



Technical programme

WEDNESDAY 1 APRIL 2009

07:30 - 09:30 Registration

09:30 - 09:40 Opening Session

Bernard Courtois, CMP, Grenoble, France

Tiziano+Botticelli+Tintoretto room

09:40 - 10:20 Invited talk I: **SILICON CARBIDE AS A MATERIAL FOR BIOMEDICAL MICROSYSTEMS**

Christian A. Zorman, *Case Western Reserve Univ., Cleveland, Ohio, USA*

Chair: Jean Michel Karam, *MEMSCAP, Bernin, France*

Tiziano+Botticelli+Tintoretto room

10:25 - 11:45 Session 01: **Mechanical simulation**

Chair: Tarik Bourouina, *ESIEE, Noisy-le-Grand, France*

Mascagni+Verdi+Puccini room

10:25 [1005] - CHARACTERIZATION AND MODELING OF 3-D VIBRATION MODES OF A MICROMACHINED U-SHAPED CANTILEVER
John Ojur Dennis, Waddah Abdelbagi Talha, Nor Hisham B Hamid, *Univ. Tekn. PETRONAS, Malaysia*

10:45 [1032] - LUMPED MODELING OF A NOVEL RF MEMS DOUBLE-DISK RESONATOR SYSTEM
Christopher Grinde, *Vestfold Univ. College, Norway*; Knut Harald Nygaard, *Oslo Univ. College, Norway*; Tor Fjeldly, *Norwegian Univ. of Science and Technology, Norway*

11:05 [1081] - MECHANICAL MODELLING OF CAPACITIVE RF MEMS SHUNT SWITCHES
Romolo Marcelli, Andrea Lucibello, Giorgio De Angelis, Emanuela Proietti, Daniele Comastri, *CNR-IMM Roma, Italy*

11:25 [1090] - GAS DAMPING EFFECT ON THIN VIBRATING GOLD PLATES: EXPERIMENTS AND MODELING
Giorgio De Pasquale, Aurelio Somà, *Politecnico di Torino, Italy*; Timo Veijola, *Helsinki Univ. of Technology, Finland*

11:45 - 13:00 Lunch

13:00 - 14:40 Session 03: **Bio-MEMS**

Chair: Andrew Richardson, *Lancaster University, UK*

Mascagni+Verdi+Puccini room

13:00 [1008] - EFFECTS OF CHANNEL SURFACE FINISH ON BLOOD FLOW IN MICROFLUIDIC DEVICES
David Allen, Simon Prentner, Silvia Marson, Lee Larcombe, Karl Jenkins, *Cranfield Univ., UK*; Monika Saumer, *Fachhochschule Kaiserslautern, Germany*

13:20 [1002] - HYDRODYNAMIC SEPARATION OF CELLS UTILIZING INSULATOR-BASED DIELECTROPHORESIS
Chun-Ping Jen, *National Chung Cheng Univ., Taiwan*; Ching-Te Huang, Hsin-Yuan Shih, *National Chung Cheng Univ., Taiwan*

13:40 [1011] - 3D INTEGRATED SENSOR FOR BIOMOLECULES BY USING RF-MEMS TECHNOLOGIES

10:25 - 11:45 Session 02: **Assembly technologies**

Chair: Hsiharng Yang, *National Chung Hsing U., Taiwan*

Tiziano+Botticelli+Tintoretto room

10:25 [1053] - PLATFORM TECHNOLOGY FOR FORM FACTOR EQUIVALENT MICROSYSTEMS DERIVED FROM COTS COMPONENTS
Erik Jung, Mathias Minkus, Karl Friedrich Becker, *Fraunhofer IZM, Germany*

10:45 [1072] - INVESTIGATION OF KEY TECHNOLOGIES FOR SYSTEM-IN-PACKAGE INTEGRATION OF INERTIAL MEMS
Norman Marengo, *Fraunhofer ISIT, Germany*; Giorgio Allegato, *ST Microelectronics, Italy*; Hannes Kostner, *Datacon Technology, Austria*; Wilfred Gal, *Fico, Netherlands*; Andrea Conte, *SAES Getters, Italy*; Krzysztof Malecki, *Wroclaw Univ. of Technology, Poland*; Wolfgang Reinert, Stephan Warnat, Peter Lange, Sven Gruenzig, *Fraunhofer ISIT, Germany*; Gerhard Hillmann, *Datacon Technology, Austria*; Sara Guadagnuolo, *SAES Getters, Italy*; Kazimierz Friedel, *Wroclaw Univ. of Technology, Poland*

11:05 [1097] - FABRICATION AND CHARACTERIZATION OF A HYBRID VALVE FOR MICROFLUIDIC APPLICATIONS
Giuseppina Simone, *National Nanotechnology Laboratory, Italy*; Giuseppe Sardella, *Silicon Biosystems Spa, Italy*; Irma Disegna, Silvano Tori, *Olivetti-jet Spa, Italy*; Nicolò Manaresi, Gianni Medoro, *Silicon Biosystems Spa, Italy*; Gerardo Perozziello, *Teknologisk Institut, Denmark*

11:25 [1013] - A RELIABILITY TEST ON PBGA PACKAGING THROUGH PIEZORESISTIVE STRESS SENSOR
Chih-Hung Liu, Hsien Chung, Der-Wei Yang, *National Defense Univ., Taiwan*; Kun-Fu Tseng, *Chin-Min Inst. of Tech., Taiwan*; Ben-Je Lwo, *National Defense Univ., Taiwan*

13:00 - 15:00 Special Session: **3D integration**

Chair: Peter Schneider, *Fraunhofer IIS/EAS, Dresden, Germany*

Tiziano+Botticelli+Tintoretto room

13:00 [1093] - 3D INTEGRATION TECHNOLOGIES
Peter Ramm, Armin Klumpp, Josef Weber, *Fraunhofer IZM Munch, Germany*; Maaik M. V. Taklo, *SINTEF, Norway*

13:20 [1085] - 3D STACKED MEMS AND ICS IN A MINIATURIZED SENSOR NODE
Maaik M Visser Taklo, Nicolas Lietaer, Hannah Tofteberg, *SINTEF, Norway*; Timo Seppänen, *Infineon Technologies SensoNor, Norway*; Peter Ramm, *Fraunhofer IZM, Munich, Germany*; Werner Weber, *Infineon Technologies, Germany*

13:40 [1025] - THROUGH-SILICON VIA TECHNOLOGIES FOR INTERCONNECTS IN RF MEMS



Jui-Hung Chien, Yuan-Hua Chu, Shau-Yin Tseng, *ITRI, Taiwan*; Cheng-Hao Yang, Ping-Hei Chen, *NTU, Taiwan*

Jian Zhu, Fang Hou, *Nanjing Electronic Devices Institute, China, China*; Yuanwei Yu, Chen Chen, *Nanjing Electronic Devices Institute/National Key Lab. of Monolithic Integrated Circuits and Modules, China*

14:00 [1037] - DESIGN AND OPTIMISATION OF A MICROGRIPPER: DEMONSTRATION OF BIOMEDICAL APPLICATIONS USING THE MANIPULATION OF OOCYTES
Belen Solano, Andrew J. Gallant, David Wood, *Univ. of Durham, UK*

14:00 [1084] - DESIGN ISSUES OF BAW EMPLOYMENT IN 3D INTEGRATED SENSOR NODES
Josef Prainsack, Markus Dielacher, Martin Flatscher, Thomas Herndl, Rainer Matischek, *Infineon Technologies, Austria*; Joern Stolle, *Fraunhofer-Institut fuer Integrierte Schaltungen IIS Institutsteil Entwurfsautomatisierung EAS, Germany*; Werner Weber, *Infineon Technologies, Germany*

14:20 [1079] - 3D FIELD FOCUSING AND DEFOCUSING GEOMETRIES FOR CELL TRAPPING ON A CHIP
Olivier Francais, Guillaume Mottet, Alain Ayina, Bruno Le Pioufle, *Satie - Biomis, France*

14:20 [1094] - WIRELESS ACTIVITY MONITOR USING 3D INTEGRATION
Ric van Doremalen, Piet van Engen, Wouter Jochems, Ad Rommers, Geert Maas, *Philips Applied Technologies, Eindhoven, The Netherlands*; Shi Cheng, Anders Rydberg, *Univ. of Uppsala, Sweden*; Thomas Fritsch, Jürgen Wolf, *FhG/IZM, Berlin, Germany*; Walter De Raedt, Roelof Jansen, Philippe Müller, *IMEC, Leuven, Belgium*; Eduardo Alarcon, Mihai Sanduleanu, *Philips Research, Eindhoven, The Netherlands*

14:40 [1087] - DESIGN ASPECTS OF 3D INTEGRATION OF MEMS-BASED SYSTEMS
Peter Schneider, Sven Reitz, Jörn Stolle, Roland Martin, *Fraunhofer Institute for Integrated Circuits, Germany*

15:00 - 15:30 Coffee break

15:30 - 16:50 Session 05: Thermal evaluation

Chair: Aurelio Soma, *Politecnico di Torino, Italy*
Mascagni+Verdi+Puccini room

15:30 [1017] - OFFSET COMPENSATION OF INTEGRATED THERMAL FLOW SENSORS BY MEANS OF SPLIT HEATER MICROSTRUCTURES
Paolo Bruschi, Michele Dei, *Dipartimento di Ingegneria dell'Informazione, Italy*; Massimo Piotto, *IEIIT-Pisa-CNR, Italy*

15:50 [1051] - EXPERIMENTAL STUDY OF HEAT SINK PERFORMANCES USING COPPER FOAMS FABRICATED BY ELECTROFORMING
Reiyu Chein, Hsiharn Yang, Chijay Lu, *National Chung Hsing Univ., Taiwan*; Tsung-Hsun Tsai, *Wufeng Institute of Technology, Taiwan*

16:10 [1055] - THERMAL MANAGEMENT INTEGRATION FOR MICROFLUIDICS APPLICATIONS
Thierry Camps, Bertrand Marty, Josiane Tasselli, Antoine Marty, Denis Lagrange, *LAAS-CNRS, Univ. of Toulouse, France*

16:30 [1095] - FREQUENCY RESPONSE OF AN ACCELEROMETER BASED ON THERMAL CONVECTION
Alain Giani, Benoit Charlot, Philippe Combette, Alexandra Garraud, Frederique Pascal-Delannoy, *Univ. Montpellier 2, France*

15:30 - 17:10 Session 06: Manufacturing

Chair: Kazuo Sato, *Nagoya Univ., Japan*
Tiziano+Botticelli+Tintoretto room

15:30 [1001] - FABRICATION OF PATTERNED ARRAY OF ALUMINA-METAL COAXIAL NANORODS
Che-Wei Hsu, Gou-Jen Wang, *National Chung-Hsing Univ., Taiwan*

15:50 [1004] - NEW FABRICATION METHOD OF MICRO-PYRAMIDAL VERTICAL PROBE ARRAY FOR PROBE CARDS
Tsung-Hung Lin, Cheng-Kong Chao, Ching-Kong Chao, *National Taiwan Univ. of Science and Technology, Taiwan*; Hsiharn Yang, *National Chung Hsing Univ., Taiwan*

16:10 [1018] - U-SHAPED FIBER OPTICS FABRICATED WITH A FEMTOSECOND LASER AND INTEGRATED INTO A LOCALIZED PLASMON RESONANCE BIOSENSOR
Wei-Te Wu, Chun-Ping Jen, Tzu-Chien Tsao, Chien-Hsing Chen, Jaw-Luen Tang, Wan-Yun Li, Lai-Kwan Chau, *National Chung Cheng University, Chia-Yi, Taiwan*
Wei-Chih Shen, Chung-Wei Cheng, *ITRI South, Tainan, Taiwan*

16:30 [1034] - MICRO-THERMOFORMING OF NANOSTRUCTURED POLYMER FILMS: A NEW BONDING METHOD FOR THE INTEGRATION OF NANOSTRUCTURES IN 3-DIMENSIONAL CAVITIES
Markus Heilig, Stefan Giselbrecht, Andreas Guber Matthias Worgull, *Forschungszentrum Karlsruhe GmbH, Germany*

16:50 [1006] - HOT PUNCHING ON AN 8 INCH SUBSTRATE AS AN ALTERNATIVE TECHNOLOGY TO PRODUCE HOLES ON A LARGE SCALE
Bastian Rapp, Matthias Worgull, *Forschungszentrum Karlsruhe GmbH, Germany*

17:10 - 17:30 Coffee break


17:30 - 18:30 Poster session: introduction

All posters will be introduced by one slide in maximum 3 minutes each.

 Chair: David Allen, *Cranfield Univ., Bedford, UK*
Tiziano+Botticelli+Tintoretto room

- 17:30 [1012] - MECHANICAL PROPERTIES STUDY OF NANO-SCALE THIN FILMS ON THE NOVEL PADDLE CANTILEVER USING OPTICAL INTERFEROMETER WITH FOUR STEP PHASE-SHIFTING METHOD
Ming-Tzer Lin, Chi-Jia Tong, *National Chung Hsing Univ., Taiwan*; Yan-Ting Chen, Kuan-Jung Chung, *National Changhua Univ. of Education, Taiwan*; Jiong-Shiun Hsu, *National Measurement Laboratory, ITRI, Taiwan*
- 17:33 [1015] - HEAT DISSIPATION PERFORMANCE FOR THE APPLICATION OF LIGHT EMITTING DIODE
Ming-Tzer Lin, Chao-Chi Chang, Ray-Hua Horng, *National Chung Hsing Univ., Taiwan*; De-Shau Huang, *Nan Kai Univ., Taiwan*; Chi-Ming Lai, *National Cheng kung Univ., Taiwan*
- 17:36 [1019] - WIRELESS CONTROL OF MICROCHIP CAPILLARY ELECTROPHORESIS WITH A MOBILE PLATFORM
Arturo Ayon, *Univ. of Texas at San Antonio, USA*
- 17:39 [1020] - INFLUENCE OF TRUNCATED MICRO-PYRAMID CAVITY FOR LED PACKAGING HEAT DISSIPATION
Ruey Fang Shyu, *National Formosa Univ., Taiwan*; Hsiarnng Yang, Jui-Yu Liao, *National Chung Hsing Univ., Taiwan*
- 17:42 [1023] - BROADBAND BANDSTOP FILTERS USING PERIODIC FRACTAL EBG STRUCTURES ON CPW TRANSMISSION LINE
Jianming Huang, Zhongliang Deng, Yiheng Zhang, *Beijing Univ. of Posts and Telecommunications, China*
- 17:45 [1036] - MEMS PACKAGING PROCESS BY FILM TRANSFER USING ANTI-STICKING LAYER
Sebastien Brault, *IEF, France*
- 17:48 [1039] - RELIABILITY ASPECTS OF MECHANICAL INTERLOCKING BOND INTERFACES WITH NANOSTRUCTURED SILICON GRASS
Mike Stubenrauch, Morris Schwandt, Siegmund Hecht, Martin Hoffmann, *Ilmenau Univ. of Technology, Germany*
- 17:51 [1041] - RF MEMS FRONT-END RESONATOR FILTERS, VARACTORS, AND A SWITCH USING A CMOS-MEMS PROCESS
Jan Erik Ramstad, Kristian Gjertsen Kjelgaard, Baard Eirik Nordboe, Oddvar Soeraasen, *Univ. of Oslo, Norway*
- 17:54 [1045] - HEAT-BASED RECOVERY MECHANISM TO COUNTERACT STICKION OF RF-MEMS SWITCHES
Alena Repchankova, *Univ. of Trento, Italy*; Jacopo Iannacci, Benno Margesin, *Fondazione Bruno Kessler, Italy*
- 17:57 [1049] - MODELING OF AN ELECTROSTATIC TORSIONAL MICROMIRROR FOR LASER PROJECTION SYSTEM
Eleonora Marchetti, Emilio Volpi, Francesco Battini, Luca Bacciarelli, Luca Fanucci, *Univ. of Pisa, Italy*; Marco De Marinis, SensorDynamics AG, Italy; Ulrich Hofmann, Fraunhofer Institute for Silicon Technology, Germany
- 18:00 [1064] - COMPLEX OPTICAL MICROSTRUCTURE FABRICATED USING INCLINED IMMERSION LITHOGRAPHY
Tong-Yu Chang, Hsiarnng Yang, *National Chung Hsing Univ., Taiwan*; Chao-Hsiung Wu, Ching-Kong Chao, *National Taiwan Univ. of Science and Technology, Taiwan*
- 18:03 [1067] - EFFECT OF DIMENSIONAL AND MATERIAL PROPERTY UNCERTAINTIES ON THERMAL MICROACTUATOR RESPONSE USING PROBABILISTIC METHODS
Babak Khayatzaadeh Safaie, Mahnaz Shamshirsaz, Mohsen Bahrami, *Amirkabir Univ. of Technology, Iran*
- 18:06 [1071] - PROPERTIES OF M-AFM PROBE AFFECTED BY NANOSTRUCTURAL METAL COATINGS
Atsushi Hosoi, Motohiro Hamada, Akifumi Fujimoto, Yang Ju, *Nagoya Univ., Japan*
- 18:09 [1077] - DESIGN OPTIMIZATION AND STAMPER FABRICATION OF LIGHT GUIDING PLATES USING SILICON BASED MICRO-FEATURES
Jyh-Cheng Yu, Pei-Kai Hsu, *National Kaohsiung First Univ. of Science and Technology, Taiwan*
- 18:12 [1088] - ANALYSIS OF MATERIAL PROCESSING OF SOL-GEL DERIVED PZT TO THE PERFORMANCE OF MICROACCELEROMETER APPLICATIONS
Jyh-Cheng Yu, Jun-Xiang Wu, *National Kaohsiung First Univ. of Science and Technology, Taiwan*
- 18:15 [1031] - DESIGN OF CWDM MULTIPLEXERS BASED ON SERIES COUPLED RING RESONATORS: ANALYSIS AND POTENTIAL OF MEMS TECHNOLOGIES
Maurine Malak Karam, Tarik Bourouina, *ESIEE, France*; Ahmed Hisham Morshed, Khaled Hassan, Dina Khalil, *Ain Shams Univ., Faculty of Engineering, Egypt*; Hanan Anis, *Univ. of Ottawa, Canada*
- 18:18 [1052] - MEMS MULTI-PHYSICS APPROACH DESIGN AND DEVICE FABRICATION FOR ELECTRICAL METROLOGY APPLICATIONS
François Blard, Alexandre Bounouh, *LNE, France*
- 18:21 [1050] - PATTERNING OF POROUS ALUMINA FOR INTEGRATED HUMIDITY SENSORS
László Juhász, László Oláh, János Mizsei, *BUTE-BME, Budapest, Hungary*
- 18:24 [1038] - INVESTIGATIONS ON MICRO-DISPLACEMENT BASED TECHNIQUES FOR RESONANCE FREQUENCY CONTROL OF MINIATURE MONOLITHIC RESONATORS DEDICATED TO MAGNETIC RESONANCE IMAGING
Jean-Clément Guisiano, *IEF/U2R2M, France*; Souhil Megherbi, *IEF, France*; Simon Lambert, Luc Darrasse, Jean-Christophe Ginefri, *U2R2M, France*
- 18:27 [1054] - MEMS THREE-AXIS ACCELEROMETER: DESIGN, FABRICATION AND APPLICATION OF MEASURING HEART WALL MOTION
Craig Lowrie, *Heriot-Watt Univ., UK*

18:30 – 19:30 Poster viewing
19:00 – 19:30 Cocktail



THURSDAY 2 APRIL 2009

09:00 - 10:20 Session 07: Multiphysics simulation I

Chair: Pascal Nouet, *LIRMM, Montpellier France*

Mascagni+Verdi+Puccini room

- 09:00 [1059] - COMPRESSIBLE SQUEEZE-FILMS IN VIBRATING MEMS STRUCTURES AT HIGH FREQUENCIES
Timo Veijola, *Helsinki Univ. of Technology, Finland*
- 09:20 [1066] - ELECTRO-THERMAL MODELING OF LARGE-SURFACE OLED
Erno Kollar, Imre Zolomy, Andras Poppe, *BUTE-DED, Budapest, Hungary*
- 09:40 [1046] - 3D FEM SIMULATIONS OF PERFORATED MEMS GAS DAMPERS
Timo Veijola, *Helsinki Univ. of Techno., Finland*
- 10:00 [1060] - OPTIMAL DESIGN ANALYSIS OF ELECTROTHERMAL MICROACTUATORS
Mahnaz Shamsirsaz, *Amirkabir Univ. of Technology, Iran*

09:00 - 10:20 Session 08: Devices & components I

Chair: Alain Bosseboeuf, *IEF, Paris-Orsay, France*

Tiziano+Botticelli+Tintoretto room

- 09:00 [1028] - A CLOVER SHAPED SILICON PIEZORESISTIVE MICROPHONE FOR MINIATURIZED PHOTOACOUSTIC GAS SENSORS
Christopher Grinde, Per Ohlckers, *Vestfold Univ. College, Norway*; Michal Mielnik, Geir Uri Jensen, Alain Marc C Ferber, Dag Thorstein Wang, *SINTEF ICT, Oslo, Norway*
- 09:20 [1047] - A MEMS-BASED MULTI-SENSOR SYSTEM FOR ATTITUDE DETERMINATION
Boris Alandry, Norbert Dumas, Laurent Latorre, Frederick Mailly, Pascal Nouet, *LIRMM, Montpellier France*
- 09:40 [1048] - THE ACTIVE BRIDGE: AN ALTERNATIVE TO THE WHEATSTONE BRIDGE FOR EFFICIENT CONDITIONNING OF RESISTIVE MEMS SENSORS
El Mehdi Boujamaa, Norbert Dumas, Laurent Latorre, Frederick Mailly, Pascal Nouet, *LIRMM, Montpellier France*
- 10:00 [1091] - FIELD EMISSION DISPLACEMENT GAUGE FOR MICROELECTROMECHANICAL RESONATORS
Benoit Charlot, *IES Montpellier, France*; Kiyotaka Yamashita, Winston Sun, Hiroshi Toshiyoshi, *IIS Univ. of Tokyo, Japan*

10:20 - 10:50 Coffee break

10:50 - 12:10 Session 09: Micro power generation

Chair: Benoit Charlot, *IES Montpellier, France*

Mascagni+Verdi+Puccini room

- 10:50 [1070] - CAPACITIVE VIBRATION ENERGY HARVESTING WITH RESONANCE TUNING
Giorgio De Pasquale, Eugenio Brusa, Aurelio Somà, *Politecnico di Torino, Italy*
- 11:10 [1035] - EVALUATION OF PARAMETERS FOR ELECTROSTATIC ENERGY HARVESTERS
Cuong Phu Le, Einar Halvorsen, *Vestfold Univ. College, Norway*
- 11:30 [1044] - DEVELOPMENT OF NEAR HERMETIC SILICON/GLASS CAVITIES FOR PACKAGING OF INTEGRATED LITHIUM MICRO BATTERIES
Robert Hahn, Krystan Marquardt, Michael Töpper, Martin Wilke, Peter Semionyk, Herbert Reichl, *Fraunhofer IZM, Berlin, Germany* Martin Bleichert, Marco Lehmann, *TU-Berlin, Germany*
- 11:50 [1098] - A BIDIRECTIONAL VIBRATION POWERED ELECTRIC ENERGY GENERATOR BASED ON AN ELECTROSTATIC TRANSDUCTION USING AN IN-PLANE OVERLAP PLATE (IPOP) MECHANISM
Ayyaz Mahmood Paracha, Philippe Basset, Frédéric Marty, Tarik Bourouina, *ESIEE/ESYCOM, Paris, France*; Dimitri Galayko, *Univ. Pierre et Marie Curie-LIP6, Paris, France*

10:50 - 11:50 Session 10: Failure analysis

Chair: Michel Brillouet, *CEA/LETI, Grenoble, France*

Tiziano+Botticelli+Tintoretto room

- 10:50 [1056] - ELECTROMECHANICAL AND ADHESION ISSUES IN CONTACT-MODE MEMS DEVICES
K. Komvopoulos, *Univ. of California, USA*
- 11:10 [1082] - RELIABILITY OF RF MEMS SWITCHES DUE TO CHARGING EFFECTS AND THEIR CIRCUITAL MODELLING
Romolo Marcelli, Giorgio De Angelis, Andrea Lucibello, Emanuela Proietti, *CNR-IMM Roma, Italy*; Giancarlo Bartolucci, *Univ. of Roma "Tor Vergata", Italy*; George Papaioannu, *Univ. of Athens, Solid State Physics Section, Greece*; Benno Margesin, Flavio Giacomozzi, *FBK-irst, Italy*; François Deborgies, *ESA-ESTEC, Netherlands*
- 11:30 [1065] - MEAN STRESS EFFECT ON MECHANICAL FATIGUE OF MEMS UNDER ALTERNATE LOADS
Giorgio De Pasquale, Alberto Ballestra, Aurelio Somà, *Politecnico di Torino, Italy*

12:10 - 12:50 Invited talk II: NEMS: THE CHALLENGE OF COMBINING MICROSYSTEMS AND NANOTECHNOLOGY FOR NEW MARKET OPPORTUNITIES

Michel Brillouet, *CEA/LETI, Grenoble, France*

Chair: Reza Ghodssi, *U. of Maryland, College Park, USA*

Tiziano+Botticelli+Tintoretto room

12:50 - 13:10 Vendor session *Tiziano+Botticelli+Tintoretto room*

Chair: Bernard Courtois, *CMP, Grenoble, France*

CMP - SOFTMEMS

13:10 - 14:30 Lunch



14:30 - 15:50 Session 11: Multiphysics simulation II

Chair: Timo Veijola, *Helsinki Univ. of Technology, Finland*
Mascagni+Verdi+Puccini room

- 14:30 [1074] - ROLE OF NONLINEARITY AND CHAOS ON RF MEMS STRUCTURAL DYNAMICS
Eugenio Brusa, *Politecnico di Torino, Italy*; Mircea Gh. Munteanu, *Univ. of Udine, Italy*
- 14:50 [1089] - TOWARDS DESIGN-FOR-TESTABILITY FOR DIGITAL MICROFLUIDICS
Tao Xu, Krishendu Chakrabarty, *Duke Univ., Durham, USA*
- 15:10 [1016] - DESIGN AND SIMULATION OF LIGHTWEIGHT MIRROR FOR SPACE APPLICATION
Yu Chuan Lin, Long Jeng Lee, Shenq Tsong Chang, Ting Ming Huang, Chi Hung Hwang, *Instrument Technology Research Center, Hsinchu, Taiwan*
- 15:30 [1096] - ACTIVE COMPONENTS EMBEDDED INTO ORGANIC BOARDS - ACCELERATED DESIGN BY MEANS OF FINITE ELEMENT SIMULATION AND MICRO DEFORMATION MEASUREMENTS
Johann-Peter Sommer, Bernd Michel, *Fraunhofer ENAS, Micro Materials Center, Germany*

14:30 - 15:50 Session 12: Integrated processes I

Chair: Matthias Worgull, *FZK, Karlsruhe, Germany*
Tiziano+Botticelli+Tintoretto room

- 14:30 [1061] - RAPID THERMAL BONDING OF POLYMER MICROFLUIDIC DEVICES ASSISTED BY CORONA DISCHARGE
S.H. Ng, Y.X. Wu, Zhenfeng Wang, Z.P. Wang, *SIMTech, Singapore*
- 14:50 [1073] - REPLIC MOLDING OF POLYMERIC COMPONENTS FOR MICROSYSTEMS
Paula Obreja, Dana Cristea, Adrian Dinescu, Raluca Gavrilă, *National R&D Institute for Microtechnologies, Romania*
- 15:10 [1086] - DESIGN AND DEVELOPMENT OF A LATCHING MICRO OPTICAL SWITCH
Ernest J Garcia, Marc A. Polosky, *Sandia National Laboratories, USA*
- 15:30 [1063] - AMBIENT HOT EMBOSsing OF POLYCARBONATE, POLY-METHYL METHACRYLATE AND CYCLIC OLEFIN COPOLYMER FOR MICROFLUIDIC APPLICATIONS
A.G.G.Toh, Zhenfeng Wang, Z.P. Wang, *SIMTech, Singapore, Singapore*

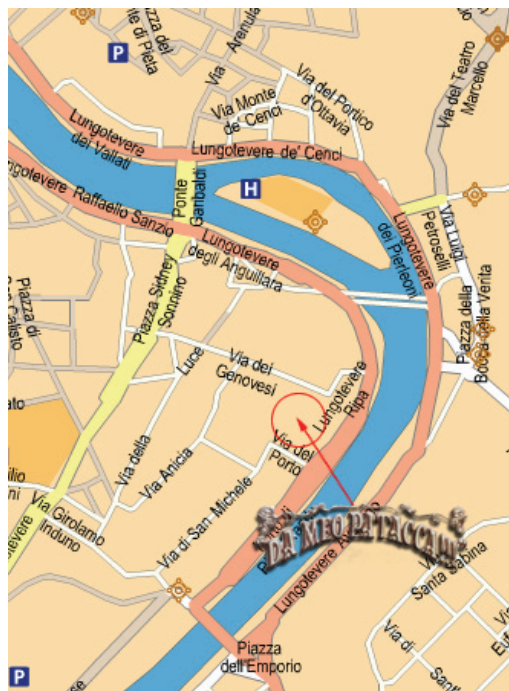
15:50 – 20:00 Free time in Rome.

20:00 – 22:00 Dinner in a typical restaurant named “Da Meo Patacca”. Housed in an ancient stable in the heart of Trastevere, the left-bank section of Rome and it sprawls out into the entire Piazza De’ Mercanti.



Da Meo Patacca
Piazza de' Mercanti, 30
Tel.: 065816198 - 58331086
Fax: 06 5812552

http://www.ristorantedameopatacca.com/chi_siamo.asp





FRIDAY 3 APRIL 2009

09:00 - 10:40 Session 13: **Characterization**

Chair: Wolfgang Reinert, *Fraunhofer Institute for Silicon Technology, Itzehoe, Germany*
Mascagni+Verdi+Puccini room

- 09:00 [1075] - DESIGN AND CHARACTERIZATION OF TEMPERATURE-ROBUST PIEZORESISTIVE MICRO-PRESSURE SENSOR WITH DOUBLE-WHEATSTONE-BRIDGE STRUCTURE
Hsun-Heng Tsai, Chi-Chang Hsieh, Cheng-Wen Fan, Young-Chang Chen, Wei-Te Wu, *National Pingtung Univ. of Science & Technology, Taiwan*
- 09:20 [1027] - MEMS CANTILEVER SENSOR FOR NON-DESTRUCTIVE METROLOGY WITHIN HIGH-ASPECT-RATIO MICRO HOLES
Erwin Peiner, *TU Braunschweig, Germany*; Lutz Doering, *PTB Braunschweig, Germany*
- 09:40 [1007] - USE OF A PDMS SPRING ELEMENT FOR INKJET PRINTING APPLICATIONS
David Allen, Sameer Bargir, *Cranfield Univ., UK*
- 10:00 [1062] - TEMPERATURE DEPENDENT FRACTURE TOUGHNESS OF GLASS FRIT BONDING LAYERS
Kerstin Nötzold, Jürgen Graf, *Robert Bosch GmbH, Germany*; Christian Dresbach, Bianca Böttge, *Fraunhofer Institute for Mechanics of Materials, Germany*
- 10:20 [1040] - IDENTIFICATION OF MECHANICAL DEFECTS IN MEMS USING DYNAMIC MEASUREMENTS FOR APPLICATION IN THE PRODUCTION MONITORING
Ronny Gerbach, Matthias Ebert, Joerg Bagdahn, *Fraunhofer Institute for Mechanics of Materials, Germany*; Geert Brokmann, Thomas Hein, *CiS Forschungsinstitut für Mikrosensorik und Photovoltaik GmbH, Germany*

10:40 - 11:00 Coffee break

12:00 - 13:30 Lunch

09:00 - 10:40 Session 14: **Devices & components II**

Chair: Krish Chakrabarty, *Duke Univ., Durham, USA*
Tiziano+Botticelli+Tintoretto room

- 09:00 [1030] - FABRICATION OF INTERNAL DRIVEN MICRO CENTRIFUGAL FORCE PUMP BASED ON SYNCHRONOUS MICRO MOTORS WITH POLYMER MAGNET ROTORS
Andreas Waldschik, Stephanus Büttgenbach, *Institute for Microtechnology, TU Braunschweig, Germany*
- 09:20 [1033] - WHAT HAPPENS TURNING A 250µM THIN PIEZO-STACK SIDEWAYS?
Sandy Zähringer, Norbert Schwesinger, *Technische Univ. München, Germany*
- 09:40 [1043] - EVALUATION OF A MICROFLUIDIC SENSOR FABRICATED ON POLYMERIC MATERIAL
Anastasios Petropoulos, Konstantinos Kontakis, *NCSR Demokritos - IMEL, Greece*; Grigoris Kaltsas, *TEI of Athens, Greece*; Evangelos Gogolides, *NCSR Demokritos - IMEL, Greece*
- 10:00 [1078] - DIGITAL CONCENTRATION GRADIENT GENERATORS ON A MICROFLUIDIC CHIP
Olivier Francais, Bruno Le Piouffle, *Satie - Biomis, France*
- 10:20 [1092] - SILICON-BASED CAPACITIVE LOAD CELL FOR TENSILE LOAD MEASUREMENT
Yunho Kim, Hyungchul Kim, Kyung-Han Jung, Junghoon Lee, *Seoul National Univ., South Korea*

11:00 - 12:20 Session 16: **Integrated processes II**

Chair: Zhenfeng Wang, *SIMTech, Singapore*
Tiziano+Botticelli+Tintoretto room

- 11:00 [1009] - HIGH PERMITTIVITY FERROELECTRIC ACTUATORS FOR RADAR APPLICATIONS
Arturo Ayon, *Univ. of Texas at San Antonio, USA*
- 11:20 [1022] - SILICON MICROFLUIDIC CHANNELS AND MICROSTRUCTURES BY ONE STEP PHOTOLITHOGRAPHY
Prem Pal, Kazuo Sato, *Nagoya Univ., Japan*
- 11:40 [1029] - THE DEVELOPMENT OF THE HIGH PERFORMANCE PARALLEL-STACKED RF SPIRAL INDUCTOR
David King Jair, Ming Chun Hsieh, *Kun Shan Univ., Taiwan*
- 12:00 [1042] - NOVEL DESIGN OF AN RF-MEMS TUNEABLE CAPACITOR BASED ON ELECTROSTATICALLY INDUCED TORSION
Parisa Ture Savadkoohi, Benno Margesin, Sabrina Colpo, *Fondazione Bruno Kessler (FBK), MemSRaD Division, Italy*