Chu, Hwan-You Chang, Fan-Gang Tseng

National Tsing Hua University, Taiwan

2:10 PM

MICROFLUIDIC CHIP BIO-SENSOR FOR DETECTION OF CANCER CELLS

Hesam Babahosseini, Vaishnavi Srinivasaraghavan, Masoud Agah

Virginia Polytechnic Institute and State University, USA

2:25 PM

IMPROVED DETECTION LIMITS OF BACTERIAL ENDOTOXINS USING NEW TYPE OF PLANAR INTERDIGITAL SENSORS

Abdul Rahman Mohd Syaifudin², Asif I. Zia², Subhas C.

Mukhopadhyay², Pak Lam Yu², Chinthaka Gooneratne¹, Jürgen Kosel¹

¹King Abdullah University of Science and Technology, Saudi Arabia; ²Massey University, New Zealand

WEDNESDAY, OCTOBER 31

1:10 PM - 2:40 PM

C3L-C: Magnetic Sensors

Room 102

Session Chairs: Gary O'Brien (Robert Bosch LLC, USA), Patrick Pons (LAAS CNRS / University de Toulouse, France)

1:10 PM

3T MRI SCANNER MAGNETIC GRADIENT MAPPING USING A 3D HALL PROBE

Jean-Baptiste Schell¹, Jean-Baptiste Kammerer¹, Luc Hébrard¹, Daniel Gounot², Elodie Breton³, Loic Cuvillon³, Michel de Mathelin³

¹Université de Strasbourg / InESS, France; ²Université de Strasbourg / LINC, France; ³Université de Strasbourg / LSIT, France

1:25 PM

A MINIATURE DIGITAL CURRENT SENSOR WITH DIFFERENTIAL HALL PROBES USING ENHANCED CHOPPING TECHNIQUES AND MECHANICAL STRESS COMPENSATION

Mario Motz, Udo Ausserlechner, Manfred Bresch, Uwe Fakesch, Bernhard Schaffer, Christian Reidl, Wolfgang Scherr, Gerhard Pircher, Michael Strasser, Volker Strutz

Infineon Technologies Austria AG, Austria

1:40 PM

A FULLY INTEGRATED HALL SENSOR MICROSYSTEM FOR CONTACTLESS CURRENT MEASUREMENT

Andrea Ajbl, Marc Pastre, Maher Kayal

École Polytechnique Fédérale de Lausanne, Switzerland

1:55 PM

SENSITIVITY ENHANCEMENT OF THE FLEXIBLE INDUCTIVE COIL TAG USING MAGNETIC C-CLAMP STRIPES FOR THE CURRENT DETECTION OF HOUSEHOLD TWO-WIRE POWER LINES

Yung-Chang Chen², Wei-Hung Hsu², Shih-Hsien Cheng¹, Yu-Ting Cheng²

¹Industrial Technology Research Institute, Taiwan; ²National Chiao Tung University, Taiwan

2:10 PM

AREA-EFFICIENT THREE-AXIS MICROMECHANICAL MAGNETIC SENSOR

Vashwar Rouf, Mo Li, David Horsley

University of California, Davis, USA

2:25 PM

COMPACT MEMS MAGNETOMETERS FOR INERTIAL MEASUREMENT UNITS

Cesare Buffa¹, Giacomo Langfelder¹, Antonio Longoni¹, Attilio Frangi¹, Ernesto Lasalandra²

¹Politecnico di Milano, Italy; ²STMicroelectronics, Italy

WEDNESDAY, OCTOBER 31

1:10 PM - 2:40 PM

C3L-D: Integrated Sensors / CMOS-MEMS

Room 101C

Session Chairs: HuiKai Xie (University of Florida, USA), Shiang-Cheng Lu (National Tsing Hua University, Taiwan)

1:10 PM

INTEGRATED SENSING OF MECHANICAL PARAMETERS IN A MICRO-TURBO-GENERATOR

Mustafa Beyaz¹, Brendan Hanrahan², Jeremy Feldman², Reza Ghodssi²

¹*Antalya International University, Turkey;* ²*University of Maryland, College Park, USA*

1:25 PM

AN ALL-INKJET PRINTED FLEXIBLE CAPACITOR ON A TEXTILE USING A NEW POLY(4-VINYLPHENOL) DIELECTRIC INK FOR WEARABLE APPLICATIONS

Yi Li, Russel Torah, Steve Beeby, John Tudor

University of Southampton, United Kingdom

1:40 PM

PACKAGE STRESS MONITOR TO COMPENSATE FOR THE PIEZO-HALL EFFECT IN CMOS HALL SENSORS

Samuel Huber¹, Christian Schott¹, Oliver Paul²

¹*Melexis Technologies SA, Switzerland;* ²*Universität Freiburg / IMTEK, Germany*

1:55 PM

AN INTEGRATED HIGH-PRECISION PROBE SYSTEM FOR NEAR-FIELD MAGNETIC MEASUREMENTS ON CRYPTOGRAPHIC LSIS

Nguyen Ngoc Mai-Khanh², Tetsuya Iizuka², Makoto Yamada¹, Osamu Morita¹, Kunihiro Asada²

¹*Morita-Tech Co., Ltd, Kawasaki, Japan;* ²*University of Tokyo, Japan*

2:10 PM

A FULLY-DIFFERENTIAL CMOS-MEMS RESONATOR INTEGRATED WITH AN ON-CHIP AMPLIFIER

Vinayak Pachkawade, Cheng-Syun Li, Sheng-Shian Li

National Tsing Hua University, Taiwan

2:25 PM

A LINEAR-RESPONSE CMOS-MEMS CAPACITIVE TACTILE SENSOR

C.-T. Sun, Y.-C. Lin, C.-J. Hsieh, J.-C. Liou, L.-B. Wang, Wei-Cheng Tian

National Taiwan University, Taiwan

WEDNESDAY, OCTOBER 31

1:10 PM - 2:40 PM

C3L-E: Diverse Applications of Magnetic Sensors and New Magnetic Sensor Development

Room 101D

Session Chairs: Alan S. Edelstein (US Army Research Laboratory, USA), Tien-Kan Chung (National Chiao Tung University, Taiwan)

1:10 PM

HIGH VOLUME PRODUCTION OF MAGNETIC SENSORS FOR THE AUTOMOTIVE MARKET

Christian Schott, Mykola Blyzniuk
Melexis Technologies SA, Ukraine

1:25 PM

NOVEL MAGNETIC NANOSTRUCTURED MULTILAYER FOR HIGH SENSITIVE MAGNETORESISTIVE SENSOR

Xiaolu Yin, Sy-Hwang Liou
University of Nebraska- Lincoln, USA

1:40 PM

LONG-RANGE MAGNETIC TRACKING

Pavel Ripka, Ales Zikmund, Jan Vcelak
Czech Technical University in Prague, Czech Republic

1:55 PM

MAGNETOELECTRIC SENSORS: SENSITIVE AND POTENTIALLY LOW-COST MAGNETIC SENSORS

Alan Edelstein², Jonathan Petrie², Gollapudi Sreenivasulu¹, Gopalan Srinivasan¹, Dwight Viehland³, Jie Fang³
¹Oakland University, USA; ²US Army Research Laboratory, USA; ³Virginia Polytechnic Institute and State University, USA

2:10 PM

EVALUATION OF SQUARE TYPE ELECTROMAGNETIC FIELD SCREEN IMPLEMENTATION ON INTERFERENCE EFFECTS IN MAGNETIC INDUCTION TOMOGRAPHY MODALITY

Zulkarnay Zakaria¹, Noor Alia Mohd Zain¹, Ibrahim Balkis¹, Sazali Yaacob¹, Muhd Saiful Badri Mansor², Ruzairi Abdul Rahim², Nor Muzakkir Nor Ayob²

¹Universiti Malaysia Perlis, Malaysia; ²Universiti Teknologi Malaysia, Malaysia

WEDNESDAY, OCTOBER 31

1:10 PM - 2:40 PM

C3L-F: Practice and Evaluation of Sensor Networks

Room 103

Session Chairs: Yu-Chee Tseng (National Chiao Tung University, Taiwan), Chih-Yu Lin (Tamkang University, Taiwan)

1:10 PM

**VIRTUALTOUCH: A FINGER GLOVE TO SIMULATE TOUCH
SCREEN COMMANDS**

Jun-Zhe Wang, Chun-Hao Wu, Yu-Chee Tseng

National Chiao Tung University, Taiwan

1:25 PM

**PERFORMANCE EVALUATION OF CDMA-BASED WIRELESS
SENSOR NETWORKS WITH LONG-THIN TOPOLOGIES**

Ming-Wei Hsu, Hsin-Mu Tsai

National Taiwan University, Taiwan

1:40 PM

**TOWARDS A GENERAL WIRELESS SENSOR NETWORK
PLATFORM FOR OUTDOOR ENVIRONMENT MONITORING**

Huang Chen Lee

National Chung-Cheng University, Taiwan

1:55 PM

**WSN-BASED REAL-TIME INDOOR LOCATION SYSTEM AT THE
TAIPEI WORLD TRADE CENTER: IMPLEMENTATION,
DEPLOYMENT, MEASUREMENT, AND EXPERIENCE**

Sung-Hwa Tsai, Seng-Yong Lau, Polly Huang

National Taiwan University, Taiwan

2:10 PM

**WEIGHTED TARGETS PATROLLING MECHANISMS IN MOBILE
WSNS**

Chih-Yung Chang², Yi-Jung Ho², Chih-Yu Lin², Chia-Ling Ho¹

¹Taipei Chengshih University of Science and Technology, Taiwan; ²Tamkang University, Taiwan

2:40 PM - 3:10 PM

Room 201

COFFEE BREAK

WEDNESDAY, OCTOBER 31

3:10 PM - 4:40 PM

**C4L-A: Graphene and Carbon Nanotube based Sensors
Room 101A**

Session Chairs: Yu-Ting Cheng (National Chiao Tung University, Taiwan), Yu-Lin Wang (National Tsing Hua University, Taiwan)

3:10 PM

**OXYGEN FUNCTIONALISED EPITAXIAL GRAPHENE SENSORS
FOR ENHANCED POLAR ORGANIC CHEMICAL VAPOUR
DETECTION**

Karthik Nagareddy², Jonathan Goss², Nicholas Wright², Alton Horsfall², Sandra Hernández¹, Virginia Wheeler¹, L.O. Nyakiti¹, Rachael Myers-Ward¹, Charles Eddy Jr.¹, S.G. Walton¹, Kurt Gaskill¹

¹Naval Research Laboratory, USA; ²Newcastle University, United Kingdom

3:25 PM

SELECTIVE GAS SENSING BY GRAPHENE

Sergey Rumyantsev², Guanxiong Liu³, Radislav Potyrailo¹, Alexander Balandin³, Michael Shur²

¹GE Global Research, USA; ²Rensselaer Polytechnic Institute, USA; ³University of California, Riverside, USA

3:40 PM

**GREEN ELECTRODE FOR PB²⁺ SENSING BASED ON THE
NAFION-GRAPHENE/CNT COMPOSITE**

Chien-Hung Lien, Kuo-Hsin Chang, Chi-Chang Hu, David Shan-Hill Wang

National Tsing Hua University, Taiwan

3:55 PM

**DETECTION OF TRACE ENERGETIC SUBSTANCE VAPORS
USING CARBON NANOTUBE NETWORK-BASED THERMAL
SENSORS**

Wenzhou Ruan, Yuanchao Li, Zheyao Wang

Tsinghua University, China

4:10 PM

**CONTROL AND ENHANCEMENT OF GRAPHENE SENSITIVITY BY
ENGINEERING EDGE DEFECTS**

Xuebin Tan, Chad Huard, Hsun-Jen Chuang, Ming-Wei Lin, Zhixian Zhou, Mark Ming-Cheng Cheng

Wayne State University, USA

4:25 PM

**HIGH-PERFORMANCE BULK SILICON INTERDIGITAL
CAPACITIVE TEMPERATURE SENSOR BASED ON GRAPHENE
OXIDE**

Chun-Hua Cai, Ming Qin, Jian-Qiu Huang

Southeast University, China

WEDNESDAY, OCTOBER 31

3:10 PM - 4:40 PM

C4L-B: Optical Sensors II

Room 101B

Session Chairs: Chengkuo Lee (National University of Singapore, Singapore), Stoyan Nihitjanov (Delft University of Technology, the Netherlands)

3:10 PM

PUREB LOW-ENERGY ELECTRON DETECTORS WITH CLOSELY-PACKED PHOTODIODES INTEGRATED ON LOCALLY-THINNED HIGH-RESISTIVITY SILICON

Agata Sakic, Silvana Milosavljevic, Wim Wien, Mario Laros, Lis Nanver
Delft University of Technology, Netherlands

3:25 PM

REAL-TIME ACCELEROMETER COUPLED SELF-MIXING LASER DISPLACEMENT SENSOR FOR EMBEDDED APPLICATIONS

Usman Zabit, Olivier Bernal, Alex Chamorro-Coloma, Thierry Bosch
Université de Toulouse, INP, LAAS, France

3:40 PM

TIME-FREQUENCY SIGNAL PROCESSING FOR A SELF-MIXING LASER SENSOR FOR VIBRATION MEASUREMENT

Usman Zabit, Olivier Bernal, Thierry Bosch
Université de Toulouse, INP, LAAS, France

3:55 PM

DESIGN STUDY OF A GUIDED-WAVE OPTICAL MICROPHONE WITH A DIAPHRAGM

Kazuya Murata, Masashi Ohkawa, Takashi Sato
Niigata University, Japan

4:10 PM

BUILT-IN-MASK MICROFLUIDIC CHIP FOR HIGHLY-SENSITIVE YOUNG INTERFEROMETRY-BASED REFRACTOMETER STRUCTURE

Kosom Chaitavon², Sarun Sumriddetchkajorn², Jiti Nukeaw¹
¹King Mongkut's Institute of Technology Ladkrabang, Thailand; ²National Electronics and Computer Technology Center, Thailand

4:25 PM

A MINIATURIZED VCSEL-BASED SYSTEM FOR OPTICAL SENSING IN A MICROFLUIDIC CHANNEL

Benjamin Reig, Veronique Bardinal, Thierry Camps, Jean Baptiste Doucet, Emmanuelle Daran
LAAS-CNRS, France

WEDNESDAY, OCTOBER 31

3:10 PM - 4:40 PM

C4L-C: Thermal / Flow Sensors

Room 102

Session Chairs: Qing-An Huang (South East University, China),
Ho-Chiao Chuang (National Taipei University of Technology,
Taiwan)

3:10 PM

MONITORING OF MENISCUS MOTION AT NOZZLE ORIFICE WITH CAPACITIVE SENSOR FOR INKJET APPLICATIONS

Jia Wei¹, Chao Yue¹, Guo Qi Zhang¹, P.M. Sarro¹, Frits Dijkman²

¹Delft University of Technology, Netherlands; ²Universiteit Twente, Netherlands

3:25 PM

IMPROVED ELECTROTHERMAL POSITION SENSING IN MEMS WITH NON-UNIFORMLY SHAPED HEATERS

Ali Bazaei, Anthony Fowler, Reza Moheimani

University of Newcastle, Australia

3:40 PM

MINIATURIZED VISCOSITY AND MASS DENSITY SENSORS COMBINED IN A MEASURING CELL FOR HANDHELD APPLICATIONS

Martin Heinisch, Erwin Reichel, Thomas Voglhuber-Brunnmaier,
Bernhard Jakoby

Johannes Kepler Universität in Linz, Austria

3:55 PM

THERMORESISTIVE CHARACTERISTICS OF SINTERED INKJET PRINTED GOLD NANOPARTICLE MICROSTRUCTURES

Robert Roberts, Norman Tien

Case Western Reserve University, USA

4:10 PM

THERMOELECTRIC COOL-FILM FLOW SENSOR

Jonathon Oiler, Hongyu Yu, Rui Tang, Teng Ma, Hai Huang

Arizona State University, USA

4:25 PM

THERMAL FLOW SENSORS ON FLEXIBLE SUBSTRATES FOR MINIMALLY INVASIVE MEDICAL INSTRUMENTS

Benjamin Mimoun¹, Arjen van der Horst¹, Ronald Dekker¹, Dennis van der Voort², Marcel Rutten², Frans van de Vosse²

¹Delft University of Technology, Netherlands; ²Eindhoven University of Technology, Netherlands

WEDNESDAY, OCTOBER 31

3:10 PM - 4:40 PM

C4L-D: Image / Optical Measurement

Room 101C

Session Chairs: Gregory Pandraud (Delft University of Technology, the Netherlands), Cheng-Tang Pan (National Sun Yat-Sen University, Taiwan)

3:10 PM

VISION BASED HAPTIC MULTISENSOR FOR MANIPULATION OF SOFT, FRAGILE OBJECTS

Artashes Mkhitarian, Darius Burschka
Technische Universität München, Germany

3:25 PM

A TACTILE AND PROXIMITY SENSOR BY OPTICAL AND ELECTRICAL MEASUREMENT

Satoshi Tsuji
Fukuoka University, Japan

3:40 PM

A LOW NOISE WIDE DYNAMIC RANGE CMOS IMAGE SENSOR WITH LOW-NOISE TRANSISTORS AND 17B COLUMN-PARALLEL ADC

Min-Woong Seo², Taishi Takasawa², Shoji Kawahito², Takehide Sawamoto¹, Tomoyuki Akahori¹, Zheng Liu¹
¹Brookman Technology, Inc., Japan; ²Shizuoka University, Japan

3:55 PM

A COMPACT ALL FIBER REFRACTIVE INDEX SENSOR BASED ON MODAL INTERFERENCE

Jianghai Wo¹, Qizhen Sun¹, Xiaolei Li¹, Jiejun Zhang¹, Deming Liu¹, Perry Shum²
¹Huazhong University of Science and Technology, China; ²Nanyang Technological University, Singapore

4:10 PM

APPLICATION OF PATTERN RECOGNITION IN THE CONDITION MONITORING OF BURIED PIPES

Muhammad Ali, Kirill V. Horoshenkov, Simon Tait
University of Bradford, United Kingdom

4:25 PM

PICOSECOND X-RAY SENSOR

Stephen Durbin, Aamer Mahmood
Purdue University, USA

WEDNESDAY, OCTOBER 31

3:10 PM - 4:40 PM

C4L-E: Biomimetics - Learning from Nature

Room 101D

Session Chairs: Paddy French (TU Delft, the Netherlands), Gijs Krijnen (Univ. Twente, the Netherlands)

3:10 PM

A NOVEL BIOMIMETIC INFOCHEMICAL COMMUNICATION TECHNOLOGY: FROM INSECTS TO ROBOTS

Marina Cole², Zoltan Rácz², Julian Gardner², Tim Pearce¹

¹University of Leicester, United Kingdom; ²University of Warwick, United Kingdom

3:25 PM

BIOMIMETIC SONAR FOR BIOMIMETIC SLAM

Jan Steckel, Herbert Peremans

University of Antwerp, Belgium

3:40 PM

DESIGN ASPECTS OF A BIO-INSPIRED FLYING SENSOR NODE

Hans Goosen

Delft University of Technology, Netherlands

3:55 PM

INTERPOLATION BASED "TIME OF TRAVEL" SCHEME IN A VISUAL MOTION SENSOR USING A SMALL 2D RETINA

Fabien Expert, Frédéric Roubieu, Franck Ruffier

Aix Marseille Université, France

4:10 PM

PHOTOPOLYMERIZATION AND PHOTOSTRUCTURING OF MOLECULARLY IMPRINTED POLYMERS FOR SENSOR APPLICATIONS

Yannick Fuchs³, Xuan-Anh Ton³, Ihab Dika², Karsten Haupt³, Andrew Mayes⁴, Olivier Soppera¹

¹CNRS, France; ²CNRS IS2M, France; ³Université de Technologie de Compiègne, France; ⁴University of East Anglia Norwich, United Kingdom

WEDNESDAY, OCTOBER 31

3:10 PM - 4:40 PM

**C4L-F: Internet of Things Technologies and Services
Room 103**

Session Chairs: Payam M. Barnaghi (University of Surrey, UK), C.-P. Chao (National Chiao Tung University, Taiwan)

3:10 PM

**SENSING AS A SERVICE: A CLOUD COMPUTING SYSTEM FOR
MOBILE PHONE SENSING**

Xiang Sheng², Xuejie Xiao², Jian Tang², Guoliang Xue¹

¹Arizona State University, USA; ²Syracuse University, USA

3:25 PM

3G-ASSISTED ROUTING IN VEHICULAR NETWORKS

Lingwei Zeng, Yanmin Zhu

Shanghai Jiao Tong University, China

3:40 PM

SEMANTIC SENSOR SERVICE NETWORKS

Wei Wang, Payam Barnaghi, Gilbert Cassar, Frieder Ganz,
Pirabakaran Navaratnam

University of Surrey, United Kingdom

3:55 PM

**TRAFFIC-AWARE TIME-CRITICAL SCHEDULING IN HEAVILY
DUTY-CYCLED IEEE 802.15.4E FOR AN INDUSTRIAL IOT**

Maria-Rita Palattella³, Nicola Accettura², Mischa Dohler¹, Luigi Alfredo
Grieco², Gennaro Boggia²

¹Centre Tecnològic de Telecomunicacions de Catalunya, Spain; ²Politecnico di
Bari, Italy; ³University of Luxembourg, Luxembourg

4:10 PM

**ENERGY-EFFICIENT LOCATION TRACKING WITH
SMARTPHONES FOR IOT**

Lei Zhang², Jiangchuan Liu², Hongbo Jiang¹

¹Huazhong University of Science and Technology, China; ²Simon Fraser
University, Canada

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