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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.

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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

General Co-Chairs
John Vig, *IEEE Sensors Council, USA*
Jin-Chern (JC) Chiou, *National Chiao Tung University, Taiwan*

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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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Paul C.-P. Chao, *National Chiao Tung University., Taiwan*
Peter Chang, *Industrial Technology Research Institute (ITRI), Taiwan*

Best Student Paper Award Chair
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Pei-Zen Chang, *National Taiwan University, Taiwan*

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National Applied Research Laboratories
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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.

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.

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.

Pentad Scientific

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 AG, headquartered in Staefa, Switzerland, is the world's leading manufacturer of digital microsensors 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.

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 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

Poster Sessions
Three poster sessions will be held in Room 201, from15:00 - 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.

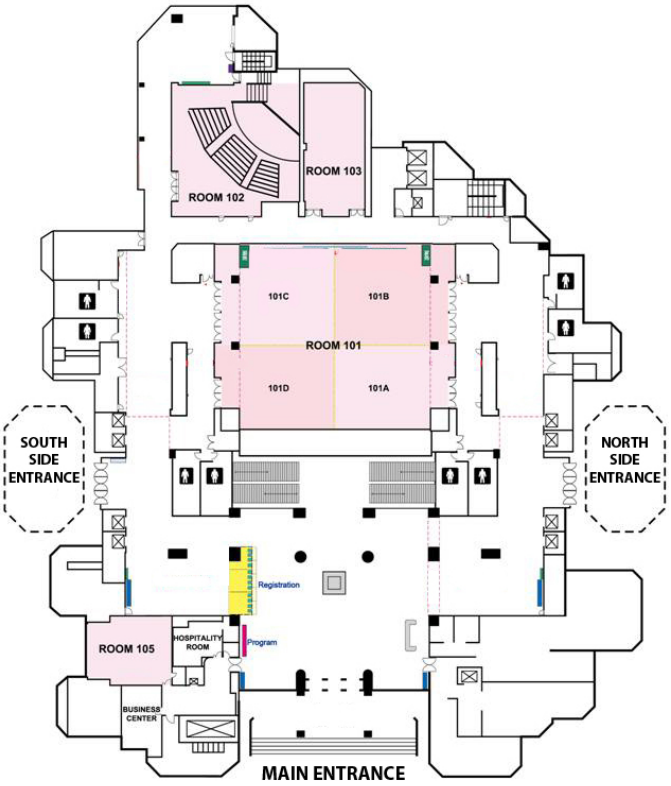
H= 12 Open Poster
J= 1 Modeling
K= 2 Chemical and Gas
L= 3 Bio (and Medical)
M= 4 Optical
N= 5 Physical and Mechanical
O= 6 Sensor/ Actuator
P= 7 Sensor Network
Q= 8 Applications/ Others
R= 9 Special Session

	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	CONFERENCE REGISTRATION AND CHECK-IN - TICC	
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	

	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 !V CONCEPTS / FUNDAMENTAL TECHNOLOGIES AND APPLICATION
3:00 PM - 4:50 PM	A4P-G: MONDAY POSTER SESSION - ROOM 201					

	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					

	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					



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)
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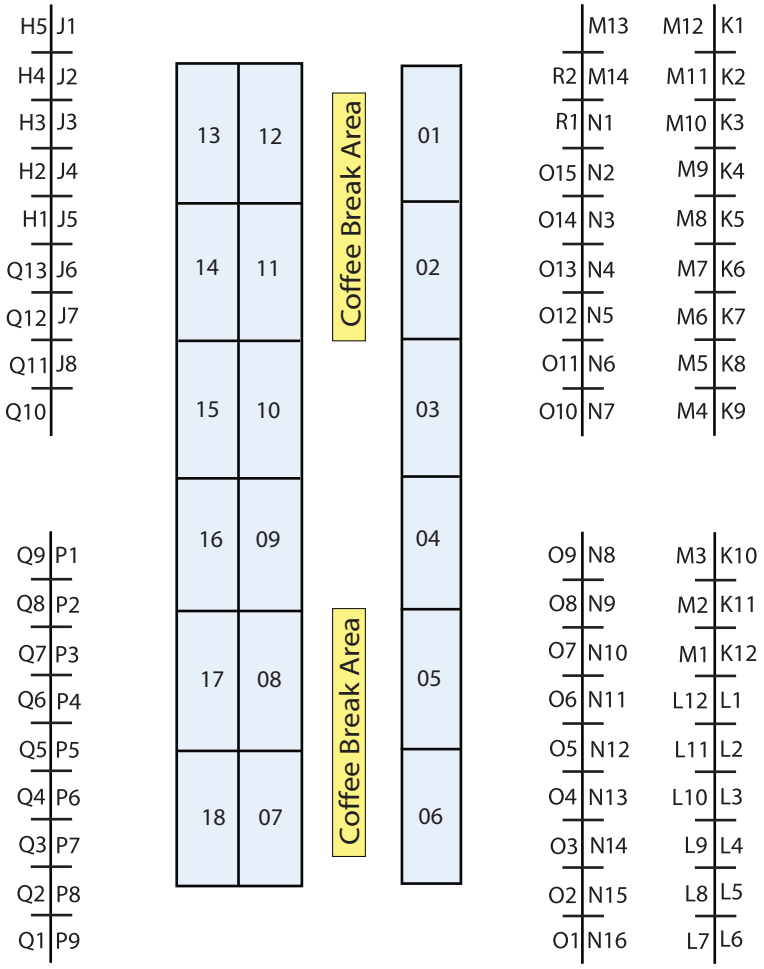
O= 6 Sensor/ Actuator
P= 7 Sensor Network
Q= 8 Applications/ Others
R= 9 Special Session

Exhibitors are listed below as of October 17, 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 Research Laboratories
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
Booth # 13 - National Applied Research Laboratories National Chip Implementation Center
Booth # 14 - Evabiotech Ltd.
Booth # 15 - STMicroelectrionics
Booth # 16 - ITRI
Booth # 17 - OTO Photonics Inc.
Booth # 18 - imec Taiwan

MONDAY POSTER SESSION - ROOM 201



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
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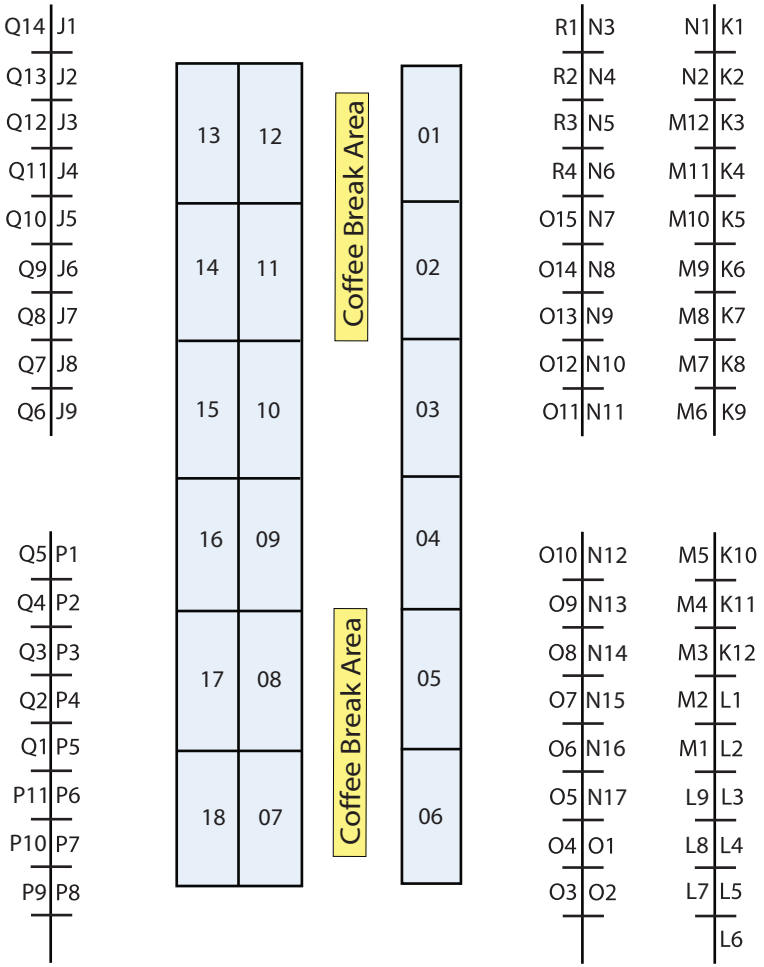
Booth # 9-10 - IEEE Sensors Council/ IEEE Gold
Booth # 11 - Wiley-Blackwell
Booth # 12 - Sinodynamics Enterprise Co., Ltd
Booth # 13 - National Applied Research Laboratories National Chip Implementation Center
Booth # 14 - Evabiotech Ltd.
Booth # 15 - STMicroelectrionics
Booth # 16 - ITRI
Booth # 17 - OTO Photonics Inc.
Booth # 18 - imec Taiwan

TUESDAY POSTER SESSION - ROOM 201



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
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Exhibitors are listed below as of October 17, 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.
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Booth # 5 - Asia Pacific Microsystems, Inc.
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Booth # 7 - Sensirion AG
Booth # 8 - Miradia
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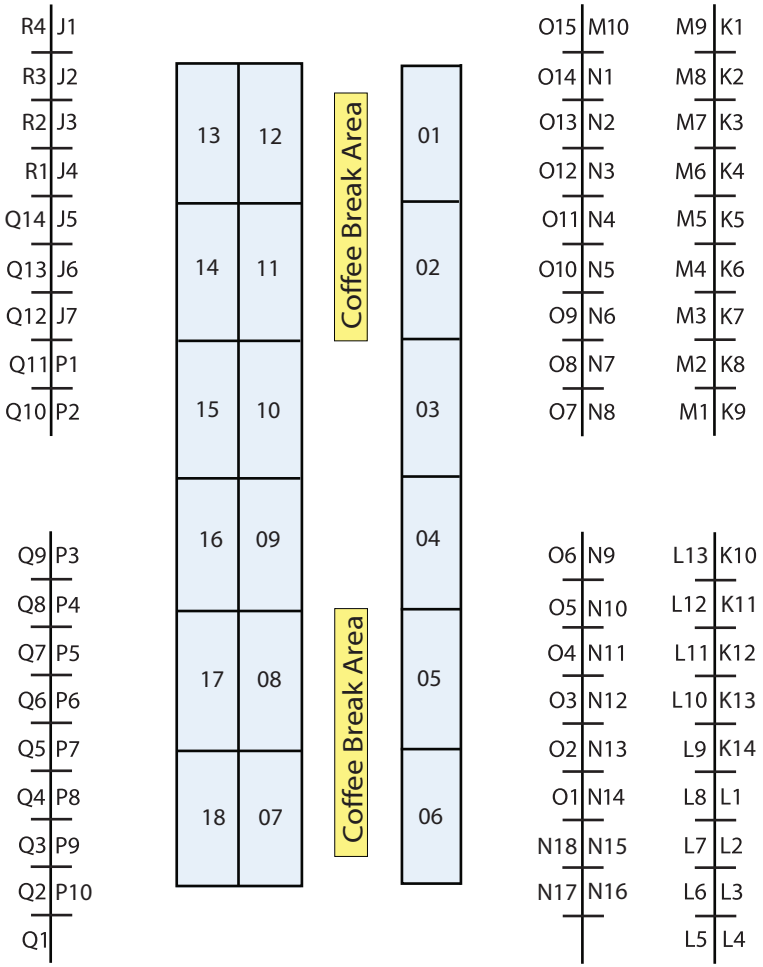
Booth # 11 - Wiley-Blackwell
Booth # 12 - Sinodynamics Enterprise Co., Ltd
Booth # 13 - National Applied Research Laboratories National Chip Implementation Center
Booth # 14 - Evabiotech Ltd.
Booth # 15 - STMicroelectrionics
Booth # 16 - ITRI
Booth # 17 - OTO Photonics Inc.
Booth # 18 - imec Taiwan

WEDNESDAY POSTER SESSION - ROOM 201



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

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.

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 DELIQUESCENCE 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 Gudan[2], Sergey Chemishkian[2], Jonathan Hull[2], Matthew Reynolds[1], Stewart Thomas[1]
[1]Duke University, USA; [2]Ricoh 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

9:15 AM - 10:30 AM
A1L-B: Biosensors I
Room 101B
Session Chairs: Shiang-Cheng Lu (National Tsing Hua Univ, Taiwan), Jiri Homola (Institute of Photonics and Electronics, Czech Republic)

9:15 AM
SUPRAMOLECULAR FUNCTIONALIZED SI NANOWIRE FETS - TOWARDS REGENERATIVE ELECTRONIC BIOSENSORS
Xuexin Duan[2], Nitin Rajan[2], Jurriaan Huskens[1], Mark Reed[2]
[1]Universiteit Twente, Netherlands; [2]Yale University, USA

9:30 AM
A NEW INTACT IMMOBILIZATION OF LIPOSOME AS SENSING BIO NANO-PARTICLE ON OXIDIZED METAL ELECTRODE SURFACE
Minoru Noda[1], Keisuke Takada[1], Mariko Nakai[1], Kaoru Yamashita[1], Toshinori Shimanouchi[2], Hiroshi Umakoshi[2]
[1]Kyoto Institute of Technology, Japan; [2]Osaka University, Japan

9:45 AM
LOW POWER TEXTILE-BASED WEARABLE SENSOR PLATFORM FOR PH AND TEMPERATURE MONITORING WITH WIRELESS BATTERY RECHARGE
Michele Caldara[2], Claudio Colleoni[2], Michael Galizzi[2], Emanuela Guido[2], Valerio Re[2], Giuseppe Rosace[2], Andrea Vitali[1]
[1]STMicroelectronics, Italy; [2]Università 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 NANOELECTRODE ARRAYS
Aamer Mahmood[2], Peng-Sheng Chen[1], A George Akingba[1]
[1]Indiana University-Purdue University Indianapolis, USA; [2]Purdue University, USA

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 Kulinyi[4], Richard Vegvari[4], Anita Pongracz[2], Attila Nagy[2], Tamas Karpati[1], Marika Adam[2], Gabor Battistig[1], Istvan Bársony[3]
[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 Karimi[1], Matthias Fabian[1], Tong Sun[1], Kenneth Grattan[1], Kay Schuster[2], Leszek R. Jaroszewicz[4], Pawel Mergo[3]
[1]City University London, United Kingdom; [2]Institut für Photonische Technologien, Germany; [3]Maria Curie Sklodowska University, Poland; [4]Military University of Technology, Poland

10:15 AM
A TACTILE MICRO TRANSCEIVER 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

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 Li[1], George Yu[3], Yijiang Lu[1], Chang Hsiung[1], Ami Hannon[1], Daniel Kim[1], Steve Dennis[2]
[1]NASA Ames Research Center, USA; [2]USA Department of Homeland Security, USA; [3]Variable Technologies, USA

9:30 AM
A LOW-COST SYSTEM FOR REAL TIME MONITORING AND ASSESSMENT OF POTABLE WATER QUALITY AT CONSUMER SITES
Theofanis Lambrou[2], Christos Panayiotou[2], Christos Anastasiou[1]
[1]Frederick University, Cyprus; [2]University of Cyprus, Cyprus

9:45 AM
A WIRELESS SURFACE ELECTROMYOGRAPHY (SEMG) PROBE WITH 4 HIGH-SPEED CHANNELS
Giona Imperatori[1], Diego Barrettino[2]
[1]Phonak AG, Switzerland; [2]University of Applied Sciences of Southern Switzerland, Switzerland

10:00 AM
ON DETECTING MOBILE TARGET WITH DEADLINE CONSTRAINT IN MOBILE SENSOR NETWORKS
Yu-Yi Chen[2], Chih-Cheng Hsu[2], Cheng-Fu Chou[2], Ching-Ju Lin[1]
[1]Academia Sinica, Taiwan; [2]National Taiwan University, Taiwan

10:15 AM
A COLUMN-PARALLEL SA ADC WITH LINEARITY CALIBRATION FOR CMOS IMAGERS
Shan-Ju Tsai[2], Yen-Chun Chen[2], Chih-Cheng Hsieh[2], Wen-Hsu Chang[1], Hann-Huei Tsai[1], Chin-Fong Chiu[1]
[1]National Applied Research Laboratories, Taiwan; [2]National Tsing Hua University, Taiwan

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 Strle[2], Janez Trontelj[2], Bogdan Stefane[2], Igor Musevic[1]
[1]Institute Josef Stefan, Slovenia; [2]University of Ljubljana, Slovenia

9:30 AM
A LOW COST MINIATURE VORTEX SENSOR FOR TURBULENCE MEASUREMENT
Jianguo Zhao[3], Dara Feili[3], Henning Völlm[3], Thrassos Panidis[2], Binghe Ma[1], Helmut Seidel[3]
[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 Alvarado[2], Vignesh Subramaniam[2], Michael Triantafyllou[1]
[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. Taruno[1], Marlin R. Baidillah[1], Rommy I. Sulaiman[1], Arbai Yusuf[1], Wahyu Widada[1], Habib Alzufri[1], Muhammed Aljohani[2]
[1]Edwar Technology, Indonesia; [2]King Abdulazis University, Saudi Arabia

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
INVITED TALK: RESONANT CIRCUITS FOR THERMAL THERAPY EXCITED BY RF MAGNETIC FIELD FROM MRI
Yasushi Takemura
Yokohama National University, Japan

9:45 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

10:00 AM
WIRELESS MAGNETIC SENSING SYSTEM FOR BIOENGINEERING APPLICATION
Shuichiro Hashi, Kazushi Ishiyama
Tohoku University, Japan

10:15 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

10:30 AM - 11:00 AM
Room 201
COFFEE BREAK

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
INVITED TALK: NANOGAPS FOR HYDROGEN SENSING
Fred Favier
Université Montpellier II, France

11:30 AM
NOVEL LAYER-BY-LAYER SILICA NANOPARTICLES AS AN ADORBENT BED FOR MICRO-FABRICATED PRECONCENTRATORS
Dong Wang, Akbar Muhammad, James Heflin, Masoud Agah
Virginia Polytechnic Institute and State University, USA

11:45 AM
GAS THERMAL CONDUCTIVITY MEASUREMENT BASED ON THE THREE-OMEGA METHOD
Sébastian Gauthier, Philippe Combette, Alain Giani
Université Montpellier II - CNRS UMR 5214, France

12:00 PM
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

12:15 PM
LAYER-BY-LAYER STRUCTURED AU NPS SENSORS FOR TERPENE VAPORS DETECTION
Bin Chen, Chuanjun Liu, Kenshi Hayashi
Kyushu University, Japan

11:00 AM - 12:30 PM
A2L-B: Optical Sensing Systems
Room 101B
Session Chairs: Hengky Chandrahalim (University of Michigan, USA), Patrick Ruther (IMTEK, Germany)

11:00 AM
INVITED TALK: ION IMAGE SENSORS BASED ON CCD/CMOS TECHNOLOGY
Kazuaki Sawada
Toyohashi University of Technology, Japan

11:30 AM
TRANSVERSE FORCE SENSITIVITY OF PHOTONIC CRYSTAL FIBRES
Mohammad Karimi[1], Matthias Fabian[1], Tong Sun[1], Kenneth Grattan[1], Kay Schuster[2], Leszek R. Jaroszewicz[4], Pawel Mergo[3]
[1]City University London, United Kingdom; [2]Institut für Photonische Technologien, Germany; [3]Maria Curie Sklodowska University, Poland; [4]Military University of Technology, Poland

11:45 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

12:00 PM
THERMO-OPTOFLUIDICS - ON-CHIP LIGHT MODULATION AS AN APPLICATION
Emanuel Weber[1], Michael Vellekoop[2]
[1]Technische Universität Wien, Austria; [2]Universität Bremen, Germany

12:15 PM
DEVELOPMENT OF 3D HYPERSPECTRAL CAMERA USING COMPRESSIVE SENSING
King Wai Chiu Lai[1], Ning Xi[2], Hongzhi Chen[2], Liangliang Chen[2], Bo Song[2]
[1]City University of Hong Kong, Hong Kong; [2]Michigan State University, USA

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
INVITED TALK: USING NONLINEARITY TO ENHANCE MICRO/NANOSENSOR PERFORMANCE
Kimberly Turner[2], Christopher B. Burgner[2], Zi Yie[2], Ellen Holtoff[1]
[1]Army Research Laboratory, USA; [2]University of California, Santa Barbara, USA

11:30 AM
A BULK-MICROMACHINED FULLY-DIFFERENTIAL MEMS ACCELEROMETER WITH INTERDIGITATED FINGERS
Osman Aydin, Tayfun Akin
METU-MEMS Research and Applications Center, Turkey

11:45 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

12:00 PM
CMOS-MEMS ACCELEROMETER WITH DIFFERENTIAL LC-TANK OSCILLATORS
Yi Chiu, Hao-Chiao Hong, Po-Chih Wu
National Chiao Tung University, Taiwan

12:15 PM
MEMS-BASED HEMISPHERICAL RESONATOR GYROSCOPES
Pradeep Pai, Faisal Chowdhury, Carlos Mastrangelo, Massood Tabib-Azar
University of Utah, USA

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
INVITED TALK: CMOS-INTEGRATED FOUR-CONTACT SENSORS FOR MAGNETIC AND MECHANICAL SIGNALS: NOVEL DEVICES, SYSTEMS, AND APPLICATIONS
Oliver Paul
Universität Freiburg / IMTEK, Germany

11:30 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

11:45 AM
40 VOLT NMOS IN A 0.5 µM STANDARD CMOS PROCESS
Tsung-Hsueh Lee, Pamela Abshire
University of Maryland, USA

12:00 PM
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

12:15 PM
A MEMS BASED ELECTROMETER WITH A LOW-NOISE SWITCHED RESET AMPLIFIER FOR CHARGE MEASUREMENT
Gerardo Jaramillo[2], David Horsley[2], Cesare Buffa[1], Giacomo Langfelder[1]
[1]Politecnico di Milano, Italy; [2]University of California, Davis, USA

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
INVITED TALK: PROBING VISCOELASTICITY OF NANOMETER THICK SELFASSEMBLED LAYERS
Srinivas Tadigadapa[2], Hwall Min[2], Ping Kao[1]
[1]Inotera Memories Inc, Taiwan; [2]Pennsylvania State University, USA

11:30 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

11:45 AM
A MULTI-FEATURE SCHEME FOR POSTURE RECOGNITION WITH 3D TOF SENSOR
Alessandro Leone, Giovanni Diraco, Pietro Siciliano
CNR-IMM, Italy

12:00 PM
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

12:15 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

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
INVITED TALK: CHALLENGES IN VISIBLE WAVELENGTH DETECTION USING OPTICALLY TRANSPARENT OXIDE SEMICONDUCTORS
Sungsik Lee[2], Arokia Nathan[1], John Robertson[1]
[1]Cambridge University, United Kingdom; [2]University College London, United Kingdom

11:30 AM
FULLY INKJET-PRINTED PARALLEL-PLATE CAPACITIVE GAS SENSORS ON FLEXIBLE SUBSTRATE
FRANCISCO MOLINA-LOPEZ[1], DANICK BRIAND[1], NICO DE ROOIJ[1], MARIA Smolander[2]
[1]Ecole Polytechnique Fédérale de Lausanne, Switzerland; [2]VTT Technical Research Centre of Finland, Finland

11:45 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

12:00 PM
ULTRA-FLEXIBLE, ULTRA-THIN, ULTRA-SENSITIVE ORGANIC PRESSURE SENSOR SYSTEM FOR BIOMEDICAL APPLICATIONS
Tsuyoshi Sekitani, Tomoyuki Yokota, Takao Someya
University of Tokyo, Japan

12:15 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

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 Okano[1], Akira Terao[1], Kazuhiro Ban[1], Sunao Ichihara[1], Natsuhiko Mizutani[1], Tetsuo Kobayashi[2]
[1]Canon Inc., Japan; [2]Kyoto 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

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
INVITED TALK: 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

2:00 PM
QUARTZ-BASED PHOTONIC CRYSTAL SURFACES FOR MULTIPLEXED CANCER BIOMARKER DETECTION
Cheng-Sheng Huang[2], Vikram Chaudhery[2], James Polans[2], Meng Lu[2], Brian Cunningham[2], Anusha Pokhriyal[2], Sherine George[2], Richard Zangar[1]
[1]Pacific Northwest National Laboratory, USA; [2]University of Illinois at Urbana-Champaign, USA

2:15 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

2:30 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

2:45 PM
MONOLITHIC SYSTEM FEATURING A GOLD NANOWIRE ARRAY ON A CMOS CHIP FOR BIOSENSING APPLICATIONS
Paolo Livi[1], Joerg Rothe[1], Alexander Stettler[1], Yihui Chen[1], Andreas Hierlemann[1], Vitaliy Guzenko[2]
[1]ETH Zürich, Switzerland; [2]Paul Scherrer Institute, Switzerland

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

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 Hrokubo[1], Hiroshi Komatsu[1], Nobuaki Hashimoto[1], Makoto Sonehara[2], Toshiro Sato[2]
[1]Seiko Epson Corporation, Japan; [2]Shinshu University, Japan

1:45 PM
NEW MICROWAVE SENSING SYSTEM FOR BLADE TIP CLEARANCE MEASUREMENT IN GAS TURBINES
Maddalena Violetti[1], Anja Skrivervik[1], Qin Xu[2], Michaël Hafner[2]
[1]École Polytechnique Fédérale de Lausanne, Switzerland; [2]Meggitt 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 Violetti[1], Francesco Merli[1], Jean-François Zürcher[1], Anja Skrivervik[1], Matthieu Pellaton[2], Christoph Affolderbach[2], Gaetano Mileti[2]
[1]École Polytechnique Fédérale de Lausanne, Switzerland; [2]Université de Neuchâtel, Switzerland

2:30 PM
A NEW MILLIMETER-WAVE MICRO-FLUIDIC TEMPERATURE SENSOR FOR WIRELESS PASSIVE RADAR INTERROGATION
Sofiene Bouaziz[2], Franck Chebila[2], Anya Traille[2], Patrick Pons[2], Hervé Aubert[2], Manos Tentsiris[1]
[1]Georgia Institute of Technology, USA; [2]LAAS 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

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 Wang[2], Yu-Ching Lin[2], Thomas Gessner[1], Masayoshi Esashi[2]
[1]Fraunhofer-Institut für Elektronische Nanosysteme, Germany; [2]Tohoku University, Japan

2:15 PM
RIE PATTERNING TECHNOLOGY OF ZR-BASED METALLIC GLASS FOR MEMS DEVICES FABRICATION
Yao-Chuan Tsai[3], Yu-Ching Lin[3], Takashi Abe[2], Masayoshi Esashi[3], Thomas Gessner[1]
[1]Fraunhofer-Institut für Elektronische Nanosysteme, Germany; [2]Niigata University, Japan; [3]Tohoku 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

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
INVITED TALK: 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

2:00 PM
ACTUATOR AND SENSOR PERFORMANCE OF PIEZO-METAL-COMPOSITES
Welf-Guntram Drossel[1], Sebastian Hensel[1], Matthias Nestler[1], Reimund Neugebauer[1], Lutz Lachmann[2]
[1]Fraunhofer-Institut für Werkzeugmaschinen und Umformtechnik, Germany; [2]Technische Universität Chemnitz, Germany

2:15 PM
STATE-OF-THE-ART PIPELINE STRUCTURAL HEALTH MONITORING SYSTEMS
Irene Li, Amrita Kumar, Shawn J. Beard, David C. Zhang
Acellent Technologies, USA

2:30 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

2:45 PM
ADAPTIVE METACOMPOSITES FOR VIBROACOUSTIC CONTROL APPLICATIONS
Manuel Collet[2], M. Ouisse[1]
[1]CNRS - FEMTO-ST Institute, France; [2]Université de Franche-Comté / CNRS - FEMTO-ST Institute, France

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 Hashizume[1], Masanori Sugimoto[2]
[1]National Institute of Informatics, Japan; [2]University of Tokyo, Japan

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 Jing[2], Bobo Peng[2], Tao Liu[2], Fei Wang[2], Lianwei Wang[2], Paul K Chu Chu[1]
[1]City University of Hong Kong, Hong Kong; [2]East 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 Hong[2], Kyung Hoon Jung[2], Nam Ki Min[2], Yong Hoon Rhee[2], Chan Won Park[1]
[1]Kangwon National University, Korea, South; [2]Korea University, Korea, South

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 Choopun[1], Duangmanee Wongratanaphisan[1], Atcharawon Gardchareon[1], Ekasiddh Wongrat[2]
[1]Chiang Mai University, Thailand; [2]University of Phayao, Thailand

A4P-K9
DETERMINATION OF TOTAL PHOSPHORUS IN WATER ENVIRONMENT BY THREE-DIMENSIONAL DOUBLE COILS MICROELECTRODE CHIP
Qiannan Xue[2], Chao Bian[1], Jianhua Tong[1], Jizhou Sun[1], Hong Zhang[1], Shanhong Xia[1]
[1]Institute of Electronics, Chinese Academy of Sciences, China; [2]Institute of Electronics, Chinese Academy of Sciences / Civil Aviation University of China, China

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 Honda[1], Yusuke Takei[3], Koutarou Ishizu[3], Hiroshi Imamoto[2], Toshihiro Itoh[1], Ryutaro Maeda[1], Kiyoshi Matsumoto[3], Isao Shimoyama[3]
[1]NMEMS Technology Research Organization, Japan; [2]OMRON corporation, Japan; [3]The University of the Tokyo, Japan

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, Hirotoshi Fuda, Shigeki Jin, Hitoshi Chiba, Kazuhisa Sueoka
Hokkaido University, Japan

A4P-L4
THE NOVEL RESEARCH OF INTRAOCULAR PRESSURE TONOMETER BY USING INDUCTANCE SENSOR
Yu-Shun Tang[4], Wei-De Jeng[4], Ting-Wei Huang[4], Mang Ou-Yang[4], Jin-Chern Chiou[4], Jeng-Ren Duann[1], Ching-Hsing Luo[3], Hong-Yi Huang[5], Yi-Wu Tsai[2]
[1]China Medical University, Taiwan; [2]China Medical University Hospital, Taiwan; [3]National Cheng Kung University, Taiwan; [4]National Chiao Tung University, Taiwan; [5]National 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 Yeh[2], Hsin-Zhan Yeh[2], Yu-Cheng Lin[2], Pi-Lan Shen[1]
[1]Firstep Bioresearch, Inc., Taiwan; [2]National 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 Hsu[3], Geng-Yen Lee[2], Jen-Inn Chyi[2], Chung-ke Chang[1], Chih-Cheng Huang[3], Chen-Pin Hsu[3], Tai-huang Huang[1], Fan Ren[4], Yu-Lin Wang[3]
[1]Academia Sinica, Taiwan; [2]National Central University, Taiwan; [3]National Tsing Hua University, Taiwan; [4]University of Florida, USA

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 Yeh[2], Wei-Ting Wang[2], Yu-Cheng Lin[2], Pi-Lan Shen[1]
[1]Firstep Bioresearch, Inc., Taiwan; [2]National Cheng Kung University, Taiwan

A4P-L11
SUB-POPULATION ANALYSIS OF DEFORMABILITY DISTRIBUTION IN HETEROGENEOUS CELL POPULATIONS
Il Doh[2], Young-Ho Cho[2], Won Chul Lee[1], Frans Kuypers[1], Albert Pisano[3]
[1]Children's Hospital Oakland Research Institute, USA; [2]Korea Advanced Institute of Science and Technology, Korea, South; [3]University 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 Roksana Rashid, Duy-Thach Phan, Gwiy-Sang Chung
University of Ulsan, Korea, South

A4P-M5
RECEIVER AND AMPLIFIER OPTIMIZATION FOR HYBRID MOEMS
Wilfried Hortschitz[1], Jörg Encke[1], Franz Kohl[1], Thilo Sauter[1], Harald Steiner[2], Michael Stifter[2], Franz Keplinger[2]
[1]Austrian Academy of Sciences, Austria; [2]Technische Universität Wien, Austria

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

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 Darabkhani[2], Miguel Banuelos-Saucedo[2], John Young[2], Mark Stringer[1], Paul Wright[2], Qian Wang[3], Yang Zhang[3], Bob Miles[1], Krikor Ozanyan[2]
[1]University of Leeds, United Kingdom; [2]University of Manchester, United Kingdom; [3]University 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 Prelle
Université de Technologie de Compiègne, France

A4P-M10
NANO-SIZE STRUCTURE FORMATION ON SI SUBSTRATE FOR OPTICAL DEVICE APPLICATION
Daeyoung Kong[2], Junghwa Oh[2], Bonghwan Kim[1], ChanSeob Cho[2], Jonghyun Lee[2]
[1]Catholic University of Daegu, Korea, South; [2]Kyungpook National University, Korea, South

A4P-M11
TEMPERATURE SENSORS BASED ON D-SHAPED FIBER BRAGG GRATING COATED WITH DIFFERENT THIN FILMS
Chuen-Lin Tien[2], Li-Chieh Chen[2], Hsiang-Yi Chiang[2], Wen-Fung Liu[2], Hsi-Fu Shih[1]
[1]Chung Hsing University, Taiwan; [2]Feng Chia University, Taiwan

A4P-M12
HIGHLY SENSITIVE PRESSURE SENSOR BASED ON CASCADED LONG-PERIOD GRATINGS
Mateusz Smietana[2], Wojtek Bock[1], Predrag Mikulic[1], Jiahua Chen[1]
[1]University of Quebec, Canada; [2]Warsaw University of Technology, Poland

A4P-M13
SANDWICHED MICROFLUIDIC CHIP-BASED INTERFEROMETRIC REFRACTOMETER
Sarun Sumriddetchkajorn[2], Kosom Chaitavon[2], Jiti Nukeaw[1]
[1]King Mongkut's Institute of Technology Ladkrabang, Thailand; [2]National 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

A4P-N1
ELECTROSTATICALLY LEVITATED RING-SHAPED ROTATIONAL-GYRO/ACCELEROMETER USING ALL-DIGITAL OFDM DETECTION WITH TAD
Tomohito Terasawa[1], Takamoto Watanabe[1], Takao Murakoshi[2]
[1]Denso Corporation, Japan; [2]TOKYO KEIKI Inc., Japan

A4P-N2
A NOVEL CAPACITIVE ABSOLUTE PRESSURE SENSOR USING SON TECHNOLOGY
Xiuchun Hao[1], Atuhiko Masuda[1], Kohei Higuchi[1], Sinya Tanaka[4], Kazusuke Maenaka[4], Hidekuni Takao[2], Jun Nakamura[5], Koichi Sudoh[3]
[1]Japan Science and Technology Agency, Japan; [2]Kagawa University, Japan; [3]Osaka University, Japan; [4]University of Hyogo, Japan; [5]Yamaha 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 Jiang[2], He-Ling Chen[1], Wensyang Hsu[1], Yueh-Kang Lee[2], Yen-Wu Miao[2], Yi-Chueh Shieh[1], Chen-Yuan Hung[1]
[1]National Chiao Tung University, Taiwan; [2]UPI Semiconductor, Taiwan

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

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 Chen[2], Kai-Lun Lin[2], Chien-Chong Hong[2], Tong-Miin Liou[2], Jiann Shieh[3], Szu-Hung Chen[1]
[1]National Nano Device Laboratories, Taiwan; [2]National Tsing Hua University, Taiwan; [3]National 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 Rochus[3], Roelof Jansen[3], Harry Tilmans[3], Xavier Rottenberg[3], Sylvain Ranvier[1], Hervé Lamy[1], Gary Chen[3], Pierre Rochus[2]
[1]Belgian Institute for Space Aeronomy, Belgium; [2]Centre Spatial de Liège, Belgium; [3]Interuniversitair Micro-Electronica Centrum, Taiwan

A4P-N16
SUB-FF TRIMMABLE READOUT CIRCUIT FOR TRI-AXES CAPACITIVE MICROACCELEROMETERS
Hyun Kyu Ouh[2], Jungryoul Choi[2], Jungwoo Lee[2], Sangyun Han[2], Sungwook Kim[2], Jindeok Seo[1], Kyomook Lim[1], Hyoungho Ko[1]
[1]Chungnam National Univ., Korea, South; [2]TLi Inc., Korea, South

A4P-O1
A CMOS CAPACITIVE MICROMECHANICAL OSCILLATOR DRIVEN BY A PHASE-LOCKED LOOP
Hsin-Chih Li[2], Sheng-Hsiang Tseng[1], Po-Chiun Huang[2], Michael Lu[2]
[1]National Applied Research Laboratories & National Tsing Hua University, Taiwan; [2]National Tsing Hua University, Taiwan

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 Barnabei[2], Marco Grassi[2], Enrico Dallago[2], Piero Malcovati[2], Daniele Gianluigi Finarelli[2], Alessandro Liberale[2], Fabio Quaglia[1]
[1]STMicroelectronics, Italy; [2]Università degli studi di Pavia, Italy

A4P-O7
HOLLOW CYLINDRICAL NEAR-FIELD ELECTROSPINING HIGH ß-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

A4P-O9
A NOVEL N X M ARRAY OF RESONANCE-BASED ADDRESSABLE MEMS ACTUATORS
Minfeng Wang[2], Yang Zhang[1], Guann-Pyng Li[2], Mark Bachman[2]
[1]California Institute for Telecommunications and Information Technology, USA; [2]University 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 Laskovski[2], Mehmet Yuce[1], Reza Moheimani[2]
[1]Monash University, Australia; [2]University of Newcastle, Australia

A4P-O13
INVESTIGATION OF AN ADVANCED MICRO-INDUCTIVE SENSOR
Paul Köchert[2], Jens Flügge[2], Dragan Miletic[1], Hans-Heinrich Gatzen[1]
[1]Leibniz Universität Hannover, Germany; [2]Physikalisch-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 Liao[2], Wenjing Liu[2], Yiping Zhu[2], Yongming Tang[1], Baoping Wang[1], Huikai Xie[2]
[1]Southeast University, China; [2]University 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

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 Hamie[1], Benoit Denis[1], Cedric Richard[2]
[1]CEA LETI MINATEC, France; [2]Université de Nice Sophia-Antipolis, France

A4P-P4
DEVELOPMENT OF WIRELESS COMMUNICATION METHODS FOR DECREASING THE POWER CONSUMPTION OF SENSOR NODES
Hironao Okada[2], Toshihiro Itoh[1], Takashi Masuda[3]
[1]Macro BEANS Center & National Institute of Advanced Industrial Science and Technology, Japan; [2]National Institute of Advanced Industrial Science and Technology, Japan; [3]University of Tokyo, Japan

A4P-P5
ULTRA-LOW-COST RADIATION MONITORING SYSTEM UTILIZING SMARTPHONE-CONNECTED SENSORS DEVELOPED WITH INTERNET COMMUNITY
Yang Ishigaki[3], Ryo Ichimiya[1], Yoshinori Matsumoto[2], Kenji Tanaka[3]
[1]High Energy Accelerator Research Organization, Japan; [2]Keio University, Japan; [3]University 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 Dutta[1], Andrew Terhorst[1], Aaron Hawdon[1], Bill Cotching[2]
[1]CSIRO, Australia; [2]UTAS, Australia

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 Santagata[1], Giuseppe Fiorentino[1], Meng Nie[2], Catello Farriciello[1], Rene Poelma[1], Guo Qi Zhang[1], P.M. Sarro[1]
[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 Placido[4], Roberto Comparelli[2], Marinella Striccoli[2], Angela Agostiano[4], Arben Merkoçi[1], Maria Lucia Curri[3]
[1]Institut Català de Nanotecnologia / Universitat Autònoma de Barcelona, Spain; [2]Italian National Research Council CNR-IPCF, Italy; [3]Università degli Studi di Bari Aldo Moro / Italian National Research Council CNR-IPCF, Italy; [4]Università degli Stu

A4P-Q4
FPGA IMPLEMENTATION OF A LOW-COST METHOD FOR TRACKING THE RESONANCE FREQUENCY AND THE QUALITY FACTOR OF MEMS SENSORS
Farbod Ghassemi[1], Maira Possas[1], Gilles Amendola[1], Jérôme Juillard[2]
[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 Bouloc, 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 Oliveira[1], Jozué Vieira Filho[2]
[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

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 Khánh[1], István Lukács[1], Sándor Kurunczi[1], György Sáfrán[1], Zoltán Szabó[1], János Volk[1], K. Kubina[2], Róbert Erdélyi[3]
[1]HAS-Research Centre for Natural Sciences, Institute of Technical Physics and Materials Science, Hungary; [2]Pázmány Péter Catholic University, Hungary; [3]University 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 Sharma[1], Deepak Bansal[1], Kamaljit Rangra[1], Dinesh Kumar[2]
[1]Central Electronics Engineering Research Institute, India; [2]Kurukshetra University Kurukshetra, India

A4P-R2
PEDESTRIAN ACTIVITY DETECTION IN A MULTI-FLOOR ENVIRONMENT BY A SMART PHONE
Chi-Chung Lo[2], Yi-Hsiu Chen[2], Yu-Chee Tseng[2], Shang-Ming Huang[1], Yu-Neng Hung[1], Chiu-Mei Tseng[1], Yeh-Chin Ho[1]
[1]Chunghwa Telecom Co., Ltd., Taiwan; [2]National Chiao Tung University, Taiwan

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
[1]Vit Ledl, [1]Roman Dolecek, [1]Pavel Psota, Tomas Vit[2]
[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

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 Jaruwongrungsee[1], Withawat Withayachumnankul[2], Anurat Wisitsoraat[1], Derek Abbott[2], Christophe Fumeaux[2], Adisorn Tuantranont[1]
[1]National Electronics and Computer Technology Center, Thailand; [2]University 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 Haddi[2], Madiha Boughrini[2], S. Ihlou[2], Aziz Amari[5], S. Mabrouk[1], Houcine Barhoumi[1], Abderrazak Maaref[1], Nezha El Bari[2], Eduard Llobet[3], Nicole Jaffrezic-Renault[4], Benachir Bouchikhi[2]
[1]Faculté des Sciences de Monastir, Tunisia; [2]Moulay Ismaïl University, Morocco; [3]Universitat Rovira i Virgili, Spain; [4]Université Claude Bernard-Lyon1, France; [5]University Mohamed V, Morocco

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 NANOELECTRONIC 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 Huang[3], Chen-Pin Hsu[3], You-Ren Hsu[3], Yu-Lin Wang[3], Geng-Yen Lee[1], Jen-Inn Chyi[1], Hui-Teng Cheng[2], Fan Ren[4]
[1]National Central University, Taiwan; [2]National Taiwan University Hospital, Taiwan; [3]National Tsing Hua University, Taiwan; [4]University of Florida, USA

10:05 AM
A SIMPLE, COMPETITIVE BIOSENSOR FOR RAPID DETECTION OF AFLATOXIN B1 BASED ON AGGREGATION OF GOLD NANORODS
Xia Xu[1], Yibin Ying[1], Yanbin Li[2]
[1]Zhejiang University, China; [2]Zhejiang University & University of Arkansas, USA

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
INVITED TALK: DIAPHRAGM-BASED MICROSYSTEMS USING THIN FILM SILICON CARBIDE
Christian Zorman, Andrew Barnes, Philip X.-L. Feng
Case Western Reserve University, USA

9:20 AM
WIDE-BAND PIEZORESISTIVE MICROPHONE FOR AERO-ACOUSTIC APPLICATIONS
Zhijian Zhou[1], Man Wong[1], Libor Rufer[3], Edouard Salze[2], Petr Yuldashev[2], S¨¦bastien Ollivier[2]
[1]Hong Kong University of Science and Technology, Hong Kong; [2]Laboratoire de Mecanique des Fluides et d'Acoustique, France; [3]TIMA Laboratory, France

9:35 AM
PIEZOELECTRIC SENSOR ARRAY FOR PASSIVE FISH-LIKE UNDERWATER SENSING
Ajay Giri Prakash Kottapalli[2], Mohsen Asadnia[2], Zhiyuan Shen[2], Jianmin Miao[2], Michael Triantafyllou[1]
[1]Massachusetts Institute of Technology, USA; [2]Nanyang Technological University, Singapore

9:50 AM
HIGH-FREQUENCY CMUT ARRAYS WITH PHASE-STEERING FOR IN VIVO ULTRASOUND IMAGING
Kjersti Midtbø[1], Arne Rønnekleiv[1], Kjell Arne Ingebrigtsen[1], Jon Due-Hansen[2], Erik Poppe[2], Dag Wang[2], Geir Uri Jensen[2], Kari Schjølberg-Henriksen[2]
[1]Norwegian University of Science and Technology, Norway; [2]SINTEF, Norway

10:05 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

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 Mayton[2], Gershon Dublon[2], Sebastian Palacios[1], Joseph Paradiso[2]
[1]Georgia Institute of Technology / MIT Media Lab, USA; [2]Massachusetts 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 Saleem[1], Norsheila Fisal[2], M. Ariff Baharudin[2]
[1]King Saud University, Saudi Arabia; [2]Universiti Teknologi Malaysia, Malaysia

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 McCarthy[3], Sinead O'Keeffe[3], Elfed Lewis[3], Dan Sporea[2], Adelina Sporea[2], Ion Tiseanu[2], Peter Woulfe[1], John Cronin[1]
[1]Galway Clinic, Ireland; [2]National Institute for Laser, Plasma and Radiation Physics, Romania; [3]University of Limerick, Ireland

9:05 AM
FIBER GRATING-ASSISTED INVESTIGATION ON SURFACE PLASMON RESONANCE OF FIBER CLADDING MODES
Tobias Schuster[1], Christian G. Schäffer[1], Michael Mertig[2], Martin Bönsch[2], Dirk Plettemeier[2]
[1]Helmut Schmidt Universität, Germany; [2]Technische 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 Poeggel[2], Gabriel Leen[2], Kort Bremer[1], Elfed Lewis[2]
[1]City University London, Germany; [2]University of Limerick, Ireland

8:50 AM - 10:20 AM
B1L-F: Bendable / Stretchable Sensors and Systems II
Room 103
Session Chairs: Zeynap 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 Seminara[3], Luigi Pinna[3], Maurizio Valle[3], Laura Basiricò[2], Alberto Loi[2], Piero Cosseddu[2], Annalisa Bonfiglio[2], Alberto Ascia[1], Maurizio Biso[1], Alberto Ansaldo[1], Davide Ricci[1], Giorgio Metta[1]
[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 Hans[2], Jianmin Miao[2], Michael Triantafyllou[1]
[1]Massachusetts Institute of Technology, USA; [2]Nanyang Technological University, Singapore

10:20 AM - 10:50 AM
Room 201
COFFEE BREAK

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 Dai[1], Yi-Lo Lin[2], Hong-Cheng Lin[1], Hsiao-Wen Zan[1], Kai-Ting Chang[3], Hsin-Fei Meng[1], Jiunn-Wang Liao[2], May-Jywan Tsai[3], Henrich Cheng[3]
[1]National Chiao Tung University, Taiwan; [2]National Chung Hsing University, Taiwan; [3]Taipei 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

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 Takada[1], Kaoru Yamashita[1], Minoru Noda[1], Toshinori Shimanouchi[2], Hiroshi Umakoshi[2]
[1]Kyoto Institute of Technology, Japan; [2]Osaka University, Japan

11:35 AM
DIRECT DETECTION OF BIOMOLECULES IN LIQUID MEDIA USING PIEZOELECTRIC ROTATIONAL MODE DISK RESONATORS
Emad Mehdizadeh[2], Jennifer Chapin[2], Jonathan Gonzales[1], Amir Rahafrooz[2], Reza Abdolvand[1], Byron Purse[2], Siavash Pourkamali[2]
[1]Oklahoma State University, USA; [2]University 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

10:50 AM - 12:20 PM
B2L-C: Pressure Sensors
Room 102
Session Chairs: Mitsuhiro Shikida (Nagoya University, Japan), Bassam Alfeeli (Kuwait Institute for Scienfic Research, Kuwait)

10:50 AM
INVITED TALK: MEMS FOR TPMS AND EXHAUST OF AUTOMOBILES
Kukjin Chun[2], H. C. Kim[3], S. Kim[2], Y. Kim[2], S. Lee[2], K. Min[2], S. Lim[1], J. Lee[1]
[1]Hyundai Motors Company, Korea, South; [2]Seoul National University, Korea, South; [3]University of Ulsan, Korea, South

11:20 AM
THE INVERSE MAGNETIC SHAPE MEMORY EFFECT IN MEMBRANES FOR PRESSURE SENSOR APPLICATIONS
Jochen Stephan[1], Kyle Retan[2], Patrick Ruther[3], Oliver Paul[3]
[1]Albert-Ludwigs-Universität Freiburg, IMTEK, Germany; [2]Universität Freiburg, Germany; [3]Universität Freiburg / IMTEK, Germany

11:35 AM
LIQUID-FREE, PIEZORESISTIVE, SOI-BASED PRESSURE SENSOR FOR HIGH TEMPERATURE MEASUREMENTS UP TO 400 °C
Ha-Duong Ngo[2], Biswaijit Mukhopadhyay[2], Vu Cong Thanh[2], Peter Mackowiak[2], Volker Schlichting[2], Ernst Obermeier[2], Klaus-Dieter Lang[2], Andrea Giuliani[1], Lionello Drera[1], Domenico Arancio[1]
[1]Gefran SpA, Italy; [2]Technische Universität Berlin, Germany

11:50 AM
DIFFERENT SCALE CONFINEMENTS OF PVDF-TRFE AS FUNCTIONAL MATERIAL OF PIEZOELECTRIC SENSOR DEVICES
Giancarlo Canavese[2], Stefano Stassi[2], Valentina Cauda[2], Alessio Verna[2], Angelica Chiodoni[2], Simone Marasso[3], Matteo Cocuzza[1]
[1]CNR-IMEM, Italy; [2]Istituto Italiano di Tecnologia, Italy; [3]Politecnico di Torino, Italy

12:05 PM
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

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
INVITED TALK: 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

11:20 AM
CHARACTERIZATION OF A 2-DOF MEMS NANOPOSITIONER WITH INTEGRATED ELECTROTHERMAL ACTUATION AND SENSING
Micky Rakotondrabe[1], Anthony Fowler[2], Reza Moheimani[2]
[1]FEMTO-ST Institute, Université de Franche-Comté Besançon, France; [2]University of Newcastle, Australia

11:35 AM
A MAGNETIC MEMBRANE ACTUATOR UTILIZING DIAMAGNETIC LEVITATION
Wolfgang Hilber, Bernhard Jakoby
Johannes Kepler Universität in Linz, Austria

11:50 AM
A LOW-ACTUATION VOLTAGE DESIGN FOR RF CMOSMEMS SWITCHES
Horng-Hsiang Lai, Wen-Chien Chen, Sheng-Shian Li
National Tsing Hua University, Taiwan

12:05 PM
LORENTZ FORCE TORSIONAL ACTUATOR WITH EMBEDDED NICKEL STRUCTURES
Wei-Lun Sung[1], Tsung-Lin Tang[1], Feng-Yu Lee[1], Ching-Chen Tu[2], Ching-Han Huang[2], Rongshun Chen[1], Weileun Fang[1]
[1]National Tsing Hua University, Taiwan; [2]Touch Micro-System Technology Corp, Taiwan

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 Moser[2], Derya Ilkaya[1], Daniel Kopp[1], Oliver Paul[2]
[1]Universität Freiburg, Germany; [2]Universität 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 Fowler[2], Reza Moheimani[2], Sam Behrens[1]
[1]CSIRO Energy Technology, Australia; [2]University of Newcastle, Australia

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
INVITED TALK: A SURVEY OF OLFACTORY DISPLAYS: MAKING AND DELIVERING SCENTS
Yasuyuki Yanagida
Meijo University, Japan

11:20 AM
IMPLEMENTATION OF OLFACTORY INTERACTION BETWEEN IMAGES AND SMELLS
Hyung-Gi Byun[4], Jeong-Do Kim[3], Sang-Goong Lee[1], Hae-Ryong Lee[2]
[1]Catholic University of Korea, Korea, South; [2]Electronics and Telecommunications Research Institute, Korea, South; [3]Hoseo University, Korea, South; [4]Kangwon National University, Korea, South

11:35 AM
SENSOR FAILURE MITIGATION BASED ON MULTIPLE KERNELS
Jordi Fonollosa, Alexander Vergara, Ramon Huerta
University of California San Diego, USA

11:50 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

12:05 PM
FRAGRANT MULTIMEDIA DISPLAY SYSTEM: PRESENTING ODOR DISTRIBUTION ON DISPLAY SCREEN
Haruka Matsukura, Tatsuhiro Yoneda, Hiroshi Ishida
Tokyo University of Agriculture and Technology, Japan

12:20 PM - 1:10 PM
3F Banquet Hall
LUNCH

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 Cheng[3], Chen-Tung Feng[3], Massood Zandi Atashbar[3], Kapseong Ro[3], Jai-Chul Song[1], Dongdoo Lee[2], Changwha Lee[2]
[1]Admotech Inc., Korea, South; [2]Induk Institute of Technology, Korea, South; [3]Western Michigan University, USA

B3P-J7
3-DIMENSIONAL AND DAMAGE-FREE NEUTRAL BEAM ETCHING FOR MEMS APPLICATIONS
Akira Wada[2], Tomohiro Kubota[2], Yuuki Yanagisawa[2], Batnasan Altansukh[2], Seiji Samukawa[2], Takahito Ono[2], Kazuhiro Miwa[1]
[1]BEANS Laboratory, Japan; [2]Tohoku University, Japan

B3P-J8
MEASUREMENT OF MATERIAL PROPERTIES FOR POLYSILICON THIN FILMS BY AN ELECTROSTATIC FORCE METHOD
Wei-Qing Zhang[2], Wei-Hua Li[1], Zai-Fa Zhou[1], Min-xia Jiang[1], Hai-Yun Liu[1], Qing-An Huang[1]
[1]Southeast University, China; [2]Southeast University & XiDian University, China

B3P-J9
TOWARDS A REAL TIME SENSOR FOR FOCUSING THROUGH SCATTERING MEDIA
Timothé Laforest[1], Arnaud Verdant[1], Antoine Dupret[1], Sylvain Gigan[2], François Ramaz[2]
[1]CEA, DRT, LETI, France; [2]Institut 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 Meng[2], Takeshi Hashishin[1], Jun Tamaki[2], Kazuo Kojima[2]
[1]Osaka University, Japan; [2]Ritsumeikan 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

B3P-K7
INCREASING THE SENSITIVITY AND SELECTIVITY OF METAL OXIDE GAS SENSORS BY CONTROLLING THE SENSITIVE LAYER POLARIZATION
Nicolas Dufour[4], Yoan Veyrac[2], Philippe Menini[3], Frederic Blanc[2], Chabane Talhi[2], Bernard Franc[2], Christian Ganibal[2], P. Menini[5], N. Dufour[6], Corinne Wartelle[6], Khalifa Aguir[1]
[1]IM2NP-CNRS, France; [2]LAAS-CNRS, France; [3]LAAS-CNRS / Paul Sabatier University, France; [4]LAAS-CNRS / Renault S.A.S., France; [5]Paul Sabatier University, France; [6]Renault 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 Kostesha, 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

B3P-L3
DEEP-BRAIN SILICON MULTIELECTRODES WITH SURFACE-MODIFIED PT RECORDING SITES
Gergely Márton[4], Zoltán Fekete[4], István Bakos[4], Gábor Battistig[3], Anita Pongrácz[4], Gábor Juhász[2], Péter Baracskay[1], István Bársony[5]
[1]Erawatch Bay Zoltán Nonprofit Ltd, Hungary; [2]Eötvös Loránd University, Hungary; [3]Institute of Technical Physics and Materials Science, RCNS, HAS, Hungary; [4]Research Center for Natural Sciences, HAS, Hungary; [5]Research 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 IMMOBILIZATIONER
Chen-Fu Lin[1], Ying-Zong Juang[1], Hann-Huei Tsai[1], Hsin-Hao Liao[1], Ping-Hong Chen[2], Mei-Jywan Syu[2], Chien-Cheng Fu[3], Ruey-Lue Wang[3]
[1]National Applied Research Laboratories, Taiwan; [2]National Cheng Kung University, Taiwan; [3]National 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 Cheng[2], Gernot Bahle[1], Paul Lukowicz[1]
[1]DFKI Kaiserslautern, France; [2]University of Passau, Germany

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 AUTHETICATING TOP-FERMENTED AND BOTTOM-FERMENTED BEERS AND PREDICTING THE ALCOHOLIC STRENGTH
Anna Grazia Mignani[1], Leonardo Ciaccheri[1], Andrea Azelio Mencaglia[1], Heidi Ottevaere[2], Edgar Eugenio Samano Baca[2], Hugo Thienpont[2]
[1]CNR IFAC, Italy; [2]Vrije 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 Todd[2], Erik Moro[1], Anthony Puckett[1]
[1]Los Alamos National Laboratory, USA; [2]University 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 Razquin[1], Carlos Ruiz Zamarreño[1], Francisco Muñoz[2], Ignacio Matias[1], Francisco Arregui[1]
[1]Universidad Pública de Navarra, Spain; [2]Universidad Pública de Navarra / Agrobiotechnology Institute CSIC/GN, Spain

B3P-M7
OPTIMIZED HYBRID MOEMS SENSORS BASED ON NOISE CONSIDERATIONS
Wilfried Hortschitz[1], Jörg Encke[1], Franz Kohl[1], Thilo Sauter[1], Harald Steiner[2], Michael Stifter[2], Franz Keplinger[2]
[1]Austrian Academy of Sciences, Austria; [2]Technische Universität Wien, Austria

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, Hongijn Fan
Nanyang Technological University, Singapore

B3P-M11
FIBER PH SENSOR BASED ON LONG PERIOD GRATINGS
Jiang-Chiou Mau[3], Guei-Ru Lin[3], Ming-Yue Fu[1], Wen-Fung Liu[2]
[1]Air Force Academy, Taiwan; [2]Feng Chia University, Taiwan; [3]Feng-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 Onodera[2], Nobuharu Mimura[1]
[1]Niigata University, Japan; [2]Tsuruoka National College of Technology, Japan

B3P-N2
A NOVEL GUIDING DEVICE FOR DISTAL LOCKING OF INTRAMEDULLARY NAILS
Meng-Shiue Lee[1], Sung-Yueh Wu[1], Tze-Hong Wong[2], Wensyang Hsu[1], Tien-Kan Chung[1]
[1]National Chiao Tung University, Taiwan; [2]National Taiwan University Hospital, Taiwan

B3P-N3
A REVERSIBLE MICRO MECHANICAL-LATCH SHOCK SWITCH BY EXTERNAL MAGNETIC FIELD
Yi-Chueh Shieh[2], Ruei-Pin Ma[2], Wensyang Hsu[2], Yu-Hsin Lin[1], Yu-Hsiang Tang[1]
[1]National Applied Research Laboratories, Taiwan; [2]National Chiao Tung University, Taiwan

B3P-N4
ACTIVE THERMAL COMPENSATION OF MEMS BASED GYROSCOPE
Sheng-Ren Chiu[1], Chung-Yang Sue[1], Chih-Hsiou Lin[1], Li-Tao Teng[1], Lu-Pu Liao[1], Yu-Wen Hsu[1], Yan-Kuin Su[2]
[1]Industrial Technology Research Institute, Taiwan; [2]National 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 Weilguni[1], Walter Smetana[1], Goran Radosavlevic[1], Johann Nicolics[1], Alex Hofmann[2], Werner Goebl[2]
[1]Technische Universität Wien, Austria; [2]University 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 Antlinger[2], Stefan Clara[2], Bernhard Jakoby[2], Roman Beigelbeck[1], Samir Cerimovic[3], Franz Keplinger[3]
[1]Austrian Academy of Sciences, Austria; [2]Johannes Kepler Universität in Linz, Austria; [3]Technische Universität Wien, Austria

B3P-N11
PROPERTIES OF THERMAL DEVICES AND SENSORS ON POROUS SILICON SUBSTRATES
Frieder Lucklum[2], Bernhard Jakoby[2], Alexander Schwaiger[1]
[1]E plus E Elektronik Ges.m.b.H., Austria; [2]Johannes Kepler Universität in Linz, Austria

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 Pang[1], Qiang Chen[1], Lirong Zheng[2]
[1]KTH Royal Institute of Technology, Sweden; [2]KTH Royal Institute of Technology & Fudan University, Sweden

B3P-O2
FLEXIBLE SOUND GENERATOR BASED ON THERMOACOUSTIC EFFECT
Yoshiki Nakajima, Takehiro Sugimoto
Japan Broadcasting Corporation, Japan

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 Univesity of Science and Technology, China

B3P-O6
PIEZOELCTRIC 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/ºC ROIC FOR CAPACITIVE-SENSOR SIGNAL-ACQUISITION APPLICATIONS
Raul Aragones, Joan Oliver, Carles Ferrer
Universitat Autònoma de Barcelona, Spain

B3P-O11
PIEZOELECTRIC ENERGY DROPLET HARVESTING AND MODELING
Tasneim 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 0.18μM 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 Yang[1], Bin Fang[1], Yuan Yan Tang[1], Jiye Qian[1], Xudong Qin[3], Wenhua Yao[2]
[1]College of Computer Science, China; [2]No. 22 Research Institute China Electronics Technology Group Corporation, China; [3]Zhengzhou 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

B3P-P3
MEASURING THE EFFECTIVENESS OF BEACON LOCATION BY DISTRIBUTION-ADAPTED GRID MEASUREMENT
Yuan-Chao Chou[2], Te-Chih Wang[2], Chao-Lung Ting[2], Ray-I Chang[2], Chia-Hui Wang[1]
[1]Ming Chuan University, Taiwan; [2]National 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 Kim[1], Cheoloh Kang[1], Hui-Sok Jung[2], Yeon-Mo Yang[2]
[1]Attached Institute of Electronics & Telecommunication Research Institute, Korea, South; [2]Kumoh 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

B3P-P11
UTILIZING A NETWORK OF FREQUENCY DISTURBANCE MONITORING SENSORS FOR LARGE DYNAMIC SYSTEM SYNTHESIS
Yin Lei[2], Reynaldo Nuqui[1], Yilu Liu[2]
[1]ABB Inc. USCRC, USA; [2]University of Tennessee, USA

B3P-Q1
LOW TEMPERATURE DEPOSITION OF DOPED POLYCRYSTALLINE SILICON AT ATMOSPHERIC PRESSURE AND ITS APPLICATION TO A STRAIN GAUGE
Teruki Naito[1], Nobuaki Konno[1], Takashi Tokunaga[1], Toshihiro Itoh[2]
[1]BEANS Laboratory, Japan; [2]Macro 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 Oh[2], Daeyoung Kong[2], Seongbo Seo[1], Dongyoung Kim[1], Hwamin Kim[1], ChanSeob Cho[2], Jonghyun Lee[2], Bonghwan Kim[1]
[1]Catholic University of Daegu, Korea, South; [2]Kyungpook 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 Schaur[2], Bernhard Jakoby[2], Gernot Kronreif[1]
[1]Austrian Center for Medical Innovation and Technology, Austria; [2]Johannes 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

B3P-Q8
CONCENTRATION OF ACOUSTIC WAVE BY MENTAL BACKING LAMINATION LAYERED ON EMBEDDED PZT*
Yu Chen[2], Nina Chen[1], Pengcheng Li[2], Bin Tan[2]
[1]Chongqing Nanfang Translators College Of SISU, China; [2]Sichuan University, China

B3P-Q9
ELECTROSTATIC FORCE DETECTION DURING ANODIC WAFER BONDING
Tamás Kárpáti[1], Andrea Edit Pap[1], Mária Ádám[1], János Ferencz[1], Péter Fürjes[1], Gábor Battistig[1], István Bársony[2]
[1]Institute of Technical Physics and Materials Science, RCNS, HAS, Hungary; [2]Research 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 Shi[2], Olfa Kanoun[1]
[1]Chemnitz Universitiy of Technology, Germany; [2]Technische 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 Univeristy, Taiwan

B3P-R1
COMPUTING PERCEPTION FROM SENSOR DATA
Payam Barnaghi[1], Frieder Ganz[1], Cory Henson[2], Amit Sheth[2]
[1]University of Surrey, United Kingdom; [2]Wright State University, USA

B3P-R2
PERFORMANCE OF LONG-WAVELENGTH QUANTUM WELL INFRARED PHOTODETECTOR FOCAL PLANE ARRAYS USING SIMPLIFIED BACKSIDE SELECTIVELY WET-ETCHING PROCESS
Shiang-Feng Tang[1], Ping-Kuo Weng[1], Yao-Tang Gao[1], Cheng Yuan Wu[1], Tzu-Chiang Chen[2], Yi-Lin Lu[2], Chia-Chia Huang[2]
[1]Chung-Shan Institute of Science and Technology, Taiwan; [2]National 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 Paramasivan[1], K. Mohaideen Pitchai[2], Madasamy Kaliappan[2], Madasamy Bhuvaneswari[2]
[1]Anna University, India; [2]National Engineering College, India

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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

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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 Nertherlands), 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

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 Uneversity, 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 Itoh[2], Eri Koyachi[2], Hiroaki Suzuki[2], Yuko Murata[1], Masakazu Murata[1]
[1]National Research Institute of Fisheries Science, Japan; [2]University 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 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 Kang[2], Supil Raina[2], Jim Davidson[2], Jin Hua Huang[1]
[1]National Tsing Hua University, Taiwan; [2]Vanderbilt University, USA

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 Chang[2], Kuo-Wei Cheng[2], Chih-Cheng Hsieh[2], Wen-Hsu Chang[1], Hann-Huei Tsai[1], Chin-Fong Chiu[1]
[1]National Applied Research Laboratories, Taiwan; [2]National Tsing Hua University, Taiwan

9:35 AM
A SINGLE-PHOTON AVALANCHE DIODE IN CMOS 0.5μM 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

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 Gong[1], Laura Ware[1], Steve Ray[1], Gary Ware[2], Brett Leida[2], Tim Ren[2], Phil London[2], Ashley Turza[1], David Way[1], Leon Glicksman[1], Joseph Paradiso[1]
[1]Massachusetts Institute of Technology, USA; [2]Schneider 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 Shigeta[2], Tatsuya Sasaki[2], Duong Minh Quan[2], Yoshihiro Kawahara[2], Rushi Vyas[1], Manos Tentzeris[1], Tohru Asami[2]
[1]Georgia Institute of Technology, USA; [2]University 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

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
INVITED TALK: BIOSENSING TYPOLOGIES FOR AGRICULTURAL ROBOTICS
Daniel Schmoldt
National Institute of Food & Agriculture, USA

9:20 AM
DIRECT AND DISCRIMINATIVE DETECTION OF ORGANOPHOSPHATE NEUROTOXINS FOR FOOD AND AGRICULTURE PRODUCTS
Jeffry Kirsch, Virginia Davis, Aleksandr Simonian
Auburn University, USA

9:35 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

9:50 AM
BIOSENSOR PLATFORM BASED ON STRESS-IMPROVED PIEZOELECTRIC MEMBRANE
Xu Lu[2], Zhuo Xu[2], Zhongyang Cheng[1]
[1]Auburn University, USA; [2]Xi'an Jiaotong University, China

10:05 AM
BIOSENSOR FOR DIRECT DETECTION OF PATHOGENS ON FRESH PRODUCE
Zhongyang Cheng, Kewei Zhang, S.Q. Li
Auburn University, USA

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
INVITED TALK: AUGMENTED ONE DIMENSIONAL NANOSTRUCTURED SENSOR ELEMENTS
Pooi See Lee, Nandan Singh
Nanyang Technological University, Singapore

9:20 AM
SURFACE IONIZATION BASED GAS DETECTION
Angelika Hackner, Gerhard Müller
EADS Innovation Works, Germany

9:35 AM
A POLARIMETRIC SENSOR BASED ON NANOPOROUS FREE STANDING MEMBRANES
Paolo Bettotti[1], Neeraj Kumar[1], Lorenzo Pavesi[1], Jesus Alvarez[2], Daniel Hill[2]
[1]Università degli Studi di Trento, Italy; [2]Universitat de València, Spain

9:50 AM
PDCS FUNCTIONALIZED CARBON NANOSTRUCTURE FOR GAS SENSING APPLICATION
Lung-Hao Hu[4], Rishi Raj[4], Aylin Karakuscu[2], Andrea Ponzoni[1], Giorgio Sberveglieri[1], Riccardo Ceccato[3]
[1]Università degli Studi di Brescia, Italy; [2]Università degli Studi di Brescia and CNR-IDASC, Italy; [3]Università degli Studi di Trento, Italy; [4]University of Colorado, USA

10:05 AM
ELECTROPHORETIC DEPOSITION OF SNO2 NANOPARTICLES IN NON-AQUEOUS MEDIUM FOR SENSOR APPLICATIONS
Goktug Gunkaya[1], Mevlut Gurbuz[2], Aydin Dogan[1]
[1]Anadolu University, Turkey; [2]Ondokuz Mayýs University, Turkey

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 Liu[2], Cheng Zhao[2], Ren Liu[1]
[1]Huakai Electronics Co. LTD., China; [2]Yangzhou 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. Reichel[3], Martin Heinisch[1], Bernhard Jakoby[1], Jan Vermant[2], Christine E.A. Kirschhock[2]
[1]Johannes Kepler Universität in Linz, Austria; [2]Katholieke Universiteit Leuven, Belgium; [3]University 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

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 Yuan[2], Se-Hyuk Yeom[2], Jae-Sung Lee[2], Hyun-Min Jeong[2], Byoung-Ho Kang[2], Md. Rajibur Rahaman Khan[2], Dae-Hyuk Kwon[1], Shin-Won Kang[2]
[1]Kyungil University, Korea, South; [2]Kyungpook 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, Gwiy-Sang Chung
University of Ulsan, Korea, South

C2P-K5
AN EXPERIMENTAL ANALYSIS OF THICK-FILM SOLID-STATE REFERENCE ELECTRODES
Marios Sophocleous[2], Monika Glanc-Gostkiewicz[2], John Atkinson[2], Eduardo Garcia-Breijo[1]
[1]Universidad de Valencia, Spain; [2]University of Southampton, United Kingdom

C2P-K6
SENSITIVITY OF SURFACE ACOUSTIC WAVE NO2 GAS SENSOR BASED ON RR-P3HT AT ROOM TEMPERATURE
Shengfa Liang[1], Dongmei Li[1], Xin Chen[1], Xiaojing Li[1], Ming Liu[1], Shuang Zhan[2]
[1]Institute of Microelectronics, Chinese Academy of Sciences, China; [2]Qingdao 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

C2P-K9
SYNTHESIS AND HYDROGEN GAS SENSING PROPERTIES OF PURE NIS AND AU-COATED NIS
Ella C. Linganiso[1], Bonex W. Mwakikunga[1], Sabelo D. Mhlanga[4], Neil Coville[4], B.T. Sone[2], M. Maaza[3]
[1]Council for Scientific and Industrial Research, South Africa; [2]Ithemba LABS-National Research Foundation, South Africa; [3]University of South Africa, South Africa; [4]University 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 Khoshaman[2], Paul Li[1], Behraad Bahreyni[1]
[1]Simon Fraser University, Canada; [2]University of British Columbia, Canada

C2P-K12
CALIBRATION OF MOX GAS SENSORS IN OPEN SAMPLING SYSTEMS BASED ON GAUSSIAN PROCESSES
Javier Gonzalez Monroy[1], Achim Lilienthal[2], Jose Luis Blanco[1], Javier González-Jimenez[1], Marco Trincavelli[2]
[1]Universidad de Málaga, Spain; [2]Örebro University, Sweden

C2P-K13
SENSOR RESPONSE TIME EVALUATIONS OF TRACE HYDROGEN GASEOUS SPECIES WITH PLATINUM USING KELVIN PROBE
Golla Eranna[1], Roman Paris[2], Theodor Doll[3]
[1]CEERI Pilani, India; [2]TU-Ilmenau, Germany; [3]University 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

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 Chang[2], Cagri Savran[2], Shadia Jalal[1], Daniela Matei[1]
[1]Indiana University-Purdue University Indianapolis, USA; [2]Purdue University, USA

C2P-L6
DETECTION OF ANTI-IGG USING CANTILEVER-TYPE RESONANT MICROSTRUCTURES VIBRATING IN IN-PLANE FLEXURAL MODES
Luke Beardslee[4], Shyam Aravamudhan[3], Christopher Carron[1], Paul Joseph[1], Oliver Brand[1], Stephen Heinrich[2], Fabien Josse[2]
[1]Georgia Institute of Technology, USA; [2]Marquette University, USA; [3]North Carolina A&T State University, USA; [4]University 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 Lee[2], Yo Han Choi[2], Mun Yeon Jung[3], Yong Duk Han[1], Hyun C. Yoon[1], Shuichi Shoji[4]
[1]Ajou University, Korea, South; [2]Electronics and Telecommunications Research Institute, Korea, South; [3]Electronics and Telecommunications Research InstituteETRI (ETRI), Korea, South; [4]Waseda University, Korea, South

C2P-L9
PEPTIDE INHIBITOR BASED QCM BIOSENSOR FOR RAPIDLY DETECTING PROTEIN KINASE ACTIVITY
Xiahong Xu[2], Yanbin Li[3], Jiang Zhou[1], Zhou Nie[1], Shouzhuo Yao[1]
[1]Hunan University, China; [2]Zhejiang University, China; [3]Zhejiang University & University of Arkansas, China

C2P-L10
COLORIMETRIC ASSAY FOR AMPLIFICATION AND DETECTION OF ESCHERICHIA COLI BACTERIA ON FLEXIBLE SUBSTRATE
Mohammadali Safavieh, Minhaz Uddin Ahmed, Mohammed Zourob
INRS-EMT / Universitié du Quebéc, Canada

C2P-L11
SIMULTANEOUS DETECTION OF ASCORBIC ACID AND SULFUR DIOXIDE ON A POLY(3,4-ETHYLENEDIOXYTHIOPHENE) COVERED GOLD ELECTRODE
Marion Schneider[1], Alexander Türke[1], Wolf-Joachim Fischer[1], Paul Kilmartin[2]
[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, Hirotoshi 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 Lin[1], H.-H. Tsai[1], Y.-Z. Juang[1], Ruey-Lue Wang[3], H.-W. Chu[3], Mei-Jywan Syu[2], Z.-K. Lin[2]
[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 Yang[3], Mang Ou-Yang[3], Yao-Fang Hsieh[2], Yu-Ta Chen[2], Jin-Chern Chiou[3], Jeng-Ren Duann[1], Ming-Hsui Tsai[1], Shun-De Wu[4], Cheng-Chung Lee[2]
[1]China Medical University, Taiwan; [2]National Central University, Taiwan; [3]National Chiao Tung University, Taiwan; [4]Taiwan Normal University, Taiwan

C2P-M4
SMART OPTICAL WIRELESS SENSOR FOR REAL TIME SWIMMERS FEEDBACK
Rabee M. Hagem[1], David V. Thiel[1], Steven O'Keefe[1], Nicholas Dahm[1], Andy Stamm[1], Thomas Fickenscher[2]
[1]Griffith University, Australia; [2]University of the Federal Armed Force, Germany

C2P-M5
OIL SPILL DETECTION SENSOR USING ARITIFICIAL 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 Stolkin[2], David Rees[2], Mohammed Talha[2], Ionut Florescu[1]
[1]Stevens Institute of Technology, USA; [2]University 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 Spacková[2], Nicholas Lynn Jr.[2], Jiri Homola[2], Pavel Kwiecien[1], Ivan Richter[1]
[1]Czech Technical University in Prague, Czech Republic; [2]Institute 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

C2P-N2
A COMPACT FIBER-OPTIC PROBE FOR TWO-DIMENSIONAL VECTOR VIBRATION MEASUREMENT
Tuan Guo[2], Jun Yi[2], Libin Shang[2], Fu Liu[2], Bai-Ou Guan[2], Jacques Albert[1]
[1]Carleton University, Canada; [2]Jinan University, China

C2P-N3
DESIGN, FABRICATION AND PERFORMANCE CHARACTERIZATIONS OF AN INTEGRATED DUAL-AXIS TUNING FORK GYROSCOPE
Sheng-Ren Chiu[1], Chung-Yang Sue[1], Chih-Hsiou Lin[1], Shih-Ting Lin[1], Shih-Chieh Lin[1], Yu-Wen Hsu[1], Yan-Kuin Su[2]
[1]Industrial Technology Research Institute, Taiwan; [2]National 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 Chung[1], Hou-Jen Chu[1], Tze-Hong Wong[2], Wensyang Hsu[1], Meng-Shiue Lee[1], Wen-Tuan Lo[1], Chia-Yuan Tseng[1]
[1]National Chiao Tung University, Taiwan; [2]National 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 Nie[3], Fabio Santagata[1], Thomas Moh[1], P.M. Sarro[1], Qing-An Huang[2]
[1]Delft University of Technology, Netherlands; [2]Southeast University, China; [3]Southeast 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

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 Wei[4], Fu-Hsiang Ko[3], Tai-Ping Sun[2], Hsuen-Li Chen[5], Yung-Bin Lin[1], Meng-Huang Gu[1], Chun-Chung Chen[1], Meiyi Li[4], Szu Ching Liu[4], Cho-Lun Hsu[4], Wen-Cheng Chiu[4], Jui-Min Liu[4], Yu-Sheng Lai[3], Chiahua Ho[4]
[1]National Center for Research on Earthquake Engineering, Taiwan; [2]National Chi Nan University, Taiwan; [3]National Chiao Tung University, Taiwan; [4]National Nano Device Laboratories, Taiwan; [5]National 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 0.18μM CMOS MEMS TECHNOLOGY
Chun-Chieh Wang, Long-Sheng Fan, Kuei-Ann Wen
National Chiao Tung University, Taiwan

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 Liang[1], Chun-Wen Cheng[3], Chung-Hsien Lin[2], Weileun Fang[1]
[1]National Tsing Hua University, Taiwan; [2]Taiwan Semiconductor Manufacturing Company Ltd., Taiwan; [3]Taiwan 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 Leonov[2], Martijn Goedbloed[1], Christine de Nooijer[1], Rob van Schaijk[1]
[1]Holst Centre / IMEC-nl, Netherlands; [2]Imec, 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 Stifter[1], Thilo Sauter[1], Wilfried Hortschitz[1], Franz Keplinger[2], Harald Steiner[2]
[1]Austrian Academy of Sciences, Austria; [2]Technische 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

C2P-O6
RECONFIGURABLE INTEGRATED WIDE-DYNAMIC-RANGE READ-OUT CIRCUIT FOR MOX GAS-SENSOR GRIDS PROVIDING LOCAL TEMPERATURE REGULATION
Fabrizio Conso[2], Marco Grassi[2], Piero Malcovati[2], Andrea Baschirotto[1]
[1]Università degli Studi di Milano-Bicocca, Italy; [2]Università degli studi di Pavia, Italy

C2P-O7
BULK-SI WITH POLY BUMP PROCESS SCHEME FOR MEMS SENSORS
Chun-Wen Cheng[3], Kai-Chih Liang[3], Chia-Hua Chu[2], Te-Hao Lee[2], Jiou-Kang Lee[2], Chung-Hsien Lin[2], Hsiao Chin Tuan[2], Alex Kalnitsky[2], Weileun Fang[1], David A Horsley[4]
[1]National Tsing Hua University, Taiwan; [2]Taiwan Semiconductor Manufacturing Company Ltd., Taiwan; [3]Taiwan Semiconductor Manufacturing Company Ltd. / National Tsing Hua University, Taiwan; [4]University of California, Davis, USA

C2P-O8
MINIATURIZED CORTEX COOLING DEVICE AND SYSTEM FOR HYPOTHERMIA THERAPY APPLICATION ON FREELY MOVING RAT
Chih-Wei Chang[3], Kuan-Chou Hou[3], Lei-Chun Chou[3], Jin-Chern Chiou[3], Jeng-Ren Duann[1], Yun-Wen Tsai[2]
[1]China Medical University, Taiwan; [2]National Cheng Kung University, Taiwan; [3]National Chiao Tung University, Taiwan

C2P-O9
AFM CANTILEVER WITH INTEGRATED PIEZOELECTRIC THIN FILM FOR MICRO-ACTUATION
Leema Rose Viannie[1], Sudeep Joshi[1], G.R. Jayanth[1], Konandur Rajanna[1], V. Radhakrishna[2]
[1]Indian Institute of Science, Bangalore, India; [2]Space 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 PHYNOX 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

C2P-O13
ENERGY HARVESTING BY ROTATION OF WHEEL FOR TIRE MONITORING SYSTEM
Kyoung Il Lee[1], Byung Jik Lim[1], Seong Hyun Kim[1], Yongtaek Hong[2]
[1]Korea Electronics Technology Institute, Korea, South; [2]Seoul 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 Kan[2], Jie-Ting Chen[2], Jung-Chuan Chou[2], Yi-Hung Liao[3], Shu-Ying Yang[1]
[1]Fortune Institute of Technology, Taiwan; [2]National Yunlin University of Science and Technology, Taiwan; [3]Transworld 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 Chen[2], Niang-Ying Huang[2], Yu-Hsien Chu Chu[2], Meng-Han Li Li[2], Ray-I Chang[2], Chia-Hui Wang[1]
[1]Ming Chuan University, Taiwan; [2]National 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 Srbinovski, Emanuel Popovici, Brendan O'Flynn
University College Cork, Ireland

C2P-P6
BLUETOOTH LOW ENERGY (BLE) BASED WIRELESS SENSORS
Elke Mackensen[1], Matthias Lai[1], Thomas M. Wendt[2]
[1]Hochschule Offenburg, Germany; [2]NewTec 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 Cardoso[2], Sérgio Faria[1], José Oliveira[1]
[1]Eneida, SA, Portugal; [2]University of Coimbra, Portugal

C2P-P10
ON THE RELATIONSHIP BETWEEN CUMMULATIVE 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 Serizawa[3], Tsutomu Yamada[3], Sumio Masuda[3], Susumu Abe[1], Shiro Kohno[2], Fumio Kaneko[2], Yasushi Takemura[3]
[1]Kanagawa University, Japan; [2]Nikkoshi Co., Ltd, Japan; [3]Yokohama 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 Grassi[1], Luca Picolli[1], Fabrizio Conso[1], Piero Malcovati[1], Gian Franco Regnicoli[2], Giuseppe Perretti[2]
[1]Università degli studi di Pavia, Italy; [2]Università degli Studi di Perugia, Italy

C2P-Q4
LOW-COST SENSOR TAPE FOR ENVIRONMENTAL SENSING BASED ON ROLL-TO-ROLL MANUFACTURING PROCESS
Nan-Wei Gong[1], Chiu-Yen Wang[2], Joseph Paradiso[1]
[1]Massachusetts Institute of Technology, USA; [2]National 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 Huang[1], Ting-Kai Tsai[1], Chih-Wei Hsieh[2]
[1]Huafan University, Taiwan; [2]Industrial 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

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 ±0.8°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 Hsu[1], Wen-Chien Chen[1], Ching-Chen Tu[1], Ching-Han Huang[2], Weileun Fang[1]
[1]National Tsing Hua University, Taiwan; [2]Touch Micro-System Technology Corp, Taiwan

C2P-R3
ON THE TRADE-OFF OF POWER CONSUMPTION AND TIME SYNCHRONIZATION QUALITY IN WIRELESS SENSOR NETWORKS
Pablo Briff[2], Ariel Lutenberg[2], Leonardo Rey Vega[2], Fabian Vargas[1]
[1]Pontifícia Universidade Católica do Rio Grande do Sul, Brazil; [2]University of Buenos Aires, Argentina

C2P-R4
FABRICATION OF THROUGH-SILICON-VIA (TSV) FOR ULTRA-HIGH VACUUM ATOM-OPTICS CELL
Ho-Chiao Chuang[2], Hsiang-Fu Li[2], Yun-Siang Lin[2], Yu-Hsin Lin[1]
[1]National Applied Research Laboratories, Taiwan; [2]National Taipei University of Technology, Taiwan

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 Rossem[2], Tom Kamperman[2], Johan Bomer[2], Albert van Den Berg[2], Séverine Le Gac[2], Michele Boiani[1]
[1]Max-Planck-Institut für molekulare Biomedizin, Germany; [2]Universiteit 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 Pavlidis[2], Jin-Jyh Su[2], Luke Beardslee[3], Oliver Brand[2], Josh Hagen[1], Nancy Kelley-Loughnane[1], Paul Leclaire[4]
[1]Air Force Research Laboratory, USA; [2]Georgia Institute of Technology, USA; [3]University at Albany-SUNY, USA; [4]University of Lille 1, France

1:55 PM
APPLICATION OF IONIC LIQUID DOPED IONOMERS FOR ORGANIC VAPOR SENSING
Hwall Min[2], Gokhan Hatipoglu[2], Srinivas Tadigadapa[2], Dean Tigelaar[1]
[1]NASA Glenn Research Center, USA; [2]Pennsylvania 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

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
MICROFLUIDIC CHIP BIO-SENSOR FOR DETECTION OF CANCER CELLS
Hesam Babahosseini, Vaishnavi Srinivasaraghavan, Masoud Agah
Virginia Polytechnic Institute and State University, USA

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
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

2:25 PM
IMPROVED DETECTION LIMITS OF BACTERIAL ENDOTOXINS USING NEW TYPE OF PLANAR INTERDIGITAL SENSORS
Abdul Rahman Mohd Syaifudin[2], Asif I. Zia[2], Subhas C. Mukhopadhyay[2], Pak Lam Yu[2], Chinthaka Gooneratne[1], Jürgen Kosel[1]
[1]King Abdullah University of Science and Technology, Saudi Arabia; [2]Massey University, New Zealand

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 Schell[1], Jean-Baptiste Kammerer[1], Luc Hébrard[1], Daniel Gounot[2], Elodie Breton[3], Loic Cuvillon[3], Michel de Mathelin[3]
[1]Université de Strasbourg / InESS, France; [2]Université de Strasbourg / LINC, France; [3]Université de Strasbourg / LSIIT, 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 Chen[2], Wei-Hung Hsu[2], Shih-Hsien Cheng[1], Yu-Ting Cheng[2]
[1]Industrial Technology Research Institute, Taiwan; [2]National 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 Buffa[1], Giacomo Langfelder[1], Antonio Longoni[1], Attilio Frangi[1], Ernesto Lasalandra[2]
[1]Politecnico di Milano, Italy; [2]STMicroelectronics, Italy

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 Beyaz[1], Brendan Hanrahan[2], Jeremy Feldman[2], Reza Ghodssi[2]
[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 Huber[1], Christian Schott[1], Oliver Paul[2]
[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-Khanh[2], Tetsuya Iizuka[2], Makoto Yamada[1], Osamu Morita[1], Kunihiro Asada[2]
[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

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
INVITED TALK: HIGH VOLUME PRODUCTION OF MAGNETIC SENSORS FOR THE AUTOMOTIVE MARKET
Christian Schott, Mykola Blyzniuk
Melexis Technologies SA, Ukraine

1:40 PM
NOVEL MAGNETIC NANOSTRUCTURED MULTILAYER FOR HIGH SENSITIVE MAGNETORESISTIVE SENSOR
Xiaolu Yin, Sy-Hwang Liou
University of Nebraska- Lincoln, USA

1:55 PM
LONG-RANGE MAGNETIC TRACKING
Pavel Ripka, Ales Zikmund, Jan Vcelak
Czech Technical University in Prague, Czech Republic

2:10 PM
MAGNETOELECTRIC SENSORS: SENSITIVE AND POTENTIALLY LOW-COST MAGNETIC SENSORS
Alan Edelstein[2], Jonathan Petrie[2], Gollapudi Sreenivasulu[1], Gopalan Srinivasan[1], Dwight Viehland[3], Jie Fang[3]
[1]Oakland University, USA; [2]US Army Research Laboratory, USA; [3]Virginia Polytechnic Institute and State University, USA

2:25 PM
EVALUATION OF SQUARE TYPE ELECTROMAGNETIC FIELD SCREEN IMPLEMENTATION ON INTERFERENCE EFFECTS IN MAGNETIC INDUCTION TOMOGRAPHY MODALITY
Zulkarnay Zakaria[1], Noor Alia Mohd Zain[1], Ibrahim Balkis[1], Sazali Yaacob[1], Muhd Saiful Badri Mansor[2], Ruzairi Abdul Rahim[2], Nor Muzakkir Nor Ayob[2]
[1]Universiti Malaysia Perlis, Malaysia; [2]Universiti Teknologi Malaysia, Malaysia

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 Universit, Taiwan)

1:10 PM
INVITED TALK: VIRTUALTOUCH: A FINGER GLOVE TO SIMULATE TOUCH SCREEN COMMANDS
Jun-Zhe Wang, Chun-Hao Wu, Yu-Chee Tseng
National Chiao Tung University, Taiwan

1:40 PM
PERFORMANCE EVALUATION OF CDMA-BASED WIRELESS SENSOR NETWORKS WITH LONG-THIN TOPOLOGIES
Ming-Wei Hsu, Hsin-Mu Tsai
National Taiwan University, Taiwan

1:55 PM
TOWARDS A GENERAL WIRELESS SENSOR NETWORK PLATFORM FOR OUTDOOR ENVIRONMENT MONITORING
Huang Chen Lee
National Chung-Cheng University, Taiwan

2:10 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

2:25 PM
WEIGHTED TARGETS PATROLLING MECHANISMS IN MOBILE WSNS
Chih-Yung Chang[2], Yi-Jung Ho[2], Chih-Yu Lin[2], Chia-Ling Ho[1]
[1]Taipei Chengshih University of Science and Technology, Taiwan; [2]Tamkang University, Taiwan

2:40 PM - 3:10 PM
Room 201
COFFEE BREAK

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 Nagareddy[2], Jonathan Goss[2], Nicholas Wright[2], Alton Horsfall[2], Sandra Hernández[1], Virginia Wheeler[1], L.O. Nyakiti[1], Rachael Myers-Ward[1], Charles Eddy Jr.[1], S.G. Walton[1], Kurt Gaskill[1]
[1]Naval Research Laboratory, USA; [2]Newcastle University, United Kingdom

3:25 PM
SELECTIVE GAS SENSING BY GRAPHENE
Sergey Rumyantsev[2], Guanxiong Liu[3], Radislav Potyrailo[1], Alexander Balandin[3], Michael Shur[2]
[1]GE Global Research, USA; [2]Rensselaer Polytechnic Institute, USA; [3]University of California, Riverside, USA

3:40 PM
GREEN ELECTRODE FOR PB^2+ 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

3:10 PM - 4:40 PM
C4L-B: Optical Sensors II
Room 101B
Session Chairs: Chengkuo Lee (National University of Singapore, Sigarpore), Stoyan Nihtianov (Delft University of Technology, the Nertherlands)

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 Chaitavon[2], Sarun Sumriddetchkajorn[2], Jiti Nukeaw[1]
[1]King Mongkut's Institute of Technology Ladkrabang, Thailand; [2]National 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

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 Wei[1], Chao Yue[1], Guo Qi Zhang[1], P.M. Sarro[1], Frits Dijksman[2]
[1]Delft University of Technology, Netherlands; [2]Universiteit 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 Mimoun[1], Arjen van der Horst[1], Ronald Dekker[1], Dennis van der Voort[2], Marcel Rutten[2], Frans van de Vosse[2]
[1]Delft University of Technology, Netherlands; [2]Eindhoven University of Technology, Netherlands

3:10 PM - 4:40 PM
C4L-D: Image / Optical Measurement
Room 101C
Session Chairs: Gregory Pandraud (Delft University of Technology, the Nertherlands), Cheng-Tang Pan (National Sun Yat-Sen University, Taiwan)

3:10 PM
VISION BASED HAPTIC MULTISENSOR FOR MANIPULATION OF SOFT, FRAGILE OBJECTS
Artashes Mkhitaryan, 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 Seo[2], Taishi Takasawa[2], Shoji Kawahito[2], Takehide Sawamoto[1], Tomoyuki Akahori[1], Zheng Liu[1]
[1]Brookman Technology, Inc., Japan; [2]Shizuoka University, Japan

3:55 PM
A COMPACT ALL FIBER REFRACTIVE INDEX SENSOR BASED ON MODAL INTERFERENCE
Jianghai Wo[1], Qizhen Sun[1], Xiaolei Li[1], Jiejun Zhang[1], Deming Liu[1], Perry Shum[2]
[1]Huazhong University of Science and Technology, China; [2]Nanyang 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

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
INVITED TALK: A NOVEL BIOMIMETIC INFOCHEMICAL COMMUNICATION TECHNOLOGY: FROM INSECTS TO ROBOTS
Marina Cole[2], Zoltan Rácz[2], Julian Gardner[2], Tim Pearce[1]
[1]University of Leicester, United Kingdom; [2]University of Warwick, United Kingdom

3:40 PM
BIOMIMETIC SONAR FOR BIOMIMETIC SLAM
Jan Steckel, Herbert Peremans
University of Antwerp, Belgium

3:55 PM
DESIGN ASPECTS OF A BIO-INSPIRED FLYING SENSOR NODE
Hans Goosen
Delft University of Technology, Netherlands

4:10 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

4:25 PM
PHOTOPOLYMERIZATION AND PHOTOSTRUCTURING OF MOLECULARLY IMPRINTED POLYMERS FOR SENSOR APPLICATIONS
Yannick Fuchs[3], Xuan-Anh Ton[3], Ihab Dika[2], Karsten Haupt[3], Andrew Mayes[4], Olivier Soppera[1]
[1]CNRS, France; [2]CNRS IS2M, France; [3]Université de Technologie de Compiègne, France; [4]University of East Anglia Norwich, United Kingdom

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
INVITED TALK: SENSING AS A SERVICE: A CLOUD COMPUTING SYSTEM FOR MOBILE PHONE SENSING
Xiang Sheng[2], Xuejie Xiao[2], Jian Tang[2], Guoliang Xue[1]
[1]Arizona State University, USA; [2]Syracuse University, USA

3:40 PM
3G-ASSISTED ROUTING IN VEHICULAR NETWORKS
Lingwei Zeng, Yanmin Zhu
Shanghai Jiao Tong University, China

3:55 PM
SEMANTIC SENSOR SERVICE NETWORKS
Wei Wang, Payam Barnaghi, Gilbert Cassar, Frieder Ganz, Pirabakaran Navaratnam
University of Surrey, United Kingdom

4:10 PM
TRAFFIC-AWARE TIME-CRITICAL SCHEDULING IN HEAVILY DUTY-CYCLED IEEE 802.15.4E FOR AN INDUSTRIAL IOT
Maria-Rita Palattella[3], Nicola Accettura[2], Mischa Dohler[1], Luigi Alfredo Grieco[2], Gennaro Boggia[2]
[1]Centre Tecnològic de Telecomunicacions de Catalunya, Spain; [2]Politecnico di Bari, Italy; [3]University of Luxembourg, Luxembourg

4:25 PM
ENERGY-EFFICIENT LOCATION TRACKING WITH SMARTPHONES FOR IOT
Lei Zhang[2], Jiangchuan Liu[2], Hongbo Jiang[1]
[1]Huazhong University of Science and Technology, China; [2]Simon Fraser University, Canada

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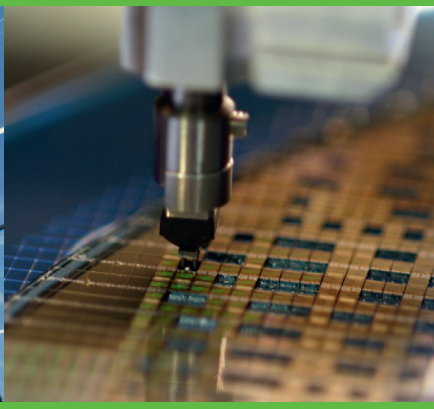

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