

DTIP 2019 – Technical Program

May 13th, 2019

08:45-09:15 Registration & Welcome Coffee

09:15-09:30 Conference Opening

09:30-10:30 Plenary Invited Talk – Session Chair: Stewart Smith

"Graphene Biosensors for Biomedical Analysis" by Pr. Tianhong CUI, University of Minnesota

10:30-10:40 Exhibitor introduction

10:40-11:10 Coffee Break

11:10-12:30 Parallel Technical Sessions

DESIGN & CHARACTERIZATION – SESSION CHAIR: YOSHIO MITA

- Measurement of key fluid parameters through an SOI CMOS multisensor MEMS chip
Yaser JAVED (CAE - Pakistan), Mohtashim MANSOOR (National University of Sciences and Technology - Pakistan), Zahid MEHMOOD (CAE - Pakistan), Ibraheem HANEEF (Air University - Pakistan)
- Reliability of etching angle estimation of MEMS resonators from electrical measurements
Alexis BRENES (ISEP - France), Bogdan VYSOTSKYI (CEA - France), Elie LEFEUVRE (University of Paris Sud - France), Jerome JUILLARD (CentraleSupélec - France)
- A Technique for Noncontact Measurement of Cavity Lengths and Deflection Shape in Optical MEMS Pressure Transducer
SHIVAM MISHRA (Homi Bhabha National Institute - India), BALASUBRAMANIAM R (Homi Bhabha National Institute AND Bhabha Atomic Research Centre - India), Sudhir CHANDRA (IIT Delhi - India)
- CFD Analysis of Aerodynamic Drag on Resonating MEMS Micro-Scanners
Russell FARRUGIA, Ivan GRECH, Duncan CAMILLERI, Joseph MICALLEF, Owen CASHA, Edward GATT (University of Malta - Malta)

MEMS SENSORS – SESSION CHAIR: MARTA RENCZ

- STEPS TOWARD INTEGRATION OF ZEOLITE-BASED THERMAL MASS GAS DETECTORS TO FORM ELECTRONIC NOSE
Matthieu DENOUAL (GREYC-ENSICAEN - France), Corentin JOREL, Didier ROBBES (Greyc - France), Julien GRAND (LCS - France), Yoshio MITA (Univ. Tokyo Japan - Japan)
- Thermal aspects of a micro thermal conductivity detector for micro gas chromatography
Hany A. ALI, Michele PIRRO, Patrick POULICHET, William CESAR, Frédéric MARTY, Imadeddine AZZOUZ, Martine GNAMBODOE-CAPOCHICHI, Elyes NEFZAOU, Tarik BOUROUINA (Université Paris Est - ESIEE Paris - France)
- UNIFORM COUPLED-CANTILEVER ARRAY DESIGN FOR PRESSURE MEASUREMENT WITH HIGH SENSITIVITY AND STABILITY
Haonan FENG, Linjun AN, Dong F. WANG (Jilin University - China), Toshihiro ITOH, Shimoyama ISAO (The University of Tokyo - Japan), Ryutaro MAEDA (UMEMSME/AIST Tsukuba - Japan)
- MEMS CALORIMETRIC SHEAR-STRESS SENSOR BASED ON FLEXIBLE SUBSTRATE
Léo CHAMARD, Alain GIANI (IES / University of Montpellier - France), Weiss JULIEN (University of Berlin - Germany), Philippe COMBETTE (IES / University of Montpellier - France)

12:30-14:00 Lunch

14:00-15:00 Parallel Technical Sessions

MEMS-BASED SYSTEMS – SESSION CHAIR: FRANCIS PRESSECQ

- Piezo-PUF: Physical Unclonable Functions for Vacuum-Packaged, Piezoelectric MEMS
Alabi BOJESOMO (NYU-Abu Dhabi - United Arab Emirates), Abe ELFADEL (Khalifa University - United Arab Emirates), Ozgur SINANOGLU (NYU-Abu Dhabi - United Arab Emirates)
- Dynamic weighted average in multisensor systems
Josue RIVERA VELAZQUEZ, Pascal NOUET, Frederick MAILLY (University of Montpellier - France)
- Genetic Algorithm for Electro-Mechanical Co-optimization of a MEMS Accelerometer Comprising a Mechanical Motion Pre-amplifier with a 2nd-order Sigma Delta Modulator
Chen WANG (Zhejiang University - China), Huafeng LIU (Huazhong University of Science and Technology - Belgium), Yuan WANG (University of Liege - China), Xiaoxiao SONG (Huazhong University of Science and Technology - China), Jian BAI (Zhejiang University - China), Michael KRAFT (KU Leuven - Belgium)

MODELLING & SIMULATION I – SESSION CHAIR: GEROLD SCHRÖPFER

- MODELING AND SIMULATION OF A MICRO-RESONATOR BASED RE-PROGRAMMABLE LOGIC GATE USING PARTIAL ELECTRODES
Sally AHMED, Ren LI, Xuecui ZOU (King Abdullah University of Science and Technology, KAUST - Saudi Arabia), Md Abdullah AL HAFIZ (University of Queensland - Australia), Hossein FARIBORZI (King Abdullah University of Science and Technology, KAUST - Saudi Arabia)
- Automated Fluid Domain Modelling for Perforated MEMS
Henry SCHMIDT, Jan MEHNER, David KRIEBEL, Benjamin ARNOLD (TU Chemnitz - Germany)
- Evaluation of a Bionical Piezoelectric Micro-Flapper for Enhanced Fluid Flow Applying Numerical Simulations and Wavelet Transforms
Regine BEHLERT, Gabriele SCHRAG (TU Munich - Germany)

15:00-15:50 Poster Introduction

ROOM BRUXELLES – SESSION CHAIR: HENRI CAMON

- CFD modelling of magnetic nanoparticle suspension in microfluidics
Peter PALOVICS, Németh MÁRTON, Marta RENCZ (Budapest University of Technology and Economics - Hungary)
- AN ADAPTATIVE RATIO-METRIC ANALOG-TO DIGITAL INTERFACE FOR WEAKLY COUPLED RESONANT SENSORS BASED ON MUTUALLY INJECTION-LOCKED OSCILLATORS
Ali MOSTAFA, Jerome JUILLARD, Pietro MARIS FERREIRA (GEEPS - CentraleSupélec - France)
- Modeling and Analysis of a Navigational, Lorentz-Force, Z-axis MEMS Magnetometer in a Standard Process
Abe ELFADEL, Wajih SYED, Daniel CHOI, Muneera AL-SHAIBAH (Khalifa University - United Arab Emirates), Sultan ALDAHMANI (United Arab Emirates Space Agency - United Arab Emirates), Zakriya MOHAMMED (New York University - United States), Boo Hyun AN (Khalifa University - United Arab Emirates)
- Steps towards large mylar membrane based multiple transducers, application to chemical adsorption sensors.
Didier ROBBES, Corentin JOREL, Matthieu DENOUAL (Greyc - France), Julien GRAND, Svetlana MINTOVA (LCS - France)
- Characterization method for integrated planar devices at low frequencies (up to 100 MHz)
D.A. OUMAR, M.I. BOUKHARI, M.A. TAHA, stephane CAPRARO, D. PIETROY (Laboratoire Hubert Curien - France), J.P. CHATELON (LT2C - France), J.J. ROUSSEAU (LabHC - France)
- Improved process for the manufacturing of back contact integrated cooling channels for concentrator solar cells
Gábor RÓZSÁS, Gabor TAKACS, Gyorgy BOGNAR, Balázs PLESZ (Budapest University of Technology and Economics - Hungary)
- A Comparative Study of Sensitivity Output Metrics for Detecting Mass Perturbation with a Trio Cantilever Array
Dong F. WANG, Jing HONG, Di ZHOU, Shuyi LIU, Jian YANG (Jilin University - China), Toshihiro ITOH (The University of Tokyo - Japan), Ryutaro MAEDA (UMEMSME/AIST Tsukuba - Japan)
- Optimization of ZnO down-shifting photoluminescent quantum dots thin film layers and their influence on single-crystal silicon solar cells.
Alvaro FLORES-PACHECO, Mario Enrique ALVAREZ-RAMOS (Universidad de Sonora - Mexico), Arturo AYON (Univ. of Texas at San Antonio, USA - United States)
- Design of a Ti-based microsensors for in vivo pressure monitoring
Gwenaél BECAN (Université Paris Sud - France), Bertrand BOUTAUD (MISTIC SAS - France), Fabien PARRAIN, Marion WOYTASIK, Elie LEFEUVRE (University of Paris Sud - France)

- A systematic and parametric analysis of etching characteristics of Si {111} in modified TMAH solution
Swarnaltha VEERLA, Venkata Narasimha Rao AVVARU (IIT Hyderabad - India), Xing YAN (Southeast University - China), Kumar Pandey ASHOK, Pal PREM (IIT Hyderabad - India)

15:50-16:50 Coffee Break

15:50-17:50 Poster Viewing / Exhibition

18:00-20:00 Sponsors Welcome Cocktail

May 14th, 2019

08:45-09:00 Registration

09:00-10:00 Plenary Invited Talk – Session Chair: Peter Schneider

"Physically-based virtual prototyping of MEMS: The 'virtual microtransducer fab' revisited" by Pr. Gabriele SCHRAG, Technical University of Munich

10:00-10:30 Coffee Break

10:30-12:10 Technical Sessions

MODELLING & SIMULATION II – SESSION CHAIR: DIMITRI GALAYKO

- Modelling of electromagnetic coupling in Micro-scale Electromagnetic Energy Harvester.
Andrii SOKOLOV (University College of Dublin - Ireland), Saibal ROY (Tyndall National Institute - Ireland), Michael Peter KENNEDY, Elena BLOKHINA (UCD - Ireland)
- Transient reduced order thermal model of LEDs with phosphor layer
Márton NEMETH, Zsolt KOHARI, János HEGEDUS, Gusztáv HANTOS, László POHL, Peter PALOVICS, András POPPE (Budapest University of Technology and Economics - Hungary)
- A multi-scale approach for the modeling of pressure sensors consisting of carbon nanotubes and a polymer
Michael SCHIEBOLD, Henry SCHMIDT, Jan MEHNER (TU Chemnitz, Germany - Germany)
- Macro-modeling library in Simscape for MEMS pressure sensors based on energy-flow paradigm
Thibault DELHAYE (Université catholique de Louvain - Belgium), Edmond CRETU (University of British Columbia - Canada), Laurent FRANCIS, Denis FLANDRE (Université catholique de Louvain - Belgium)
- An Accurate Method for Automated Reduced Order Modelling of Frequency Depending Fluid-Structure Coupling Effects in Modal Subspace
David KRIEBEL, Jan MEHNER (TU Chemnitz, Germany - Germany)

MATERIALS & PACKAGING – SESSION CHAIR: ARTURO AYON

- A Soft Composite Thermal Emitter with High Efficiency in Broadband Infrared Spectrum
Lang ZHOU, Zhuo LI, Xin WANG, Jinying ZHANG, Suhui YANG (Beijing Institute of Technology - China)
- Characterization of the activation of yttrium-based getter films by electrical measurements and ion-beam analyses
Clément BESSOUET, Sylvain LEMETTRE, Alain BOSSEBOEUF, Philippe COSTE (Center for nanoscience and nanotechnology - France), Hélène LECOQ, Thierry SAUVAGE (CEMHTI - France), Johan MOULIN (Univ. Paris Sud / CNRS - France)
- ZnS and ZnO nanocomposite for near white light tuning applications.
Aldo ZAZUETA RAYNAUD, Alejandra CORDOVA RUBIO, Rosendo LOPEZ-DELGADO, J Elias PELAYO CEJA, Roberto Carlos CARRILLO TORRES, Raul SANCHEZ ZEFERINO, Mario Enrique ALVAREZ-RAMOS (Universidad de Sonora - Mexico), Arturo AYON (Univ. of Texas at San Antonio, USA - United States)

- Highly controlled chemical functionalization process of PDMS for BIOMEMS applications
Etienne LABORIE, Alexandra PETRETO, Olivier LEFEBVRE, Maité DO VALE (C2N - France), Claire SMADJA (IGPS - France), Mehdi AMMAR (C2N - France), Elisabeth DUFOUR-GERGAM (Univ. Paris Sud / CNRS - France)
- Analysis of Forces during UV Glue Curing for Micro-Assembly Applications
Bhawmath TIWARI, Cédric CLEVY, PHILIPPE LUTZ (FEMTO-ST Institute - France)

12:15-13:45 Lunch

13:45-14:45 Technical Sessions

CHARACTERIZATION – SESSION CHAIR: ALAIN BOSSEBOEUF

- Influence of the porosity of PDMS foams on the performances of flexible capacitive pressure sensors
Sylvie BILENT, Thi Hong Nhung DINH, Emile MARTINCIC, Pierre-Yves JOUBERT (Université Paris Sud - France)
- Integrated Electro-optical wafer level dynamic characterization of MEMS
David MOLINERO, Shawn CUNNINGHAM (Wispry - USA)
- Impact of γ -rays and protons on integrated magnetic inductors
D.A. OUMAR, M.I. BOUKHARI, stephane CAPRARO, Sylvain GIRARD (Laboratoire Hubert Curien - France), D. PIETROY (LabHC - France), J.P. CHATELON (LT2C - France), J.J. ROUSSEAU (LabHC - France)

INERTIAL SENSORS SESSION CHAIR – SESSION CHAIR: ELIE LEFEUVRE

- Pillar-Shaped Electrodes for 3-axis Gold-Proof-Mass MEMS Capacitive Accelerometers
Ken ATSUMI, Shota OTOBE, Tatsuya KOGA, Takashi ICHIKAWA, DAISUKE YAMANE (Tokyo Institute of Technology - Japan), Shinichi IIDA (NTT Advanced Technology Corp - Japan), Hiroyuki ITO, Noboru ISHIHARA, Masato SONE, Katsuyuki MACHIDA, Kazuya MASU (Tokyo Institute of Technology - Japan)
- Towards the optimization of excitation waveform for electrostatic resonant sensors with enhanced frequency stability
Jerome JUILLARD (CentraleSupélec - France), Alexis BRENES (ISEP - France), Manon GOUSPY (GEEPS - France), Michael KRAFT (KU Leuven - Belgium)
- A New Gas Flow Gyroscope MEMS For Harsh Environment Applications
Marwan TEDJINI, Alexandre KECHAF, Alain GIANI, Philippe COMBETTE, Guillaume KOCK (IES - France), Caroline GAUTHIER-BLUM, Markus SCHNEIDER (ISL - France)

14:45-15:40 Poster Introduction

ROOM BRUXELLES – SESSION CHAIR: ALINA CISMARU

- FEM Modeling and experimental testing of stress concentration factor in MEMS
aurelio SOMA (Politecnico di Torino, Italy - Italy)
- Piezoresistive sensor array design for shoe-integrated, continuous body weight and gait measurement
Shahzad MUZAFFAR, Abe ELFADEL (Khalifa University - United Arab Emirates)
- Analysis of Thin Film Parylene-Metal-Parylene Device Based on Mechanical Tensile Strength Measurement
Seonho SEOK (C2N-Orsay - France), Jinseok KIM, HyungDal PARK (KIST - Korea, Republic of)
- DESIGN AND ANALYSES OF NEW CONFIGURED VERTICAL ELECTRO-THERMAL MICROACTUATORS
Rodica-Cristina VOICU (National Institute for R&D in Microtechnologies - Romania), Marius PUSTAN, Corina BIRLEANU (Technical University of Cluj-Napoca - Romania), Catalin TIBEICA (National Institute for R&D in Microtechnologies - IMT Bucharest - Romania)
- CMOS-compatible Mid-infrared MEMS thermopile integrated with an RTD for flame sensing in IoT application
Jaewoo LEE, Myeongseok KWAK, Kanghoon KIM, J. IM, J. H. KIM, S. E. MOON (Electronics and Telecommunications Research Institute - Korea, Republic of)
- Interfacial Stress Prediction of Tri-layer Packaging with Void in Adhesive
Wu ZHOU (University of Electronic Science and Technology of China), Lili CHEN (Chengdu Technology University - China), Xiaoping HE (China Academy of Engineering Physics), Liushan LAI, Bei PENG (University of Electronic Science and Technology of China), Peng PENG (Chengdu Technology University - China)

- MEMS Inertia Sensors in Semi-Standard Processes – Transiting from University’s Laboratory to a CMOS-MEMS Foundry
Chee Lap CHOW, Holden LI (Nanyang Technological University - Singapore)
- Thermal effect on mechanical properties of titanium oxide thin films for thermoelectric applications
Marius PUSTAN, Corina BIRLEANU, Violeta MERIE (Technical University of Cluj-Napoca - Romania), Sorina GARABAGIU, Daniel MARCONI, Lucian BARBU-TUDORAN (National Institute for Research and Development of Isotopic and Molecular Technologies - Romania), Rodica-Cristina VOICU (National Institute for R&D in Microtechnologies - Romania)
- Investigations of Aluminum Nitride based piezoelectric MEMS
Martin STIEBING (Technical University of Chemnitz - Germany)
- Computational Modeling of 3D Metamaterial Wire Arrays for Terahertz operation
Juan Adrian ZEPEDA-GALVEZ, Clarissa VAZQUEZ-COLON, Arturo AYON (University of Texas at San Antonio - United States)

15:40-16:40 Coffee Break

15:40-17:15 Poster Viewing/Exhibition

17:30-23:00 Social Event

May 15th, 2019

09:00-09:15 Registration

09:15-10:15 Technical Sessions

ACTUATORS – SESSION CHAIR: JAN MEHNER

- Planar MEMS variable optical attenuators (VOAs) with linear attenuation-voltage characteristics
Dooyoung HAH (Abdullah Gul University - Turkey)
- Design, fabrication and characterization of a buckled beam actuator for micro-displacement applications
Zhichao SHI (Laboratoire Roberval, Université de Technologie de Compiègne - France), David BOUVILLE, Emile MARTINCIC, Johan MOULIN, Elie LEFEUVRE (University of Paris Sud - France), Frédéric LAMARQUE (Roberval, UTC - France)
- Design of a Micropump Based on an Industrial Microphone Manufacturing Process
Martin SEIDL, Gabriele SCHRAG (Technical University of Munich - Germany), Wolfgang KLEIN, Matthias VOBL, Ulrich KRUMBEIN (Infineon Technologies AG - Germany)

MEMS RESONATORS – SESSION CHAIR: DONG F. WANG

- Process-Voltage-Temperature Analysis of a CMOS-MEMS Readout Architecture
Pietro MARIS FERREIRA, Joao R. O. MARTINS, Ali MOSTAFA, Jerome JUILLARD (GeePs - CentraleSupélec - France)
- Patterning PZT thin films using Reactive Ion Beam Etching for Piezo MEMS, RF MEMS resonator and filter applications
Robinson JAMES, Yannick PILLOUX (Plasmatherm - United States)
- A Feasibility Study on Piezoelectric MEMS Lateral Bulk Acoustic Wave Resonators including Thermal Effect
Mounira BENGASHIER, Ivan GRECH, Owen CASHA, Russell FARRUGIA, Barnaby PORTELLI, Edward GATT (University of Malta - Malta)

10:15-10:45 Coffee Break

10:45-12:05 Technical Sessions

MODELLING & SIMULATION III – SESSION CHAIR: JÉRÔME JUILLARD

- TRANSIENT RESPONSE OF MINIATURIZED PIEZORESISTIVE SENSORS FOR SIDE-ON PRESSURE SHOCKWAVE
Patrick PONS (LAAS-CNRS - France)
- EMBG Magnetostatic Wave Band Stop Resonators
Alina CISMARU, Martino ALDRIGO, Sergiu IORDANESCU, Catalin PARVULESCU (IMT - Bucharest - Romania),
Emanuela PROIETTI, Giovanni SARDI, Romolo MARCELLI (CNR-IMM Roma - Italy)
- Reconfigurable X-shaped THz Metamaterials employing Quantum Dots
Clarissa VAZQUEZ-COLON, Juan Adrian ZEPEDA-GALVEZ, Arturo AYON (Univ. of Texas at San Antonio, USA)
- Semi-Analytical Method for the Extraction of the System Parameters in Application to Kinetic Energy Harvesters.
Andrii SOKOLOV, Michael Peter KENNEDY (University College Dublin - Ireland), Oskar OLSZEWSKI (Tyndall National
Institute, University College Cork - Ireland), Elena BLOKHINA (UCD - Ireland)

ENERGY HARVESTING - SESSION CHAIR: HOLDEN LI

- Towards a Semi-analytical Model of a Tapered Piezoelectric Energy Harvester with an Arbitrary Proof-mass
Wajih SYED, Abe ELFADEL (Khalifa University - United Arab Emirates)
- Electrical Characterization of Textile-Based Enzymatic Biofuel Cell for Energy Harvesting Interface Circuit
Seonho SEOK, Elie LEFEUVRE (University of Paris Sud - France), Jungyul PARK (Sogang university - Korea, Rep. of)
- Design of a MEMS electrostatic kinetic energy harvester and its Bennet conditioning circuit in integrated
technologies.
Philippe BASSET (Université Paris-Est - France), Dimitri GALAYKO (LIP6 - France), Mohamed Amin BEN HASSANA
(University of Carthage - Tunisia), Abdelkrim BESSAAD (Sorbonne Université - France), Paola CARULLI (ESIEE Paris
- France), Hatem SAMAALI, Fehmi NAJAR (University of Carthage - Tunisia)
- An Electrostatic Vibrational MEMS Energy Harvester of Large Power Recover Effectiveness over 92%
Hiroyuki MITSUYA, Hisayuki ASHIZAWA (Saginomiya Seisakusho Inc. - Japan), Hiroaki HOMMA (The university of
Tokyo - Japan), Gen HASHIGUCHI (Shizuoka universty - Japan), HIROSHI TOSHIYOSHI (The Univeristy of Tokyo -
Japan)

12:10-12:30 Closing Session

12:30-14:00 Lunch

14:30-18:00 Visit of Laboratory & Facilities (pre-registration is required)

- 14:30: Departure from Conference Center by public transportation (Guided)
- 15:30: Arrival at C2N laboratory – Visit of clean room and facilities
- 17:30: Departure from C2N laboratory and return to downtown Paris by public transportation