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PROGRAM

EUROPEAN MICRO AND NANO SYSTEMS 2004 (EMN04)

First Issue
Advances & Applications for Micro & Nano Systems
20-21 October 2004

ESIEE
Noisy le Grand (PARIS)
Ecole Supérieure d'Ingénieurs en
Electronique et Electrotechnique

A satellite event of EMN04:
MIMOSA Workshop 19 October 2004

Aim of the EMN04

While advances in micro and nanoscale science have been going on for more than two decades and have led to exciting discoveries and inventions, we are now at the cross-roads where one could envision to built systems based on micro and nanoscale technologies.

ASME (French Section) and ASME Nanotechnology Institute, in association with TIMA and ESIEE and with the sponsorship of several French Societies and Institutions thought that a meeting would help Europe to tackle the challenge to design, synthesize and integrate micro and nanostructures to develop functional systems. The idea of the European Micro and Nano Systems 2004 (EMN04) was born. The aim of EMN04 is to bring together a multidisciplinary group of scientists, engineers and users to discuss issues related to research, fabrication and commercialization of independent or combined micro and nanosystems.

We look forward to welcoming you at EMN04.

B. COURTOIS
TIMA Laboratory
Chair, EMN04 Scientific Committee



EMN04 Noisy le Grand (PARIS) 20-21 October 2004

The main topics to be discussed during the meeting are the following:

Industrial aspects

- Commercialization of μ & n systems
- Information technology based applications
- Biological technology based applications
- Energy technology based applications
- Medical technology based applications

Research aspects

- a. μ & n materials
 - i. silicon
 - ii. polymers
 - iii. ceramics
 - iv. material testing and characterization
- b. μ & n fabrication/manufacturing
 - i. ultrasonic
 - ii. erosion
 - iii. machining
 - iv. printing
- c. μ & n mechanics / devices
 - i. fluidics
 - ii. actuators
 - iii. robotics
 - iv. motors
 - v. optics
- d. μ & n design / integration
 - i. self-assembly
 - ii. computational tools
 - iii. multiscale modeling
 - iv. use of μ for n exploration
- e. μ & n electronics
 - i. circuits and architectures
 - ii. molecular electronics, spintronics, magnetics
 - iii. tubes and wires
 - iv. scaling

The programme includes 5 invited talks, 46 oral presentations and 31 poster presentations. Oral contributions consist of 15 min. presentations followed by 5 min. discussion. The posters will be presented in one session Wednesday 20 October, 18:30-19:30. They will be mounted during the lunch time. Authors are expected to be at their posters during the posters viewing session. The posters will be removed by the end of the EMN04. EMN04 received a total of 100 submissions.

Contribution to NANOPOLIS

NANOPOLIS is a portal (www.nanopolis.net) including thousands of screens of nanotechnology content for the benefit of research, education and industry. Multimedia presentations of selected contributions to EMN04 will be included in Nanopolis.

Organizing Committee

Dr. Daniel H. FRUMAN, Consultant Engineer, ASME France, Chair

Prof. Mohamed AKIL, ESIEE, France
Prof. Skandar BASROUR, TIMA Labs, Grenoble, France
M. Xavier BOUTIN, Club nano-microtechnologie, SAGEM SA, France
M. Jean FABRI, SFM, France
Prof. Didier GEIGER, Univ. Paris XII Val-de-Marne, France
Mr. Pierre-Alain HACQ, Executive Director, AFM, France
Mr Raj MANCHANDA, ASME NI, U.S.A.
Prof. Albert TRUYOL, CNISF, France

Scientific Committee

Dr. Bernard, COURTOIS, TIMA Labs, Grenoble, France, Chair

Prof. Gary H. BERNSTEIN, Univ. of Notre Dame, USA
Prof. Tarik BOUROUINA, ESIEE, France
Dr. Dominique CORNUEJOLS, ESRF, France
Dr. David ELATA, TECHNION-I.I.T, Israel
Dr. Michael FORSHAW, Univ. College London, U.K
Prof. Christoph GERBER, Univ. of Basel & IBM Rueschlikon, Switzerland
Prof. Giuseppe IANNACCONE, Univ. of Pisa, Italy
Prof. Hilbert von LÖHNEYSSEN, Univ. Karlsruhe, Germany
Prof. Arun MAJUMDAR, UC Berkeley, USA
Prof. Aric MENON, Mikroelektronik Centret (MIC), Denmark
Prof. Hans MOOIJ, Delft Univ. of Technology, Netherlands
Prof. Francesco PEREZ MURANO, IMB-CNM, Spain
Dr. Peter (Chung-Yu) WU, National Chiao Tung Univ., Taiwan

Invited talks

"MAGNETIC QCA SYSTEMS"

by *Prof. Gary H. BERNSTEIN*, Univ. of Notre Dame, USA

The field-coupled QCA architecture has emerged as a candidate for providing local interconnectivity for nanodevices, and offers the possibility to perform very dense, high speed, and low power computing in an altogether new paradigm. Magnetic interactions between nanomagnets are sufficiently strong to allow room-temperature operation. We are investigating the fabrication and testing of arrays of nanomagnets for this purpose, and have found that by tailoring their shapes, strong coupling can be observed. This paper will present recent work of the Notre Dame group on magnetically-coupled QCA.

"HEAT AND CHARGE TRANSPORT AT INTERFACES AND THEIR IMPLICATIONS IN ENERGY CONVERSION DEVICES"

by *Prof. Arun MAJUMDAR*, UC Berkeley, USA

When materials are devices are nanostructured, interfaces can play a dominant role in their behavior. In this paper, I will review some basic concepts of electron and phonon transport acrossmetal-nonmetal and metal-molecule interfaces. Based on this, I will discuss their implications on utilizing the science in developing high-performance solid-state energy conversion devices.

"ORGANIC THIN FILM TRANSISTORS: TOWARDS THE SINGLE LAYER SCALE"

by *Dr. Gilles HOROWITZ*, Univ. Denis Diderot, Paris, France

The fabrication of thin-film transistors with organic semiconductors is currently attracting much interest worldwide. These devices open the way to low-cost, large area, flexible electronics. Another issue is the possibility of reducing the size of the devices down to the molecular size. In the present communication, we will review the current state of the art in the field of organic thin-film transistors. Emphasis will be made on the use of single layer molecular films, which constitute a first step towards molecular scale.

"ELECTRONIC TRANSPORT THROUGH SINGLE MOLECULES"

by *Prof. H.v. LÖHNEYSEN*, Univ. of Karlsruhe & Forschungszentrum, Germany

Electronic transport measurements through single π -conjugated molecules can be realized using mechanically controlled break junctions to couple thiol end groups of the molecules to two gold electrodes. We have investigated transport through π -conjugated molecules which differ by their spatial symmetry and π -conjugated connectivity. The current voltage characteristics (*IV*-s) of the metal-molecule-metal system reflect the spatial symmetry and topology of the molecules with respect to the direction of current flow indicating that transport occurs indeed through single molecules. Fluctuations in the *IV*-s are a manifestation of the variation of level spacings of the system, which depend crucially on the bonding between thiol end groups and Au electrodes. Controlled chemical alteration of π -conjugation offers the possibility to tailor the electronic transport through single molecules. For the future electronics, carbon nanotubes are the prime candidates. Recent progress in the controlled deposition of nanotubes between electrodes and separation of metallic and semiconducting nanotubes is reported.

"PERSPECTIVES AND CHALLENGES IN NANOSCALE DEVICE MODELING"

by *Prof. G. IANACCONE*, Univ. of Pisa, Italy

The development of nanoelectronic devices, including both latest generation MOSFETs and alternative nanodevices, can benefit significantly from adequate modeling tools, enabling researchers to optimize device structures and evaluate their performances. Recent results and perspectives in nanodevice modeling are presented.

Information

More information on the meeting is available from:

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Insurance

While the meeting organisation makes every effort in order to ensure the safety and well being of all the meeting participants and associates, the organizers cannot take responsibility for any accident or damage that may occur during the meeting.

Proceedings

Proceedings of EMN04 will be available at the meeting as part of the registration fee. If you cannot attend, you may still order Proceedings at the price of 35 Euros (order form available on the conference web site, the sending of the Proceeding package will be done after the meeting, and if the payment is received).

EMN04 Noisy le Grand (PARIS) 20-21 October 2004

Venue

The meeting will be held the **20 and 21 of October 2004**, at **ESIEE**, an engineering school situated at **Noisy le Grand**, a close neighbourhood of Paris which can be reached by RER from Châtelet Station in about 20 minutes. Participants can either reside in Paris or near ESIEE where reasonably priced hotels are available.

Exhibition

During the two days meeting, a special exhibition of equipments, products and scientific publications will be organized. If you plan to exhibit, please contact the Organizing Committee Chair.

Lodging

Early reservation is recommended.

Where to stay:

Hotels close to the location of the EMN include:

A Hotel IBIS is very conveniently situated at 200 min. from ESIEE.

Ibis Marne La Vallée Champs

Boulevard Newton

Cite Descartes

77420 CHAMPS SUR MARNE

FRANCE

Tel.: +33 (0)1 6468 0083

Fax: +33 (0)1 6468 0260

Rooms are proposed at 56 € per night with breakfast at 6 €.

Make an online reservation (<http://www.ibishotel.com>) for your hotel room. Enter **Champs sur Marne** in the box "city of destination".

Confort Inn Primevère

http://fr.federal-hotel.com/hotel-information_hotel-comfort-inn-primevere_15063.htm

hotel les 2 Parcs

<http://www.hotel-deux-parcs-noisiel.federal-hotel.com/>

Hotel Kyriad Noisiel Mlv

http://fr.federal-hotel.com/hotel_hotel-kyriad-noisiel-mlv-noisiel_6894.htm

Hotel Grill Campanile

http://fr.federal-hotel.com/hotel_hotel-grill-campanile-torcy_3220.htm

Hotel Balladins Confort Express Torcy

http://fr.federal-hotel.com/hotel_hotel-balladins-confort-express-torcy-torcy_12791.htm

Ibis Noisy Le Grand

<http://www.e-hotellerie.com/hotel-ibis-france/noisy-le-grand.htm>

Kyriad Marne-la-Vallee Noisy-le-Grand

http://fr.federal-hotel.com/hotel-information_hotel-kyriad_3395.htm

To stay in Paris it is convenient to have a hotel near one of the following **RER A** Stations: **Etoile-Charles de Gaulle, Auber, Chatelet-Les Halles, Gare de Lyon and Nation**. ESIEE station is **Noisy-Champs**.

Social Event on 20 October 2004

19:30 

Buses departure to the Restaurant on the banks of the Marne river

MIMOSA Workshop: Tuesday 19 October 2004

The 1st MIMOSA Workshop will be held on 19 October as a satellite event of the European Micro and NanoSystems Conference.

The Workshop will point out the research objectives and the preliminary results achieved by the Integrated Project "MIMOSA: Microsystems platform for Mobile Services and Applications".

The main focus of MIMOSA is to perform advanced research in the field of ambient intelligence to enhance the quality of life of citizens (intelligent house, improving health, improving training efficiency of sportsman...). The main idea is to propose all these services on an advanced mobile phone platform. In order to complete these objectives, research efforts will be conducted concerning the scenarios that could be considered, the different architectures and the technological development that would benefit to have a smart mobile.

In the field of advanced architectures, the key parameters are the low voltage, low power circuits, the energy scavenging, the integration of multi sensors within a wireless link and the demonstration of the advantages that could be expected by using the concept of MEMSIC "MEMS technologies embedded with an integrated circuit".

The workshop will be one day long with presentation in the following topics:

General Overview of the MIMOSA vision, Invited paper on ambient intelligence, Scenarios, Technologies development (sensors, MEMS, IC), Architecture and Microsystem integration

For more information, contact Robert Plana, LAAS, Toulouse, France at: plana@laas.fr

EMN04 Noisy le Grand (PARIS) 20-21 October 2004

Wednesday, 20 October 2004

07.30 REGISTRATION

08.30 OPENING SESSION

Bernard Courtois, TIMA, Grenoble, France

08.40-09:20

INVITED TALK: HEAT AND CHARGE TRANSPORT AT INTERFACES AND THEIR IMPLICATIONS IN ENERGY CONVERSION DEVICES

Prof. Arun Majumdar, UC Berkeley, USA

Chair: Bernard Courtois, TIMA, Grenoble, France

09:20-10:00

INVITED TALK: PERSPECTIVES AND CHALLENGES IN NANOSCALE DEVICE MODELING

Prof. G. Iannaccone, Univ. of Pisa, Italy

Chair: Bernard Courtois, TIMA, Grenoble, France

10:00-10:30 *Break*

10:30-12:10

10:30-12:10	
10:30	Session A: MICROMACHINING Chair: Gary Bernstein, Univ. of Notre Dame, USA
10:30	OPTICAL TECHNOLOGY AIMED FOR QUALITY-CONTROL AND PROCESS-OBSERVATION IN THE MANUFACTURING OF MICROSYSTEMS BY MEANS OF MICRO-EDM Tilo Pfeifer, Ubaldo Aleriano, WZL der RWTH-Aachen, Germany
10:50	OPTIMIZED ULTRA-DRIE FOR THE MEMS ROTARY ENGINE POWER SYSTEM Fabian Martinez, Ning Chen, Matthew Wasilik, Albert Pisano, Univ. of California at Berkeley, USA
11:10	OPTIMISATION OF SI DRIE FOR PERFECT HIGH SIDEWALLS OF MICROCHANNELS AND MOVABLE MICROPISTONS IN HYDRAULIC ACTUATED DEVICE WITH SILICONE MEMBRANE FOR RESTORING PISTON POSITION Andreas Schneider, Adnan Malik, Vladislav Djakov, Robert Stevens, RAL, UK; T.H.J Yang, R.L Reuben, Heriot-Watt Univ. of Edinburgh, UK
11:30	ADVANCED SILICON ETCHING TECHNIQUES BASED ON DEEP REACTIVE ION ETCHING (DRIE) FOR SILICON HARMS AND 3D MICRO- AND NANO-STRUCTURES Frederic Marty, Lionel Rousseau, Bassam Saadany, Bruno Mercier, Olivier Français, Tarik Bourouina, ESIEE, France; Yoshio Mita, The Univ. of Tokyo, Japan
11:50	A NOVEL PLASMA RELEASE PROCESS AND A SUPER HIGH ASPECT RATIO PROCESS USING ICP ETCHING FOR MEMS Michel Puech, Nicolas Launay, Nicolas Arnal, Patrick Godinat, Jean-Marc Gruffat, Alcatel Vacuum Techn., France

10:30-12:10

10:30-12:10	
10:30	Session B: MATERIAL MODELING AND PROPERTIES I Chair: Giuseppe Iannaccone, Univ. of Pisa, Italy
10:30	ANALYSIS FOR DEFORMATIONAL BEHAVIOR OF HIGHLY PRESSURIZED DIAPHRAGM CONSIDERING ITS MICROSTRUCTURE Chang-Hui Lee, Jung-Chan Ryu, Jong-Jin Shin, Samsung Electronics Co., South Korea; Mark A. Shannon, Mike L. Philpott, UIUC, USA
10:50	MAGNETICALLY INDUCED VIBRATION OF MAGNETOSTRICTIVE FILM-SUBSTRATE PLATES Victor Guerrero, Robert Wetherhold, Univ. at Buffalo, USA
11:10	METAL-POROUS SILICON COMPOSITE LAYERS FOR BIOMEDICAL APPLICATIONS Irina Kleps, Anca Angelescu, Mihaela Miu, Teodora Neghina, Monica Simion, Adina Bragaru, Nat. Inst. for Research and Develpt in Microtechnologies, Bucharest, Romania
11:30	HOMOGENIZATION THEORY APPLIED TO THE DESIGN OF BONE PIEZO-BIOMATERIAL Bernadette Miara, ESIEE, France; Mustapha Zidi, Beatrice Labat, Univ. Paris 12/ISBS-Paris, France; Eduard Rohan, Univ. of West Bohemia, Plzen, Czech Republic
11:50	OPTICAL AND ELECTRICAL PROPERTIES OF THE COPPER BASED NANOSTRUCTURES DEPOSITED BY METHOD OF LASER ELECTRODISPERSION Liliya Bui, Alphiya Khairullina, Tatiana Olshanskaya, Victor Babenko, B.I.Stepanov Inst. of Physics, Belarus; Denis Yavsin, Vladimir Kozshev, Sergey Gurevich, A.F. Ioffe Physico-Techn. Inst. RAS, Russia

12:10- 13:30 *Lunch*

13:30- 14:10

INVITED TALK: ORGANIC THIN FILM TRANSISTORS: TOWARDS THE SINGLE LAYER SCALE

Dr. Gilles Horowitz, Univ. Denis Diderot, Paris, France

Chair: Francesco Perez Murano, IMB-CNM, Spain

14:10-15:10

Session C: NANOMANIPULATION

Chair: Francesco Perez Murano, IMB-CNM, Spain

14:10	NANOMANIPULATION AND AGGREGATION LIMITS OF SELF-ASSEMBLING STRUCTURAL PROTEINS Bradley Layton, Nykia Jackson, Stephanie Sullivan, Drexel Univ., USA
14:30	MOTION PLANNING OF AN AFM-BASED NANOMANIPULATION SYSTEM Mehdi Ammi, Lab. Vision et Robotique, France; Antoine Ferreira, Lab. Vision et Robotique, France
14:50	DYNAMIC NANO-INDENTATION USING ATOMIC FORCE MICROSCOPY H. Y. Hou, N. K. Chang, S. H. Chang, Nat. Taiwan Univ., Taiwan

15:10-15:30 *Break*

EMN04 Noisy le Grand (PARIS) 20-21 October 2004

15:30-16:50

15:30	Session D: FABRICATION OF MICROCOMPONENTS Chair: Yoshio Mita, The Univ. of Tokyo, Japan
15:30	MICROMACHINING APPROACH IN FABRICATING OF THE WAVEGUIDE COMPONENTS Alexei Pavolotsky, Denis Meledin, Christophe Risacher, Miroslav Pantaleev, Victor Belitsky, Onsala Space Observatory, Chalmers Univ. of Techn., Sweden
15:50	FABRICATION OF MICRO PROFILES AND MICROLENSES ON OPTICAL FIBERS ENDFACES USING NANOGRINDING Yousef Gharbia, Garth Milton, Jayantha Katupitiya, The Univ. of New South Wales, Australia
16:10	FABRICATION OF MICRONEEDLE ARRAYS FOR DRUG DELIVERY USING WET ETCH TECHNOLOGIES Nicolle Wilke, Anthony Morrissey, Shu-Ren Ye, Joe O'Brien, NMRC, Ireland
16:30	NOVEL MULTI-LEVEL POLYMER MICROSTRUCTURE TECHNOLOGY FOR COMPONENT INTEGRATION AND COMPLEX MICROSYSTEM ASSEMBLY Jan Kruger, Peter O'Brien, NanoComms Ltd., Ireland

15:30-16:50

15:30	Session E: MATERIAL MODELING AND PROPERTIES II Chair: Arun Majumdar, UC Berkeley, USA
15:30	THERMAL CONDUCTIVITY OF NANOPOROUS MATERIALS Jaona Randrianalisoa, Patrice Chantrenne, Dominique Baillis, CETHIL/INSA Lyon, France
15:50	ELECTRON HEATING IN NANOSTRUCTURES: EFFECTS OF DISORDER Vladimir Mitin, Andrei Sergeev, SUNY/Univ. at Buffalo, USA; Michael Reizer, Chemical Abstract, USA
16:10	FREQUENCY POWER LAWS OF THE OSCILLATIONS OF SOME MICROSCOPIC STRUCTURES Dan-Alexandru Iordache, Viorica Iordache, Univ. "Politehnica" Bucharest, Romania; Cristian Florea, ESIEE, France
16:30	THE CONTROL OF AGGLOMERATION OF CEO ₂ FINE PARTICLES BY SURFACE-MODIFICATION OF PRECURSOR Wei Gao, East China Univ. of Science and Techn., China

16:50-17:10

Break

17:10-18:30

17:10	Session F: MEMS DESIGN AND MODELING Chair: David Elata, TECHNION-I.I.T, Israel
17:10	NUMERICAL SIMULATION OF COMPLEX LIQUIDS IN MICRO-PUMP Haifa El-Sadi, Nabil Esmail, Concordia Univ., Canada
17:30	A LOWER BOUND FOR THE DYNAMIC PULL-IN OF ELECTROSTATIC ACTUATORS David Elata, Hagay Bamberger, Technion/Israel Inst. of Techn., Israel
17:50	MODEL SYNTHESIS OF STRUCTURAL DYNAMICS Eugenio Brusa, Francesco De Bona, Andrea Della Schiava, Univ. degli Studi di Udine, Italy; Aurelio Somà, Politecnico di Torino, Italy;
18:10	THE AFFECT OF INTERNAL STRESS ON THE ELECTROMECHANICAL BUCKLING OF A CLAMPED-CLAMPED BEAM Samy Abu-Salih, David Elata, Technion/Israel Inst. of Techn., Israel

17:10-18:10

17:10	Session G: MANUFACTURING OF NANOCOMPONENTS Chair: Dominique Cornuejols, ESRF, France
17:10	IMPROVEMENT OF SURFACE FINISHING FOR WEDG PRODUCTS Mika Yamaguchi, Takahisa Masuzawa, Masatoshi Fujino, IIS/The Univ. of Tokyo, Japan
17:30	A STUDY OF THE THIN FILM HEAT TRANSFER IN A RAPID-HEATING NANOIMPRINT PROCESS Chao-Cheng Chang, Janq-Yann Lin, Jen-Hua Wu, Yu-Lun Ho, Chuan-Feng Chen, Shou-Ren Chen, Wei-Han Wang, The Industrial Techn. Research Inst., Taiwan
17:50	STRUCTURAL INCOHERENCY IN BIMETALLIC AU-PD NANOCLUSTERS Hongbo Liu, Jorge Ascencio, Mexican Inst. of Petroleum, Mexico; Umapada Pal, Autonomous Univ. of Puebla, Mexico; Ariosto Medina, Cuauhtemoc Maldonado, Michoacan Univ. of San Nicolas of Hidalgo, Mexico;

18:30-19:30

POSTERS SESSION

- * DETERMINATION OF THE GAZ SENSING POTENTIALITY OF NANOSIZED TIN DIOXIDE PREPARED BY ELECTROPLATING
Thierry Devers, Lévi Allam, Ibrahima Kante, Lab. de Physique Electronique de Chartres, France; Vincent Fleury, PMC Ecole Polytechnique, France
- * ANALYSIS OF POLYSILICON ELECTROTHERMAL FLEXURE MICROACTUATORS WITH TEMPERATURE-DEPENDENT PROPERTIES
Mahnaz Shamshirsaz, Mohsen Tayefeh, New Techn. Research Center-Amirkabir Univ. of Techn./Tehran Polytechnic, Iran
- * DESIGN OF A MAGNETIC MICRO-MIXER
Patrick Poulichet, Olivier Français, Lyonel Rousseau, ESIEE, France
- * REACTIVE NANOPOWDERS FOR SYNTHESIS OF NEW MATERIALS
Alexander Gromov, Ekaterina Kulinich, Alexander Ilyin, Tomsk Polytechnic Univ., Russia
- * STOMATOLOGICAL PORCELAIN ON THE BASIS OF THE POTASSIUM FELDSPAR WITH NANOPOWDERS ADDITIONS
Ekaterina Kulinich, Tamara Khabas, Tomsk Polytechnic Univ., Russia
- * NANOINDENTATION LOAD-DISPLACEMENT BEHAVIOR OF LOW STRESS PLASTICITY IN SINGLE CRYSTAL ALUMINUM AND ALUMINUM ALLOY
Yao Yuan, Qiao Lijie, Chu Wuyang, Univ. of Science and Technology Beijing, China; Shi San Qiang, the Hong Kong Polytechnic Univ. Hksar, China
- * MEDICAL IMAGE PROCESSING USING BIOMATERIAL BACTERIORHODOPSIN
D. Rao, Pengfei Wu, Univ. of Massachusetts Boston, USA
- * NANOROBOTICS COMMUNICATION TECHNIQUES
Adriano Cavalcanti, Unicamp, Brazil; Tad Hogg, HP Labs, Palo Alto, USA

EMN04 Noisy le Grand (PARIS) 20-21 October 2004

- * A 8X8 THERMOPILE BASED UNCOOLED INFRARED SENSOR
Benoit Charlot, Bernard Courtois, TIMA, France; Vladimir Szekely, Marta Rencz, György Bognár, BUTE, Hungary
- * ANALYSIS OF TWO PHASE FORCED CONVECTION IN MICROCHANNELS FOR ELECTRONICS COOLING
Anandaroop Bhattacharya, Indian Inst. of Techn. of Bombay, India
- * THE ALIGNED SI NANOWIRES GROWTH USING MW PLASMA ENHANCED CVD
Nikolai Dzbanovsky, Vladimir Dvorkin, Vladimir Pirogov, Nikolay Suetin, Moscow State Univ., Inst. of Nuclear Physics, Russia
- * SYNTHESIS OF NANOCRYSTALLINE TRANSITION METAL FOR LITHIUM STORAGE
Guoxiu Wang, J.-H. Ahn, Chen Yao, Konstantin Konstantinov, Jane Yao, Hua Liu, Univ. of Wollongong/ISEM, Australia
- * PREPARATION OF MAGNETIC MICROSPHERES COUPLING WITH PAMAM DENDRIMERS FOR ENHANCED BIOLOGICAL DETECTION
Yihua Zhu, Wujun Luo, Xiaoling Yang, Key Lab. for Ultrafine Materials of Ministry of Education, China
- * INVESTIGATION OF LINE EDGE ROUGHNESS OF SUB-100NM PATTERNED PHOTORESIST BASED ON ACRYL POLYMERS
Toshiyuki Ogata, Shogo Matsumaru, Taku Hirayama, Daiju Shiono, Hideo Hada, Tokyo Ohka Kogyo Co., Japan
- * VISCOELASTIC MECHANICAL PROPERTIES DETERMINED BY NANOINDENTATION TESTS AND ITS NUMERICAL MODELLING OF POLYPROPYLENE MODIFIED BY ALPHA PARTICLE IMPLANTATION AND ELECTRON IRRADIATION
Mounir Qasmi, Patrick Delobelle, Fabrice Richard, LMARC/CNRS, Besançon, France
- * INFLUENCE OF ULTRASOUNDS IN THE PREPARATION AND PROPERTIES OF PBTIO₃ CERAMICS BY SOL-GEL PROCESSING
Jose Marat-Mendes, Rui Igreja, Carlos Dias, Maria do Carmo, Paulo Ignacio, New Univ. of Lisbon, Portugal; Irinela Chilibon, INOE-2000, Romania
- * MAGNETICALLY CONTROLLED MICRO-MACHINE USED FOR MEDICAL SERVICES
Naotake Ohtsuka, Yasunori Shindo, Yoshitaka Natsume, Koji Hayakawa, Kazuya Tokunaga, Yasushi Tanaka, Ryukoky U., Japan
- * DESIGN OF MICRO TURBO EXPANDER FOR USE IN SMALL REFRIGERATION SYSTEMS
Assaad Zoughaib, Denis Clodic, Center for Energy Studies/EMP, France
- * STUDY OF A THERMALLY CONTROLLED MICRO-CAVITY FOR BIO-MEMS APPLICATIONS BASED ON PDMS TECHNOLOGY
Mathias Bonnauron, Lionel Rousseau, Olivier Français, ESIEE, France
- * AN EXPERIMENTAL STUDY OF GRAVIMETRIC LOVE-WAVE ACOUSTIC SENSORS INCORPORATING SU8 GUIDING LAYERS
Jean Marie Fournion, Najla Fourati, Michel Bonnefoy, CNAM/Lab. de Physique, France; Lionel Rousseau, Gaelle Lissorgues, Sébastien Le Guellec, ESIEE, France
- * HARD FERROMAGNETIC COXPT_{1-X} NANOWIRES FOR PERPENDICULAR RECORDING MEDIA
Jeremy Mallet, Univ. de Reims, France; S. Matefi-Tempfli, M. Matefi-Tempfli, Luc Piraux, Univ. Catholique de Louvain la Neuve, Belgium; Kui Yu-Zhang, Univ. de Reims, France; Peter Searson, J. Hopkins Univ., USA
- * AN NEW OPTICAL PHASE MODULATOR WITH BRAGG PHOTONIC MICRO CAVITIES AND MEMS STRUCTURE
Amina Lammari, Anne-Laure Billabert, Christian Rumelhard, ESYCOM/CNAM, France; Tarik Bourouina, Bassam Saadany, ESIEE, France
- * IMPROVE THE CAPACITANCE SENSING EFFICIENCY BY NANOWIRES ARRAY
Yu-Hung Cheng, Ying-Ko Lu, Shi-Hao Wang, Rickey Chen, Mechanical Industry Research Lab./ITRI, Taiwan
- * ELABORATION AND CHARACTERIZATION OF GAS NANO-SENSORS BASED ON SELF-ASSEMBLED-MONOLAYERS ON SILICON
Céline Trapes, Lamia Rouai, LACCSC/ECE, France; Simon Desbief, Lionel Patrone, Didier Goguenheim, L2MP /CNRS, France
- * ACOUSTICAL ELECTRICAL MODELING OF CMOS INTEGRATED MICROMACHINED INDUCTIVE MICROPHONE
Fares Tounsi, Brahim Mezghani, Soulaïmen Smaoui, Bassem Jallouli, Nouredine Ghamgui, Mohamed Masmoudi, Research Group on Microtechnology and System on Chip, Tunisia
- * NANODAC – AN SPM-BASED NANODEFORMATION MEASUREMENT TECHNIQUE FOR RELIABILITY ASSESSMENT OF MICRO- AND NANOSYSTEMS
Jürgen Keller, Astrid Gollhardt, Dietmar Vogel, Bernd Michel, Fraunhofer IZM, Germany
- * PACKAGING OF ELECTROOPTICAL SYSTEMS ON MINIATURIZED CERAMIC PLATFORMS
Ramona Eberhardt, Erik Beckert, Banse Henrik, Peter Schreiber, Fraunhofer IOF, Germany
- * INVESTIGATION OF WAFER-LEVEL ELECTROSTATIC FORCE BONDING BETWEEN GLASS AND SILICON NITRIDE DEPOSITED SILICON SUBSTRATE AND ITS APPLICATION ON SPM ARRAY
Gen Wen Hsieh, Ching Hsiang Tsai, Wei Chih Lin, Chao Chiun Liang, Industrial Techn. Research Inst., Taiwan
- * MULTISCALE MODELING OF A SPATIALLY TWO-DIMENSIONAL MICROCHIP FOR IMMUNOASSAY
Michal Pribyl, Dalimil Snita, Milos Marek, Inst. of Chemical Techn., Prague, Czech Republic
- * MEMS DYNAMIC SENSORS FOR ASYNCHRONOUS MOTOR CONTROL
Vahé Nerguizian, Mustapha Rafaf, École de Techn. Supérieure, Canada; Muthukumaran Packirisamy, Ion Stiharu, Concordia Univ., Canada
- * LINEAR ELECTROMAGNETIC MINI-ACTUATOR FOR MICRO-POSITIONING
Nabil Bencheikh, Christine Prelle, Frédéric Lamarque, UTC, France



19:30

Departure to the Restaurant.

EMN04 Noisy le Grand (PARIS) 20-21 October 2004

Thursday, 21 October 2004

08:30-09:10

INVITED TALK: MAGNETIC QCA SYSTEMS

Prof. Gary H. Bernstein, Univ. of Notre Dame, USA

Chair: Tarik Bourouina, ESIEE, France

09:10-11:10

Session H: MEMS COMPONENTS I

Chair: Tarik Bourouina, ESIEE, France

- 09:10 RESONANT MEMS MICROSENSOR FOR THE MEASUREMENT OF FLUID DENSITY AND VISCOSITY
Olivier Vancauwenberghe, A.R.H. Goodwin, Schlumberger, USA; Eric Donzier, Schlumberger, France; M Manrique, Schlumberger, UK; Frederic Marty, ESIEE/ESYCOM, France
- 09:30 ARRAYS OF CMOS COMPATIBLE BISTABLE ELECTROMAGNETIC MICROVALVES WITH PERMANENT MAGNETS
Jemmy Sutanto Bintoro, Peter J. Hesketh, Georgia Inst. of Techn., USA
- 09:50 ARCHITECTURE OF THREE-DIMENSIONAL CIRCUIT USING NANOSCALE MEMORY DEVICES
Keiko Abe, Shinobu Fujita, Shin-Ichi Yasuda, Toshiba, Japan; Thomas Lee, Stanford Univ., USA
- 10:10 SMART MEMS CONCEPT FOR ADVANCED RF COMMUNICATIONS
J.P. Busquere, N. Do, F. Bougriha, P. Pons, K. Grenier, D. Dubuc, A. Boukabache, LAAS/CNRS, France; H. Schumacher, P. Abele, Univ. of Ulm, Germany; A. Rydberg, E. Ojefors, Uppsala Univ., Sweden; P. Ancey, G. Bouche, STM, France; R. Plana, LAAS/CNRS, France
- 10:30 AN ELECTROWETTING ELECTRODE DESIGN WITH ELECTROMAGNETIC FIELD FOR MANIPULATION OF THE MAGNETIC-BEADS BIOCHEMICAL DETECTION SYSTEM
Shih-Jun Yuan, Jing-Tang Yang, J. Andrew Yeh, Nat. Tsing Hua Univ., Taiwan; Chih-Sheng Yu, Yi-Jun Hu, Nat. Science Council, Taiwan
- 10:50 MEMS DEVICES FOR MEMORY STORAGE
Olivier Français, Lionel Rousseau, Charles Marie Tassetti, ESIEE, France; Jacques Haussy, André Tissot, CEA/DAM, France

11:10-1140 **Break**

11:40-12:40

Session I: COMMERCIALIZATION, INFRASTRUCTURE AND EXPLOITATION

Chair: Raj Manchanda, ASME NI, USA

- 11:40 BARRIERS TO THE COMMERCIALIZATION OF NANOTECHNOLOGY: LESSONS LEARNED FROM ITS BIG BROTHER (A.K.A. MEMS)
Grace Roger H., Roger Grace Associates, Naples, USA
- 12:00 NANOPOLIS: AN INFRASTRUCTURE FOR COMMUNICATION IN THE NANOTECH WORLD
Dan Bog, iMediasoft, France; Florin Ciontu, TIMA, France
- 12:20 MICROREACTORS FOR THE CHEMICAL INDUSTRY
Denis Bortzmeyer, ATOFINA, France

12:40-14:10 **Lunch**

14:10-14:50

INVITED TALK: ELECTRONIC TRANSPORT THROUGH SINGLE MOLECULES

Prof. H.v. Löhneysen, Univ. of Karlsruhe & Forschungszentrum, Karlsruhe, Germany

Chair: Florin Ciontu, TIMA, Grenoble, France

14:50-1630

Session J: NANO COMPONENTS

Chair: Florin Ciontu, TIMA, Grenoble, France

- 14:50 SINGLE CRYSTAL SILICON NANOBALLS AND PERIODIC NANOSTRUCTURES OBTAINED BY LASER EXPOSURE OF NANOWIRES
Kuniyuki Kakushima, Hiroyuki Fujita, The Univ. of Tokyo, Japan; Tarik Bourouina, ESYCOM/ESIEE, France; Thierry Sarnet, Gerwan Kerrien, Dominique Debarre, Jacques Boulmer, IEF, France
- 15:10 SNO₂ NANO-STRUCTURED ANODES FOR LITHIUM ION BATTERIES
Ling Yuan, Konstantin Konstantinov, Guoxiu Wang, Hua Liu, Univ. of Wollongong/ISEM, Australia
- 15:30 MICRO-EDM OF SINTERED DIAMOND
Hiroshi Nakaoku, Takahisa Masuzawa, Masatoshi Fujino, IIS/the Univ. of Tokyo, Japan
- 15:50 STRUCTURE STUDY OF ELECTRODEPOSITED NANOWIRES ZNO
Yamin Leprince-Wang, Adyla Yacoubi-Ouslim, Univ. de Marne la Vallée, France; Guillaume-Yangshu Wang, CECM/CNRS, France
- 16:10 AROMATIC AMINO-ACIDS PHYSISORBED ON GRAPHENE AND CARBON-NANOTUBES: ELECTRONIC PROPERTIES
Cosmin Roman, Florin Ciontu, Bernard Courtois, TIMA, France

16:30-17:00 **Break**

17:00-18:20

Session K: MEMS COMPONENTS II

Chair: Daniel H. Fruman, Consultant Eng., ASME France

- 17:00 MIXING CHARACTERISTICS OF OVERLAPPING CRISSCROSS ENTRANCE IN MICROMIXERS
LiLin Wang, Jing-Tang Yang, Jing-Yi Huang, Jer-Liang Yeh, Nat. Tsing Hua Univ., Taiwan
- 17:20 FABRICATION OF A V-SHAPED MICROMECHANICAL TUNABLE CAPACITOR
Aurélie Cruau, Gaëlle Lissorgues, ESIEE, France; Pierre Nicole, Thales Airborne Systems, France; Raphaël Fritschi, Adrian M. Ionescu, EPFL, Switzerland
- 17:40 MICRO FLOW OF A BINARY GAS MIXTURE IN A GROOVED CHANNEL
Stergios Naris, Dimitris Valougeorgis, Univ. of Thessaly, Greece
- 18:00 MICROSTEREOLITHOGRAPHY FOR MICRODEVICE PACKAGING IN BIOMEDICAL APPLICATIONS - A UROLOGY CATHETER FOR MINIMAL INVASIVE ENDOSCOPY
Andreas Schneider, RAL, UK; T.H.J Yang, R.L Reuben, Heriot-Watt Univ., Edinburgh School of Eng. & Physical Sciences, UK; Robert Stevens, RAL, UK; S.A McNeill, Edinburgh Western General Hospital, UK
- 18:20 **CLOSING REMARKS**
Bernard Courtois, TIMA, Grenoble, France

EMN04 Noisy le Grand (PARIS) 20-21 October 2004

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