THE European Material Conference

European Materials Research Society Spring Meeting

Scientific / Technical Symposia & Exhibition

E-MRS

E-MRS SPRING MEETING 2010

Strasbourg, France

Palais de la Musique et des Congrès

Congress Center

June 7 - 11

Final Announcement and Call for Papers

Sponsored by:

EUROPEAN SCIENCE FOUNDATION

DEADLINE FOR ABSTRACT SUBMISSION:
January 19, 2010

http://www.emrs-strasbourg.com

PRESENTATION

The European Materials Research Society (E-MRS), a non profit scientific association founded in 1983, is focussing on creating the synergy between interdisciplinary, innovative technologies, diffusing and exchanging information and promoting technology transfer from public institutions towards industry. The main objective of E-MRS is to promote and enhance the efficiency of research in European countries in the field of Advanced Materials; in addition, to give quick information on the development of science and technology in their area in the rest of the world, through our links with other MRS societies belonging to the International Union of Materials Research Societies (IUMRS)

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E-MRS 2010

The **E-MRS 2010 Spring Meeting** will be held in Strasbourg at Palais des Congres June 7 – 11, 2010.

The exciting scientific program highlights advances in international materials research and key novel applications. Special attention will be given to the role advanced materials can have in solving the Energy supply for our future. Furthermore, the participants will have an unique opportunity to discuss, in a special workshop the developments of photovoltaïcs.

Oral sessions with **Invited** and **Contributed** papers are arranged by the program committees of the individual symposia, where the majority of the contributions are presented as **Posters**. The E-MRS 2010 Spring Meeting features 20 technical symposia, an exhibit, a plenary session with talks by outstanding researchers and a social event celebrating the winners of the E-MRS 2010 Student Awards.

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PROGRAMME

BIOMATERIALS, SENSORS & SURFACES

A From embedded sensors to sensorial materials
B Functional Biointerfaces
C Peptide-based materials: from nanostructures to applications 10
D Surface modifications of diamond and related materials

ELECTRONIC, PHOTONIC & OPTOELECTRONIC

E Frontiers of multifunctional oxides
F Wide Bandgap Cubic Semiconductors : from growth to devices
G Physics and Applications of Novel Gain Materials based on III-V-N compounds
H Post-Si CMOS electronic devices: the role of Ge and III-V materials
I Advanced Silicon Materials Research for Electronic and Photovoltaic Applications II
J Silicon-based nanophotonics
K Rare earth doped materials for optical based technologies

CARBON AND ENERGY

L Carbon -or Nitrogen-Containing Nanostructured Composite Films
M Thin Film Chalcogenide Photovoltaic Materials
N Nuclear materials IV
O Solid State Ionics: Exploring chemical and structural complexity of novel ionic conductors
P Science and Technology of Nanotubes, Nanowires and Graphene

METHODS AND PROPERTIES

Q Quantitative Electron Microscopy for Research and Industry
R Laser Processing and Diagnostics for Micro and Nano Applications
S Shape Memory Materials for Smart Systems III
T Advanced Hybrid Materials: stakes and concepts

TUTORIAL

Young Scientist Tutorial on Characterisation techniques for Thin-Film Solar Cells - *Friday afternoon June 11th*

PLENARY SESSION

The plenary session will take place on Wednesday 9th June in the afternoon, in which talks are given by prestigious speakers: Stephen Mann, University of Bristol, U.K., Jochen Mannhart, University of Augsburg, Germany, Stuart S.P. Parkin, IBM Almaden Research Center, San José, USA, ….

EXHIBITION

An EXHIBITION of products and services of interest to the materials community will complete the conference. Over 50 international exhibitors will display a full spectrum of equipment, instrumentation, products, software, publications and services.

To be held from **Tuesday June 8th to Thursday June 10th** in the Congress Center (Strasbourg, France), the exhibit will be convenient to the technical session rooms and scheduled to coincide with the technical program.

For exhibitors, it will mean an excellent opportunity to meet just the right customers and disseminate information effectively.

For meeting attendees, it will offer the convenience of visiting with multiple vendors all under one roof.

To book a booth, please fill the form available through internet http://www.emrs-strasbourg.com and send it back to E-MRS to ensure that your company can appear as Conference Exhibitors in the scientific program.

Do not hesitate to contact us should you request any further information

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Symposium A:
From embedded sensors to sensorial materials

The symposium will cover the integration of sensors and electronics in materials such as metallic parts, textiles or carbon fibre components. It will gather the community working in the new field of sensorial materials who are driven by the final vision of a semi-finished part such as a gearwheel, a wing or a bearing with integrated sensors. The sensors will be integrated in a way that allows further processing and montage like for a standard part. This way, seen from the production of the final part, sensitivity is a borne-in ability of the material and does not need any special effort. To reach this vision, contributions from the areas of micro system technology, smart and sensor material development, associated manufacturing technologies etc. are mandatory and thus also invited to participate in the symposium.

Scope:
The following areas will be covered:
- Technical vision of sensorial materials
- Sensor materials such as electrostrictive, piezoelectric or thermoelectric materials, electro-active polymers
- Advanced sensor concepts such as biomimetic sensors
- Technologies for embedding sensors
  - *Thin silicon sensors*
  - *RFID-Sensor coupling*
  - *Printed & direct writing of sensors*
  - *Embedding of piezoelectric devices*
- Integration of sensors in different materials
  - *Metals, glasses, polymers, integration by casting*
  - *Carbon fibre compounds, sensor networks for structural health monitoring*
  - *Textiles: Security application, communication devices in textiles*
- Energy supply in sensorial materials
  - *Energy distribution and management in materials with high sensor density*
  - *Energy harvesting solutions*
- Interaction of sensor nodes
  - *Physical provisions for sensor node communication (materials, manufacturing)*
- Fault detection, robustness and efficient network layout in large sensor networks
- Characterisation, modeling and simulation aspects of sensorial materials and materials with embedded sensors

Hot topics to be covered by the symposium:
- Integration of sensors in textiles
- Technology of flexible Si-chips
- Embedding Microsystems in cast metals
- RFID-Sensor coupling
- Integration of sensors in carbon fibre compounds
- Energy harvesting approaches

Tentative list of invited speakers:
- Antonia Kesel, University of Applied Sciences, Bremen, Germany
- Stephen Wilson, Cranfield University, UK
- Ayech Benjeddou, Laboratoire LISMMA, Saint Ouen, France
- Paul Mural, EPFL, Switzerland
- Ma Jan, NTU, Singapore
- Reaney, Sheffield University, UK
- Prof. van Brussel, IMEC, Belgium
- Ursula Dicke, Bremen University, Germany

Tentative list of scientific committee members:
- Taifun Akin, Middle East Technical University, Ankara, Turkey
- Oliver Paul, University of Freiburg, Germany
- Wolfgang Benecke, Fraunhofer Society, Itzehoe, Germany
- Roger Whatmore, Tyndall National Institute, UK
- Christopher Hierold, ETH Zürich, Switzerland
- Michael Friswell, University of Bristol, UK

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Symposium B:
Functional biointerfaces

The symposium addresses the growing interest of materials scientists in the creation, characterization, and control of processes at functional biointerfaces, i.e, the interfaces between biomolecules, cells, tissues or complex biological systems with other materials. The aim of this symposium is to exchange information about the fundamental understanding, characterization, control and engineering of these interfaces in a thought provoking, stimulating atmosphere. This is not only because of the intellectual challenges of the exciting interdisciplinary field of materials science but also because materials scientists, physicists, chemists, biologists, engineers and medical doctors are facing more and more situations where materials are confronted with challenging biological environments. Therefore, a need exists to develop and spread knowledge in this area. The aim of this symposium is, therefore, to address the need to design, create, characterize and test functional biointerfaces and to develop structure-property relationships for these functional biointerfaces.

Hot topics to be covered by the symposium:
Subject areas of this symposium include but are not limited to: biointerfaces of medical implants; proteins, polysaccharids and other biomolecules at biointerfaces; engineered micro and nanoenvironments of cells for regenerative medicine; structuring and functionalisation of biointerfaces; molecular cell biology at biointerfaces; antimicrobial biointerfaces; biomineralization at biointerfaces; nanoparticle, nanotube and nanofibre interfaces; gene and drug delivery at biointerfaces; therapy and probes in bioenvironments; sensors and devices; pathogen detection at biointerfaces; characterization of biointerfaces including probe methods; biointerfaces in nature and bioinspired biointerfaces; computational modelling of biointerfaces.

Target groups of the symposium:
Materials scientists, physicists, chemists, biochemists, engineers, biologists, microbiologists, pharmaceutical scientists, and medical professionals from fundamental and applied research as well as from industry and clinical backgrounds.

List of invited speakers:
- David M. Lynn, University of Wisconsin-Madison, USA
- Hsiao-Hua (Bruce) Yu, Inst. Bioengn. & Nanotechnol., Singapore
- Raphaël Lévy, University of Liverpool, UK
- Holger Schönherr, University of Siegen, Germany
- Xingyu Jiang, Beijing, China

and others

Scientific committee members:
- Klaus D. Jandt
- Giovanni Marletta
- Christine Ortiz
- Alexander Bershadsky
- Kaiyong Cai

The organizers do not plan to publish proceedings for this symposium. Selected papers presented at this symposium will be invited as regular submissions (full peer-review process) to the"Advanced Biomaterials" section of the international scientific journal "**Advanced Engineering Materials**" by Wiley-VCH. The deadline for on-line manuscript submission via http://mc.manuscriptcentral.com/adbi is 15 October 2010.

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Symposium C:
Peptide-based materials: from nanostructures to applications 10

The symposium will be focused on an extremely innovative field, i.e. the construction and characterization of nanometric architectures through self-assembly of peptide motifs (helices, sheets, coiled coils) and the possibility to design and realize new bio-hybrid materials and bio-inspired molecular devices based on functionalized peptide building blocks.

Scope:
In the last few years research activity focussed on the design, synthesis and characterization of peptide-based materials has been experiencing an explosion of interest and advancement of knowledge on both the fundamental side, i.e. the molecular mechanisms and forces that determine the growth of nanometric architectures from basic structural peptide motifs, and the applicative one, i.e. the construction of peptide-based nanodevices. Nanowires, nanotubes, peptide-based self-assembled monolayers, peptide fibers and fibrils, were prepared and characterized by using amino acidic building-blocks, derivatized by well-established and creative peptide chemistry to accomplish specific functions. This has been mainly achieved by mimicking the strategies that Nature uses in the construction of complex supramolecular aggregates, essentially based on self-assembly and self-organization.
The advantage to use peptides as elements of a molecular LEGO is related to the possibility to attain, by careful selection of the single amino acids, -sheets, coiledβ-turns, β- or 310-helices, αspecific secondary structures (coils) and to realize biocompatible surfaces with specific polarity properties. Amphiphilic peptides, i.e. peptides presenting polar and apolar surfaces, are particularly suitable to generate ordered nano- and micro-sized superstructures via hierarchic self-assembly. Extremely interesting and fascinating is the interdisciplinary field that leads to the design of bio-hybrid materials, connecting the world of functional biomolecules to inorganic materials, used not only as a support, but also as active media (metals, semiconductors).
This lead to the preparation of peptide adducts with quantum dots, carbon nanotubes, ion metals and nanoparticles, producing smart materials endowed with peculiar magnetic and electric properties or suitably functionalized for bioimaging, bioelectronics, sensing and molecular recognition.
Time is now to make order in this rapidly growing field, gather knowledge and experiences, exchange mature know-how and innovative ideas. Such a symposium will be the occasion not only to put in communication the leading scientists in the field, but also to concentrate activities and knowledge and prepare the humus for a European network of excellence that would mix fundamental research, technological applications and industrial activities.

Hot topics to be covered by the symposium:
1. Peptide-based nanostructures Subject: peptide fibers, nanotubes, nanowires
2. Peptide self-assembly Subject: methods, self-assembled monolayers, peptide gels
3. Peptide coating Subject: peptide-modified surfaces. Tissue engineering, cell adhesion., biocompatible surfaces.
4. Peptide sensing Subject: protein and nucleic acids recognition, peptide-based sensing arrays
5. Peptide adducts and nanocomposites Subject : peptide-quantum dots, peptide-carbon nanotubes, peptide-nanoparticles
6. Peptide-based bio-hybrid materials Subject: peptide-semiconductors, peptide-inorganic supports
7. Stimuli responsive peptides Subject: photoresponsive peptides, conformational triggering

List of invited speakers:
Ehud Gazid (Tel Aviv University, Israel)
Hiroshi Matsui (City University of New York, NY)
Shuguang Zhang (MIT, Cambridge, MA)

Members of the Scientific Committee:
- Amalia Aggeli (University of Leeds, U.K.) A.Aggeli@leeds.ac.uk
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Accepted contributed papers will be published in Journal of Peptide Science (WILEY VCH)

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Deadline for abstract submission: January 19, 2010

Symposium D:
Surface modifications of diamond and related materials

Chemical and biochemical sensors are applied in electrolyte solutions which cause severe degradation of most conventional materials. Only recently, it has been shown that diamond and related materials (diamond like carbon, carbon nanotubes) show exceptional properties in aqueous solutions with nearly perfect interfaces for bio-chemical sensors or for drug delivery applications.

Scope:
This symposium focuses on chemical modifications applied to graft surfaces of diamond, nano-diamond particles, diamond-like carbon, graphene, graphite and carbon nano-tubes with linker molecular layers for realization of bio-sensors, bio-markers, separation techniques, and switchable chemical links can span from spontaneous bonding to photo-chemical attachment, electrochemical modifications, to Suzuki-coupling of aryl molecules. Special attention will be drawn to mechanisms driving bonding kinetics such as electron transfer reactions, hydrogen cleavage reactions by nucleophilic molecules and growths schemas which may vary from correlated two-dimensional chain reactions to three dimensional cross polymerization. Hydrogen terminations, surface defects, surface roughness and atomic arrangements of surface carbon atoms are of interest to elucidate bonding mechanisms. Aim is to develop basic understanding ranging from the atomic/molecular level to macroscopic properties of modified carbon related surfaces.
The symposium will draw attention towards bonding stability, either of linker molecules or of complex functionalized surfaces with DNA, proteins and enzymes. The electronic interface will be of interest, especially data deduced from spectroscopic measurements which allow to determine surface and interface defect densities, Fermi level pinning and electron transfer rates. Miniaturization of sensor area and application of new detection schemas will be major topics in this symposium.
Diamond nano-particles are used as biomarkers in drug delivery experiments to monitor propagation of biomolecules. This symposium will therefore include a forum where a) physical properties, b) surface modifications, c) color-center formation, and d) size related limitations of cell penetration will be discussed.
"Controlled release" of drugs from nano-particles or from AFM tips will be a topic of this meeting taking into account: a) spontaneous release, b) triggered release by light induced bond breaking or c) electrochemical bond-breaking. Finally, a discussion of "bio-compatibility" of carbon related transducers and nano-particles will be of interest for this meeting.

Hot topics to be covered by the symposium:
1) Photochemical surface modifications.
2) Electrochemical formation of linker layers.
3) Adsorption effects of bio-molecules to transducer surfaces.
4) Controlled cleavage of bio-molecules from transducers of nano-particles for drug delivery.
5) Interface electronic properties of transducers and buffers.
6) Sensing principles.
7) Stability of biofunctionalized surface.
8) Formation of nanoparticles and of colour centers in nano-particles.
9) Biocompatibility of nanoparticles and transducer surfaces.
10) Novel sensing applications.

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Symposium E:
Frontiers of multifunctional oxides

The oxide materials can be considered as compounds having numerous properties (transport, magnetic, ferroelectric, multiferroic, optical) that are potentially useful for applications. The recent advances in the synthesis of such materials at the level of a unit cell show that it is possible to tune and tailor their properties. New properties arise from interfaces effects in superlattices structures. On the other hand, domains structures can also be used to tailor properties.

Scope:
The objective of this symposium is to bring together material scientists, chemists, physicists and theoreticians to share the recent progress, identify critical problems and provide promising solutions about tailoring physical properties of materials at (using) the interfaces. The goal of this symposium is to:
(1) present and review the latest advances in superlattice structures
(2) present the advanced techniques used to characterize the interfaces
(3) determine theoretical approaches for the understanding of interfaces
(4) Interface of oxides with semiconductors
(5) present possible devices.

Hot topics to be covered by the symposium:
Based on several recent articles (E. Bousquet et al., Nature 452, 732, 2008, A. Brinkman et al., Nature Mater 2007), the field of tailoring the properties of complex materials at the interface in superlattices is a HOT subject in the field of condensed matter physics and materials science.

Invited speakers (confirmed):
1. A. Barthélemy (University Orsay, France)
2. T.W. Noh (Seoul National University, Korea)
3. Ph. Willmott (PSI, Switerland)
4. H. Linchte (Dresden University, Germany)

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Symposium F:
Wide bandgap cubic semiconductors: from growth to devices

The symposium is devoted to define status and perspectives of cubic wide bandgap semiconductors (CWBS), such as 3C-SiC, Diamond, cubic III-N (GaN, AlN, BN), c-ZnO… Though having very promising properties, these materials are generally difficult to elaborate due to a lower thermodynamic stability compared to their other crystalline counterparts.

Scope:
The aim of this symposium is to serve as an international forum for the discussion on the recent research progress in crystal growth, processing and characterization of wide bandgap semiconductors having the cubic (blende) crystalline structure. Despite their promising properties, these materials are generally difficult to elaborate in the cubic structure. Even if, at first glance, each case may be different, they share important issues to be tackled such as the choice of an adapted substrate, innovation in deposition techniques or the defect forming within the material (polytype inclusions, twins…). Their destiny is more probably linked together since the emergence of one of these cubic materials could help the others by providing better adapted seeds than the usual ones.
The materials targeted are mainly 3C-SiC, diamond, cubic III-N materials and c-ZnO though emerging and new CWBS are also welcome. Both theoretical and experimental studies are within the scope of this simposium. Current challenges include the understanding and optimization of the growth processes for bulk and thin films; stabilization and production high-quality CWBS material; development of adapted deposition processes; determination of the fundamental and experimental properties of CWBS; processing challenges; possibility of CWBS cross-integration for bandgap engineering; device demonstration and identification of the potential of CWBS and the targeted applications.
This symposium would be a unique opportunity for the different WBG cubic semiconductors communities to meet together and share experiences and perspectives on their respective materials.

Hot topics to be covered by the symposium:
- Fundamental potential of CWBS
- Bulk material
- Epitaxy and thin films
- Characterization techniques (electrical, optical, magnetic resonance, etc.)
- Processing, devices and applications

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E-MRS 2010 SPRING MEETING, June 7 - 11 / Congress Center, Strasbourg, France

Symposium G:
Physics and applications of novel gain materials based on III-V-N compounds

Novel Gain Materials based on III-V-N compounds are gradually gaining prominence in materials research leading to wide range of options for band structure engineering devices for displays, data storage, transmission, solar cells, photodynamic therapy, terahertz devices and gas sensors operating in a wavelength range, extending from 0.3 to 3.0μm

Scope:
The low loss window of optical fibre has recently been extended to cover 1.3 to 1.7 μm, increasing the potential capacity of optical networks. As a result, optoelectronic devices operating in this wavelength range dominate photonics research. However, the tailoring of heterostructure properties is dictated by the different lattice constants of the binary III-Vs. As a result the range of useful compositions and the range of available band gaps are limited. Moreover, the alignment of the band edges, which is very important for the performance of devices, cannot be tailored by the combination of conventional materials. These limitations can be greatly reduced by incorporating a few percent of nitrogen as a group V element into GaAs or InGaAs, i.e. by creating the so-called "Dilute Nitrides". In most III-V materials, substituting an element for one with a smaller atomic radius reduces the lattice constant and increases the bandgap. However, replacing a fraction of arsenic atoms in GaAs with smaller N atoms rapidly reduces the bandgap and allows band alignment, lattice constant and strain to be tailored, opening up a new dimension of band engineering.
The second class of novel gain materials is based on the In1-xGaxN compound. It was recently discovered that InN has a much smaller fundamental energy gap than was believed hitherto. As a consequence the range of wavelengths that can be accessed by alloying this material with GaN has been significantly extended. Indeed GaInN has the widest range of direct gap of any compound semiconductors ranging from 0.7 eV to 3.2 eV which can be utilised in optoelectronic device applications over a wide range of wavelengths, including numerous key wavelengths for applications in the medical, environmental and communications fields. From a devices point of view, a key commercial target for the In-rich material is high-efficiency low-cost solar cells. Efficiencies close to the theoretical limit could be achieved by use of the whole In1-xGaxN composition range in graded layer cells and/or with quantum well multilayers; improved radiation hardness for space applications is an additional advantage. Furthermore, since the toxicity of materials used in existing solar cells is a serious concern for large scale deployment, In1-xGaxN also offers the benefit of a safer alternative.

Hot topics to be covered by the symposium:
- Growth and characterisation of Dilute Nitrides
- Effect of nitrogen complexes in optical quality
- Electronic Transport, Negative effective Mass
- Long wavelength lasers
- High speed high power VCSELs based on Dilute Nitrides
- Tandem solar cells based on dilute Nitrides
- Growth and characerisation of InN and In rich
- GaInN Surface accumulation of electrons
- Band structure
- P- doping of InN
- GaInN Solar cells
- GaInN Terahertz devices

Scientific Committee
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Invited Speakers:
W. Walukievicz "InN properties and potential for high efficiency solar cells"
Alfred R Adams "Dilute Nitride avalanche photodiodes"
Jean Marc Jancu "Tight binding calculations for InGaAsN or GaAsSbN"
A. Larsson "Long wavelength dilute nitride lasers"
C. Mc Conville "Recent results on electron accumulation in InN and potential applications"
W. Stolz "Integration of III-N-V on Si"
M. Guina "Dilute nitride heterostructures for high power lasers and ultrafast optics"

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Deadline for abstract submission: January 19, 2010

Symposium H:
Post-Si CMOS electronic devices: the role of Ge and III-V materials

Scope:
In an effort to ultimately scale logic devices beyond the 22 nm technological node, alternative options for channel materials with superior transport characteristics as compared to Si, such as Ge and III-V materials, are being thoroughly studied. Following the success of the 2008 symposium on materials and devices for post-Si CMOS, this symposium will bring together scientists and engineers working towards the integration of Ge and III-V devices with advanced Si CMOS logic. The "high mobility" option still suffers from a number of unresolved drawbacks and open challenges. Heterointegration of Ge and III-V materials on Si substrates will be addressed, including discussion of the resulting structural defect problems. Properties of the oxide/high mobility semiconductor interfaces will be reviewed, because these interfaces are quite vulnerable to interfacial defect formation. Correlated advanced characterization as well as modeling of the still puzzling oxide/high mobility substrate interfaces will be carefully taken into account with the aim to reach a superior knowledge of the physical, chemical and electrical details of the high-mobility based MOS structures. The latest Ge and III-V transistor device results can be presented and novel device concepts, which go beyond the classical CMOS structure, can be proposed for integration into advanced device structures. Optoelectronic applications on Si CMOS chips that might come into reach will complement the previous topics.
After peer-reviewing, manuscripts submitted to this symposium can be published in a special issue of *Microelectronic Engineering* (Elsevier).
Best student awards are scheduled both for oral and poster contributions.

Hot topics to be covered by the symposium:
1. Integration of Ge and III-V materials on Si wafers (Heteroepitaxy, selective growth, GOI, condensation)
2. Passivation and other properties of III-V /high-k oxide interfaces.
3. Modeling of high-k/high mobility interfaces and devices.
4. Defects in Ge (including Ge interfaces, GeOI or SiGe substrates).
5. Development of III-V and Ge-based MOSFET devices.
6. Novel device architectures (pHEMT, quantum well MOS, …).
7. Doping and contacting issues in Ge and III-V materials.
8. Optical devices for integrated Si optoelectronics.

List of invited speakers:
- Stephen Bedell (IBM Watson Research Center, USA)
- Jesus del Alamo (MIT, USA)
- Minghwei Hong (National Tsing Hua University, Taiwan)
- Michel Houssa (KU Leuven, Belgium)
- Paul K. Hurley (Tyndall National Institute, Ireland)
- Yoshiki Kamata (Toshiba Corp., Japan)
- Andrew Kummel (University of California, San Diego, USA)
- Jack C. Lee (University of Texas, USA)
- Suzanne Mohney (Pennsylvania State University, USA)
- Mike M. Morse (Intel Corp.,USA)
- John Robertson (Cambridge University, UK)
- Iain Thayne (University of Glasgow, UK)
- Maud Vinet (CEA-LETI, France)

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Deadline for abstract submission: January 19, 2010

E-MRS 2010 SPRING MEETING, June 7 - 11 / Congress Center, Strasbourg, France

Symposium I:
Advanced silicon materials research for electronic and photovoltaic applications II

Advanced silicon materials research is crucial to meet the requirements of future microelectronics, nanoelectronics, photovoltaics, and power electronics. Fundamental research as well as technological problems associated with point defects and extended defects in bulk silicon and silicon devices will be addressed, ranging from microelectronic, photovoltaic and power devices applications. The symposium will provide a forum for scientists from research and industry to discuss recent results and developments in silicon materials research. A fruitful discussion with mutual benefit is expected from the interaction and scientific exchange between the communities working in these technology fields of information, energy, and environment.
Next generation silicon technologies with ongoing scaled down feature size of transistors are asking for improved large area silicon material. Improved silicon crystal pulling and wafering processes with reduced density of crystal defects, defect engineered silicon wafers, and the improvement of material features by doping and co-doping with light elements are one of the major approaches to meet the requirements of technologies beyond 90nm to the silicon substrate material. Automotive applications will increase the demand for power devices to be used in electric cars. Photovoltaics is enormously rising in importance worldwide. The conversion efficiency is increasing as a result of better understanding of the conversion limiting factors and of innovations provided by materials research. As well, the final module cost should fall dramatically as a result of the availability of both low cost poly arising from advanced production processes and of solar grade silicon. Thin film technologies will give a substantial contribution provided their efficiency will be substantially increased. This symposium will offer a platform to discuss the latest scientific results under all the aspects mentioned above.

This symposium will include, but will not be exclusively limited to, the following topics:

Silicon for electronic applications
- modeling of defect generation and modeling of crystal growth
- vacancies, interstitials, and related defects in silicon and defect evolution in wafer processing
- vacancy and interstitial related point defect complexes with oxygen, nitrogen, carbon, and hydrogen
- complexes of dopants with intrinsic point defects and light elements
- gettering of metallic impurities and impurity precipitation in silicon
- interaction of metals with dopants and impurity atoms
- diffusivity and co-doping of light elements
- defect engineered and defect-free silicon wafer
- silicon and silicon germanium on insulator
- strain engineering of substrates and wafer processing
- large diameter crystals and innovation in crystal growth
- evolution and control of defects in large diameter silicon epitaxial wafers
- characterization and control of point-defects for void-free perfect crystals
- new wafering technologies and defect evolution in wafering processes
- advanced methods of defect diagnostics in silicon defects in nano-engineered structures

Silicon based photovoltaics
- modeling of bulk crystal growth of solar silicon
- improvements in polycrystalline silicon refinement
- novel silicon feedstocks for photovoltaics
- solar grade silicon definition
- carbon, phosphorous and boron control in solar grade silicon
- silicon based solar cell concepts
- advances in nanocrystalline silicon growth and modeling
- silicon nanowires and nanodots
- silicon based thin layer and multilayer solar cells
- improvement of solar cell efficiency by gettering and passivation processes
- defects in solar cells and novel methodologies for their characterization
- solar cell efficiency degradation issues
- gettering of metal impurities
- interaction of dopants with intrinsic point defects mono-crystalline silicon for solar cell applications

Silicon for power electronics
- crystal growth of high-quality 8-inch FZ crystals
- crystal growth: of very-low-oxygen MCZ crystals
- uniform doping of donor/acceptor impurities in FZ crystals
- point and extended defects induced by neutron transmutation doping (NTD)
- point defects in FZ crystals for power devices thermal annealing recovery of NTD induced damages point defects

Preliminary list of invited speakers:
Tonio Buonassisi, *"Stress Imaging Bulk Defects in Multicrystalline Silicon Solar Cell Materials"*
Alexandra Carvalho, *"Progress towards understanding self-interstitials and Frenkel pairs in Si"*
Anna Cavallini, *"Novel techniques for the local characterization of the optoelectronic properties of nanocrystalline silicon"*
Carlo Cavallotti, *"Modeling the plasma CVD of nanocrystalline silicon at different length scales"*
Gianluca Coletti, *"Impact of impurities on the solar cell performance"*
Naomi Fujita, *"First principles study of transition metals trapped at dislocations in silicon"*
Martin Hytch, Alain Claverie, *"Strain mapping in nanostructures and small devices using electron holography"*
Koichi Kakimoto, *"Numerical and experimental investigation of crystal growth of mc-Si for solar cells"*
Karl-Heinz Kuesters, *"Material effects in manufacturing of Si based solar cells and modules"*
Daniel Macdonald, *"Boron-oxygen defects in compensated p-type silicon for solar cells"*
Shin-Ichi Nishizawa, *"Wafer technologies for Future Advanced Power Electronics System"*
Xiaodong Pi, *"Doping silicon nanocrystals"*
Pascal Pochet, *"Atomistic simulation of point defect diffusion in Si and SiGe"*
Stefan Reber, *"Upgraded metallurgical silicon in photovoltaics: Status and challenges for a new material on its way to high-volume application"*
Stephan Riepe, *"Research on efficiency limiting defects and defect engineering in silicon solar cells - results of the German research cluster SolarFocus"*
Bengt Gunnar Svensson, *"Interaction of intrinsic point defects with boron, carbon, hydrogen, and oxygen in silicon; some recent advances"*
Hidekazu Yamamoto, *"Influence of crystal defects and impurities in power devices compared with MOS-LSIs"*

Scientific Committee:
Simona Binetti (University Milano-Bicocca, Italy), Stefan Estreicher (Texas Tech University, USA), Yoichi Kamiura (Okayama University, Japan), Bernd O. Kolbesen (Goethe-University Frankfurt, Germany), Bernard Pichaud (Universitè Paul Cezanne, Marseille, France), Bengt G. Svensson (University of Oslo, Norway), Michio Tajima (Inst. of Space and Astronautical Science (ISAS), Sagamihara, Japan), Wilfried Von Ammon (Siltronic AG Burghausen, Germany), Eicke R. Weber (Fraunhofer Institute for Solar Energy Systems (ISE) Freiburg, Germany)

Accepted contributed papers will be published in Physica status solidi (WILEY VCH)

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E-MRS 2010 SPRING MEETING, June 7 - 11 / Congress Center, Strasbourg, France

E-MRS 2010 SPRING MEETING, June 7 - 11 / Congress Center, Strasbourg, France

Symposium J:
Silicon-based nanophotonics

Silicon-based nanophotonics is fast growing field based on the idea of using silicon nanostructures to emit, modulate, guide, and detect light. The ultimate goal is the "all-silicon" photonics compatible with microelectronics technology as well as various other applications spreading from sensors to biomarkers.

Scope:
The interest in silicon-based nanostructures has a well defined igniter in the report on efficient room-temperature photoluminescence of porous silicon by Leigh Canham in 1990. It means that we are going to celebrate 20 years of light-emitting silicon-nanostructure research. The second milestone appeared 10 years later in 2000, when Pavesi's group reported on surprisingly high optical gain in silicon nanostructures. Around these two milestones and many other breakthroughs a broad research area has developed. This symposium is intended to summarize the state of art, define the open problems and the most promising directions for future investigation and societal impact. The symposium should continue in the long tradition of E-MRS symposia on silicon-photonics organized every two years. These symposia proved to be stimulating meetings of researchers from basic-research institutes as well as application-oriented and industrial laboratories enabling interdisciplinary inspiration and partnership. Recent advances in nanotechnology and the prospects of using quantum mechanical and optical phenomena at the nanoscale for new devices and functions have also stimulated the growth of the emerging field of 'nanophotonics'. Here optical phenomena such as light emission/absorption, waveguiding etc. occur at a nanoscale providing prospects for continued downscaling beyond the diffraction limits set by the wavelength of light. Examples are plasmonics for sub-wavelength lightguiding, light emission from nanostructures such as quantum dots/wires grown on silicon or embedded in silicon dioxide, photonic bandgap structures etc.
This 2010 symposium will address the latest advances in silicon-based nanophotonics and review current state-of-the-art. Contributions will be invited from academic and industrial researchers providing for a balanced mix of fundamental and applied aspects relevant to nanophotonics.

Hot topics to be covered by the symposium:
Symposium topics include, but are not limited to the following:
- Mechanism of light emission from Si: Nanocrystals, impurities, defects, SiGe structures etc.
- Fundamental studies of Si quantum dots: single nanocrystal spectroscopy, etc.
- Theoretical modelling of Si nanostructures.
- Optical gain in Si nanostructures: Si-based lasers and amplifiers.
- Si-based light emitting devices, detectors and modulators.
- Rare earth doping of Si nanostructures.
- Novel Si-based devices.
- Hybrid light-emitting devices: Integration of III-V or II-VI materials with Si.
- Waveguides and opto-electronic integration.
- Photonic bandgap structures with Si nanostructures.
- Si-based plasmonics for sub-wavelength optics.
- Solar cell applications including multi exciton generation.

Scientific committee:
- Minoru Fujii, Kobe University, Japan
- Yasuhiko Ishikawa, Tokyo University, Japan
- Wolfgang Jantsch, Johannes Kepler University, Linz, Austria
- Jan Linnros, Royal Institute of Technology, Stockholm, Sweden
- Michael Morse, Intel Corporation, USA
- Stefano Ossicini, Universita di Modena e Reggio, Italy
- Tony Peaker, University of Manchester, UK
- Richard Rizk, SIFCOM-ENSICAEN, France
- Margit Zacharias, University of Freiburg, Germany
- Zhiping (James) Zhou, Peking University, China

Invited speakers (confirmed):
- Elena Degoli (Universita di Modena e Reggio, Italy) *From free standing to embedded Si nanocrystallite: the role of size, oxydation and strain.*
- Christophe Delerue (IEMN,ISEN Lille, France) *Relaxation of hot carriers in Si.nanocrystals.*
- Philippe Fauchet (University of Rochester, USA) *Ultracompact silicon photonic crystal devices for sensing and information processing.*
- Dirk Koenig (University of New South Wales, Australia) *Introduction of majority carriers into Si and Ge nano crystals embedded in SiO2 or Si3N4.*
- Thomas F. Krauss (University of St. Andrews, UK) *Enhancement of nonlinear effects in slow light silicon photonic crystal waveguides.*
- Ivan Pelant (Institute of Physics ASCR, Czech R.) *Optical gain in silicon nanocrystals: current status and perspectives.*
- Shin-ichi Saito (Hitachi, Central Research Laboratory, Tokyo, Japan) *Optical Gain from Si-QW via CMOS technology.*
- Paul Snow (University of Bath, UK) *Silicon photonics: Twenty years of porosification.*
- Gottfried Strasser (Technical University Vienna, Austria) *GaAs-Si Hybrid Quantum Cascade Lasers.*
- Michiharu Tabe (Shizuoka University, Japan) *Single-photon detection by Si single-electron FETs.*
- Leonid Tsybeskov (NJ Institute of Technology, USA) *Light emission in Si/SiGe three-dimensional nanostructures.*

Accepted contributed papers will be published in Physica status solidi (WILEY VCH)

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E-MRS 2010 SPRING MEETING, June 7 - 11 / Congress Center, Strasbourg, France

Symposium K:
Rare earth doped materials for optical based technologies

In view of the considerable research activity under way in this field, the symposium will bring together scientists who are specially contributing to research on the luminescent properties and the photonic applications of rare-earth-doped materials.
Following the success of EMRS symposia in 2003, 2005 and 2007, which dealt with rare earth (RE) doped materials, the present proposal has a clear ambition to provide the opportunity to discuss the fundamental topics of interest that underline the development and foreseen wide range applications of these materials.
In phosphors, scintillators and laser crystals, the applications are now mature and largely exploited in industry for displays, detection and multi-purpose lasers for example. Nevertheless, a deep understanding of the mechanisms of RE active ion luminescence in these insulating materials still requires a reliable determination of the location of the energy levels of the RE dopants with respect to the valence and conduction bands as well as a detailed investigation of the involved energetic relationships. It appears also that developments of novel experimental methodologies, such as the ultrafast inscription of photonic devices in RE doped materials, are highly promising for future exciting applications. On the other hand, RE doped insulating materials are becoming more and more attractive and exciting for applications in wider areas such as biology and medicine. Optical imaging, biochemical sensing and diagnostical tools are integrating crystalline and nanomaterials (inorganic or hybrid organic/inorganic) activated by luminescent RE ions which can offer high detection selectivity as well as reliability.
In semiconductors, important contributions have been made to electroluminescent devices based on Er-doped Si crystals or nanocrystals within amorphous matrix (Si/SiO2, …). The ambition of many researchers in the photonics arena has been to realise high efficiency light emission from a Si host, preferably through a ULSI compatible process. Doping Si-based materials and devices with rare earths has emerged as the strongest contender, certainly at mid infra-red wavelengths, and possibly also for visible outputs. As processing for nano-devices becomes ever more sophisticated, so too does the development of photonic devices based upon resonant cavities, waveguides and Si-related photonic band gap materials. Considerable progress is underway in understanding luminescence from rare earths sensitised by nanoclusters in SiO2 and/or Si oxy-nitrides, with room temperature operation reported.
In the last few years, there has been considerable research activity in doping wide bandgap compound semiconductors, such as GaN, SiC, and ZnO, with Er and other rare earth elements, such as Pr, Eu, Tb, and Tm in order to obtain efficient visible emission. New opportunities have been opened up by the demonstration of the laser emission in Eu doped GaN. The adjunction of phosphors with wide bandgap semiconductors has led to the production of white electro luminescence diodes, but the research for direct doping of these semiconductors by a combination of RE species is due to lead to the production of most efficient devices.
Most interesting and new applications of RE doped materials which are under extensive investigation and are due to be discussed include adequacy of such materials for applications to quantum computing and spintronics.

Hot topics to be covered
- RE doped materials for new generation of lasers
- RE doped materials for solid state quantum memories
- RE doped wide band gap semiconductors for photonics and spintronics
- RE doped nanomaterials for diagnosis and therapy
- RE doped organic or hybrid organic-inorganic materials
- Luminescence of RE in non-linear materials and in transparent ceramics
- RE doped materials for third generation photovoltaics

Invited Speakers
1. T. Dietl*, IPPAS, Warsaw: spintronics in semiconductors
2. S. Kröll, UL, Lund: quantum information hardware
3. A.M. Srivastava*, GE, New York: light and scintillator technologies
4. C. Ronda*, Philips, Aachen: biomedical applications of RE luminescence
5. D. Jaque, UAM, Madrid: photonic devices in RE doped materials
6. G. Accorsi, CNR, Bologna: RE ions in organic materials
7. P. Dorenbos, TU, Delft: location of RE energy levels
8. S. Tanabe, KU, Kyoto: Quantum cutting downconversion phosphors for c-Si solar cells
9. T. Gregorkiewicz, Zeeman, Amsterdam: Er doping of Si - from bulk to nano
10. D. Navarro-Urrios, UB, Barcelona :Silicon photonics with Er-based amplifier
11. L. Dal Negro, BU, Boston: Er-doped Silicon nitride structures for on-chip lasers
12. L. Aigouy, LPM, Paris: RE based nanoscale sensors
13. H. Jiang, KSU, Kansas: MOCVD in-situ doping of Er ions in GaN
14. M. Raukas*, OSRAM, Beverly: RE Luminescence in nitride semiconductors
15. A. Nishikawa, Osaka University: Devices based on RE doped GaN

*To be confirmed

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Publication
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E-MRS 2010 SPRING MEETING, June 7 - 11 / Congress Center, Strasbourg, France

Symposium L:
Carbon –or nitrogen-containing nanostructured composite films

Nanostructured thin films exhibit a unique microstructure tailored at the nano-level and exceptional size-dependent behaviour which can address many of today's industrial needs. These materials contain grains, particles, layers or filaments with an average size between 1 and 100 nm. These composite films offer a wealth of structures giving rise to diverse types of physical, optoelectronic, magnetic, electrical and mechanical properties, enabling the development of new materials. Carbon and Nitrogen containing nanostructured composite films are one of the most promising families of such materials, considering the wide and already established range of applications of the films based on carbon –or nitrogen compounds. Composite films with specific properties can be tailored by adding either metallic or non metallic elements with either high or low affinity for C or N, in an amorphous or crystalline matrix. Composite films with a graded composition or multilayer structures add new insight in the development of new materials.
The main aim of this symposium is to offer an up-to-date image on recent advances in this interdisciplinary field and to create a forum debate where researchers and engineers will share their knowledge and expertise on these novel films and their various emerging applications.
The symposium program will be focused on, but will not be limited to, the following topics:
- synthesis, characterization and modelling of dimensionally constrained materials systems in terms of grain size, film thickness, interfacial boundary, etc.,
- surface interaction and nucleation phenomena,
- films consisting of nanosize particles embedded in an inorganic/organic host matrix,
- ordered nanolaminated structures such as MAX-phases,
- mechanical, electrical, optical or magnetic properties, tribological or friction behaviour, biomedical compatibility,
- degradation mechanisms linked to coating-substrate interdiffusion, phase and microstructural stability under different environmental challenges, accelerated testing methods.

More engineering- and application oriented contributions which would include, for example, applications in the automotive, chemical, electrical, magnetic storage data, optical, pharmaceutical or biomedical industry will be we considered.
We call for papers giving the latest information on research and development in topics corresponding to one or more of the above-mentioned areas. All aspects covering new applications of nanostructured composite films, at the crossroads between different technologies and disciplines, will be emphasized.
The manuscripts submitted to this symposium and accepted after peer-review processing on the basis of the referee procedure adopted for regular papers will be published in the international scientific journal "**Thin Solid Films**" by Elsevier.

For this 2010 Symposium, the following hot topics would be particularly highlighted:
- *Physical and chemical vapor deposition of thin films*
- *Novel fabrication and synthesis routes*
- *Modeling of growth processes*
- *Development of reliable characterization procedures and correlation of materials properties with structure and composition*
- *Stability of nanocomposite thin films, identification of the effect of ionizing radiation on the properties of films*
- *New optical and microtechnologies enabling to produce two and three-dimensional structures, optical elements and microdevices; research toward introduction of these composite films into semiconductor technology*
- *Mechanical and tribological properties of films*
- *Magnetic properties of films*
- *Biological and biomedical applications*
- *Thermo-solar energy applications*

Scientific Committee
D. Anglos (Greece), I. Bertoti (Hungary), V. Braic (Romania), A. Cavaleiro (Portugal), P. Dearnley (United Kingdom), W. Gulbinski (Poland), I. Efeoglu (Turkey), H. Hofsäss (Germany), P. Hovsepian (United Kingdom), U. Jansson (Sweden), S. Kaciulis (Italy), S. Kassavetis (Greece), P. C. Kelires (Cyprus), N. Laidani (Italy), P, Lobotka (Slovakia), S. Logothetidis (Greece), P. Mayrhofer (Austria), T. P. Nguyen (France), G. Padeletti (Italy), J. Patscheider (Switzerland), Y. Pauleau (France), G. Radnoczi (Hungary), C. Ruset (Romania), J.C. Sanchez-Lopez (Spain), R. Sanjines (Switzerland), H. J. Scheiber (Germany), A. Schüler (Switzerland), F. Schwarz (Germany), M. Sen (Turkey), A.Sylvestre (France), G. Van Tendeloo (Belgium), W. Vandervorst (Belgium), J. Vetter (Germany), V. Weihnacht (Germany), L. Zajickova (Czech Republic).

Invited Speakers

D. Babonneau, Université de Poitiers, France	Self-organization of noble-metal nanoparticles on rippled surfaces of Si3N4 and BN
M. Balden, Max–Planck-Institut für Plasmaphysik, Garching, Germany	Characterization of nano-structured Ti, V, Zr, and W doped carbon films
L. Hultman, Thin Film Physics Division, IFM - Linköping University, Sweden	Self-organized Nanostructure Formation during Phase Transformations in MeAlN {Me = Ti, Sc, Zr, Hf) and TiSiN Solid Solution Thin Films.
S. Mahieu, Ghent University, Belgium	Modeling the growth of sputter deposited nitride thin films
C. Mitterer, University of Leoben, Austria	Alloying of TiAlN and CrAlN-based hard coatings
S. Novak, Ian Evangelista Purkyne University, Czech Republik	Relationship between electrical and morphological properties of nanocomposites
P. Patsalas, Aristotle University of Thessaloniki, Greece	Applications and Perspectives of amorphous Carbon-based films in photonics
T. Polcar, Czech Technical University, Prague, Czech Republic	New design of self-adaptive low friction coatings
N. Radič, Rudjer Boskovic Institute, Zagreb, Croatia	C/W nanolaminates - alternating various C & W phases
M. Stüber, Forschungszentrum Karlsruhe, Institute for Materials Research, Eggenstein-Leo, Germany	New developments on magnetron-sputtered hard nitride, carbonitride and oxynitride protective thin films

Graduate student awards (GSA)
A 'special oral session' will be organized during the symposium for selected candidates of the GSA. A Jury Committee of three scientific experts will deliver two awards (~300 € + refunding of registration fees). To be eligible, applicants must fulfil the following criteria:
1) preparing a PhD thesis in a research field covered by the symposium,
2) being in charge of the presentation (oral or poster session) of one paper on a topic to be addressed in the symposium. Selection of the finalists for the 'special oral session' of the GSA will be made on the basis of the education, research work and evaluation from their PhD's advisor.

Symposium organizers:

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Deadline for abstract submission: January 19, 2010

E-MRS 2010 SPRING MEETING, June 7 - 11 / Congress Center, Strasbourg, France

Symposium M:
Thin film chacogenide photovoltaic materials

This symposium shall concentrate on chalcogenide photovoltaic materials such as CdM (M=S,Se,Te), CuMX2 (M=Al,In,Ga and X=S,Se,Te) and related ones such as Cu2ZnSnS4. The aspects treated in this symposium range from material growth and properties up to material application in devices. In connection with above chalcogenide compounds, relevant materials used in devices in conjunction, such as n- and p-type transparent conductive materials are treated as well.

Scope:
Chalcogenide semiconductors, such as copper indium gallium diselenide (Cu(In,Ga)Se2; CIGS), cadmium sulfide (CdS) and cadmium telluride (CdTe), together with transparent conducting oxides, are the critical materials for today's leading thin-film photovoltaic technologies. Progress is continuously made both in terms of small cell efficiencies (with best thin-film cell performances of 16.5 and 19.9 % obtained for CdTe- and CIGS-based cells) and in terms of larger area module efficiencies (over 12 and 11 % for CIGS and CdTe-based ones, respectively).
Chalcogenide semiconductors are also considered as promising candidates for next generation photovoltaics in the form of tandem cells and nanostructured cells. Here the scientific aspects are among others sub-bandgap transparency, doping ability and nanoparticle stability.
Since the beginning of this century, Chalcogenide based solar cells have evolved from a development stage to a fast growing industry. Yet many material issues related to defects or interfaces are unresolved, where focus is both on characterization techniques and fundamental understanding. Although chalcogenide photovoltaic materials are already used in commercial products, their growth and thin film preparation remain a subject of vivid research. Low-cost preparation techniques as well as high-speed deposition are addressed in several laboratories in the world.
Because the emphasis is on Materials R&D, relevant to PV, rather than on PV technology, the symposium will complement rather than overlap with the various PV Solar Cell Specialist and Technology Conferences.
The symposium is part of the successful biannual series of E-MRS symposia (1999, 2000, 2002, 2004, 2006, 2008) on "Chalcogenide semiconductors for photovoltaics", complemented by MRS Spring Meeting ones on "II-VI Compound Semiconductor Photovoltaic Materials", in 2001, 2003, 2005, 2007, 2009. The symposium will be organized along similar lines, i.e., with ample time for both structured and free discussion sessions, centred on the main topics of the symposium. A satellite tutorial on specific topics of relevance for young scientists will be organized in connection with the symposium.

Hot topics to be covered by the symposium:
- Novel processes for film synthesis
- Thin film growth models from theory and experiment
- Defect physics and device analysis
- Interfaces and grain boundaries
- Chalcogenide window&buffer layers
- Issues of large area film manufacturing
- Alternative chalcogenides
- Material combinations & hetero-structures, Nano-structured composites
- Defect chemistry, doping of chalcogenide semiconductors

List of invited speakers (confirmed):
- M. Edoff, Uppsala University
- A. Compaan Univ. Toledo
- T. Minemoto, Ritsumeikan University
- E. Mellikov, Uni. Tallin
- A. Tiwari, EMPA
- N. Naghavi, IRDEP
- Y. Yan, NREL
- Enzenroth, Colorado Uni.
- A. Bosio, University of Parma, INFM
- A. Klein, U. Darmstadt
- H- W. Schock, Helmholtz Zentrum

Accepted contributed papers will be published in Thin Solid Films

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Symposium organizers:

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Deadline for abstract submission: January 19, 2010

Symposium N:
Nuclear materials IV

Nuclear materials are studied for their specific utilisation under extreme temperature, pressure or irradiation environments. These materials act as barriers and their structural properties are investigated with emphasis on mechanical performances, durability, plasticity and stability. The symposium N includes sessions dealing with materials ranging from the fuel, structural components, fusion system components and waste form materials. Macro-properties such as thermodynamical, thermophysical and mechanical as well as microstructural analysis of these materials are discussed for example comparing properties prior and after irradiation.

Scope:
The symposium N includes sessions that allow a trail along nuclear systems in operation today as well as foreseen in the future generations of reactors.

- Materials for **fusion** reactor components are also treated in a separate session. Here, the energy and flux of particles are very high. This session will be connected with the structural materials in high temperature gas reactors topics.
- Generation IV reactor **structural** materials such as cladding, assembly components, reactor vessel or tubing are considered in a specific session.
- Generation II&II reactor **structural** materials such as cladding, assembly components, reactor vessel or tubing are considered in a specific session.
- The **fuel** materials include advanced oxides, nitrides, carbides or metals in homogeneous form or as composites such as cercer, cermet or metmet that can be used either as fuel matrice or as target for transmutation.
- The **waste** form materials must be acknowledged for their durability, low solubility or leaching rate in environmental conditions over geological time scales. In all cases, irradiations with accelerators guide the investigator in choosing the optimal components.

Hot topics to be covered by the symposium:
The challenge in this century will be to work with reliable or inert material that makes their use safer with respect to economical and ecological goals, such that their utilization is more sustainable for nuclear systems.

List of invited speakers:
• ***Fusion Material***
Sergei. L. Dudarev, Theory and Modelling Department, EURATOM/UKAEA Fusion Association Culham Science Centre, Oxfordshire OX14 3DB, UK
• ***Gen IV***
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• ***Gen II & III***
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• ***Fuel***
Frodo Klaassen - Life Cycle innovations & Isotopes (NRG-LCI) PO Box 25, 1755 ZG Petten, The Netherlands
• ***Waste Form***
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Accepted contributed papers will be published in Journal of Nuclear Materials

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E-MRS 2010 SPRING MEETING, June 7 - 11 / Congress Center, Strasbourg, France

Symposium O:

Solid state ionics: exploring chemical and structural complexity of novel ionic conductors on the occasion of the 65th birthday of Harry L. Tuller

This symposium will focus on novel ionic and mixed conducting materials from a fundamental as well as application-oriented view. Increasing chemical or structural materials complexity corresponds to additional degrees of freedom allowing for further tuning of the properties, e.g. in heterolayer systems. Anisotropic structures gain increasing attention for cation as well as anion transport, electrolytes and mixed conductors. Many of these materials present also interesting (electro)catalytic properties.
A number of materials become electroactive only if prepared with sufficiently small grains but ensuring good connectivity. Hierarchical pore structures and interpenetrating electronically and ionically conducting networks are increasingly important, e.g. for improving battery performance. With the expanding use of nanostructuring, a detailed understanding of transport across and along interfaces is crucial. The applicability of materials, especially at lower temperatures, may critically depend on controlling the interface properties.
Chemical and structural complexity is also an inherent feature of polymer electrolytes for protons and lithium ions. It is further increased by the formation of blends, composites and hybrid organic-inorganic materials, and is often decisive for improved properties.
Theory has become a valuable tool for the understanding of ionic motion or surface reactions on an atomistic scale. Bridging different length scales by appropriate modelling even allows for the optimization of complete electrochemical devices.

The symposium will focus on current research and developments in the field of ionic and mixed conducting crystalline or amorphous materials, glasses and polymers as well as on their applications in electroceramic and electrochemical devices. In particular, papers on the following **topics** are solicited:

Ionic and mixed conductors
with special emphasis on novel/complex structures
Understanding of transport
along and across interfaces in particular in nanostructured materials
Chemical and structural complexity
in polymer electrolytes, composites, hybrid materials, hierarchically ordered structures ...
Theory of ionic motion and reaction
from ab-inito calculations to phenomenological modelling
Characterization
with special focus on in-situ, space-resolved and nanoscale analysis methods
Selected applications: novel/complex materials for fuel cells, lithium batteries, sensors, memory devices ...

After peer-reviewing, **manuscripts** presented at this symposium can be published in a special issue of **Solid State Ionics**. Maximum length is 5 printed pages, submission deadline is **May 15, 2010**.

Scientific committee: to be announced
A. V. Chadwick, University of Kent, Canterbury
J. Fleig, Vienna University of Technology
M. S. Islam, University of Bath
T. Norby, University of Oslo
W. Sitte, Montanuniversität Leoben
H. L. Tuller, Massachusetts Institute of Technology

Invited speakers: to be announced
A. Bieberle-Hütter, ETH Zürich
M. L. Di Vona, University of Rome Tor Vergata
C. A. J. Fisher, Japan Fine Ceramics Center, Nagoya
C. P. Grey, University of Cambridge, UK
R. Haugsrud, University of Oslo
J. A. Kilner, Imperial College, London
D. A. Muller, Cornell University, Ithaca
P. Poizot, Universite de Picardie, Amiens
B. Roling, University of Marburg
P. R. Slater, University of Birmingham
J. R. Varcoe, University of Surrey, Guildford
J. M. Vohs, University of Pennsylvania, Philadelphia
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Deadline for abstract submission: January 19, 2010

Symposium P:
Science and technology of nanotubes, nanowires and graphene

The successful application of nanomaterials for nanotechnology faces four main challenges: materials preparation, characterization, device fabrication and integration. This symposium will cover the considerable progress in the design, manufacturing and characterisation of nanotubes/nanowires/graphene, and the new developments that are leading to possible commercial applications of these materials in the near future.

Scope:
The physical properties of nanomaterials strongly depend on their atomic-scale structure, size and chemistry but also on their organisation and aggregation. To fully exploit the technological advantages offered by these self-assembled molecular structures it is essential to acquire the ability to select, control and manipulate individual or aggregated nanomaterials. There has been much progress in the synthesis and characterization of nanostructures such as nanotubes, nano-crystals, atomic wires, organic and biological nanostructures, molecular junctions and graphene layers. However, immense challenges remain in understanding their properties and interactions with external probes to realize their tremendous potential for applications. Some of the frontiers in nanoscience include molecular electronics, nano-scale opto-electronic devices, nanomechanics, light harvesting and emitting nanostructures. Nanotubes, nanowires and graphene dominate the pursuit for materials for future nanotechnology applications.
Carbon nanotubes are a unique platform for many fundamental studies of quantum physics in low-dimensional systems, and several unexpected physical phenomena have been discovered. Recent breakthroughs in the high-yield, structure-selective manufacturing and techniques for separating metallic and semiconducting nanotubes promise to make commercial applications of this material real. Large efforts in the area of chemical modification and manipulation have allowed the design and fabrication of well-controlled architectures. Substantial progress has also been made in fabricating electronic devices, sensors, field-emission displays, and nano-electro-mechanical systems using nanotubes and nanotube-based mesostructures.
One-dimensional nanowires are also receiving increasing attention because of their potential applications in electronics and photonics. Device performance typically depends on the material structure and crystallinity, but assembly is also a critical issue for applications. Fabrication of several types of one dimensional nanostructures, such as nanowires, nanorods, nanosaws and nanoribbons, has been successfully demonstrated by several growth methods for elemental semiconductors, such as Si and Ge, as well as for III-V and II-VI compounds. Nanotubes of various non-carbon materials have been found and characterized. Theoretical modelling of these structures continues to reveal fascinating attributes. The electronic functionality of these materials, based on the directional transport of charges or energy, makes them ideal building blocks for interconnecting individual quantum systems in supramolecular architectures, field effect transistors or photonic wires. The large surface to volume ratio results in a pronounced sensitivity to environmental conditions making them suitable as sensors in nanoscale devices.
Graphene is the latest carbon allotrope to be experimentally discovered, and it is now at the centre of a significant experimental and theoretical research effort. In particular, near-ballistic transport at room temperature and high carrier mobilities make it a potential material for nanoelectronics, especially for high frequency applications. It is now possible to produce graphene samples with areas exceeding thousands of square microns by means of micro-mechanical cleavage of graphite, and much larger by "epitaxial" growth on SiC. An ongoing effort is being devoted to large-scale production and growth on different substrates of choice. Graphene nanoribbons are the counterpart of nanotubes in graphene nanoelectronics.

Hot topics to be covered by the symposium:
- Progress in the synthesis of nanotubes/nanowires/graphene
- Progress in the assembly of nanotubes/nanowires into well-controlled architectures
- Electron and spin transport
- Light absorption, emission, and scattering
- Carrier interactions, ultrafast dynamics of carriers, excitons, and phonons, band structure and optical spectra
- Novel characterization techniques.
- Theoretical modelling of growth, electronic and optical properties
- Fabrication and characterization of nanotube/nanowires/graphene devices, sensors, actuators.
- Nanocomposites
- Applications and commercialisation
- Health/toxicity related issues

Symposium organizers:

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Deadline for abstract submission: January 19, 2010

Symposium Q:
Quantitative electron microscopy for reseach and industry

This symposium aims at providing a forum for researchers interested in applying quantitative methods of electron microscopy and spectroscopy to materials research in the different technology fields, such as electronics, optics, magnetics, energy and environment, engineered materials, nanosystems, soft matter and bioscience. Current topics will be highlighted in keynote presentations given by leading invited experts.

Scope:
Materials research on thin films, bulk materials, surfaces, materials at the nanoscale and at the interface between physical and life sciences is of prevailing interest because of its fundamental importance in understanding the chemical and physical properties of materials and in evaluating their potential for technological applications. With the emergence of new electron optical components for energy filtering and aberration correction and the availability of improved software for data acquisition and analysis, new advanced quantitative high-resolution imaging, diffraction and spectroscopic techniques of electron microscopy have become available. These techniques play a crucial role in characterizing the microstructure and the structure-property relationships of materials, as well as in metrology.
The symposium will address but is not limited to the following topics of interest:
- advanced quantitative electron microscopy (EM) methods – strategies and applications: In-situ EM measurements, electron tomography, scanning-transmission EM, diffractive imaging and diffraction, aberration-corrected EM, electron holography, electron nanospectroscopic techniques for local bonding and elemental mapping, quantitative comparisons (experiment versus theory)
- the application of physical sciences techniques in electron microscopy to soft and biological materials
- metrology for thin layers, nanoscale materials, and interfaces
- electron microscopy for the characterization of the growth and structure of nanoscale materials, such as nanowires and nanotubes
- electron microscopy of the self-assembly of nanostructures on surfaces or in thin films
- the in-situ manipulation and characterization of nanomaterials and processes by electron and ion beam techniques
- electron microscopy of functional nanocomposite materials
- electron microscopy of organic-inorganic interfaces for molecular and electronic applications

Important topics will be highlighted in keynote presentations given by leading invited experts and will be targeted to a non-expert audience, designed to communicate the potential of quantitative EM to application-oriented researchers in all of the fields addressed above. Contributions are solicited that feature applications of quantitative electron microscopy to all different classes of materials.

Hot topics to be covered by the symposium:
The scientific sessions (incl. poster sessions) are grouped into the following clusters covering state-of-the-art characterization / using quantitative electron microscopy (EM) for topic areas of materials science:
- In-situ electron microscopy measurements
- Electron tomography, focused ion beam / scanning electron microscopy techniques (FIB-SEM) and scanning-transmission electron microscopy (STEM)
- Diffractive imaging and diffraction
- Aberration-corrected electron microscopy
- Electron holography
- Electron nanoscopic techniques for local bonding and elemental mapping
- Pump-probe electron microscopy
- Quantitative comparison: experiment vs theory

Tentative list of invited speakers *(attendance partially confirmed, alphabetical order):*
- Florian Banhart, Université de Strasbourg FR
- Juri Barthel, ER-C Jülich / RWTH Aachen DE
- Pascale Bayle-Guillemaud, CEA-Grenoble, Grenoble FR
- Hugo Bender, IMEC Leuven BE
- Jose Calvino, Universidad de Cádiz, Cadiz ES
- Aicha Hessler CIME-EPFL, Lausanne CH
- Wayne Kaplan Technion, Haifa IL
- Gerald Kothleitner, FELMI Graz AT
- Dierk Raabe, Max-Planck-Institut für Eisenforschung Düsseldorf DE
- John Walmsley, Norwegian University of Science and Technology, Trondheim , Norway

Scientific Committee:
The chairmen agreed to not nominating a scientific committee.

Accepted contributed papers will be published in Journal of Materials Science.

Symposium organizers:

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Deadline for abstract submission: January 19, 2010

Symposium R:
Laser processing and diagnostics for micro and nano applications

Scope of the symposium:
The primary goal of the EMRS is to promote the materials agenda within the European Research Community, focusing on both fundamental and applied issues concerning materials development, assessment, functionality, and applications. This proposed symposium addresses laser and plasma materials synthesis, processing, and diagnostics with the special emphasis on micro-and nano-scale applications across a broad range of science and technologies, directed towards both fundamental and applied end goals. Laser ablation, patterning, micro/nano structuring, microanalysis and laser synthesis of nanomaterials of materials have been applied across the full range of scientific disciplines, covering materials science, engineering, photonics, biophotonics, display technologies and opto- and micro-electronics for biosensing and environmental monitoring. The recent widespread availability of high power and ultrashort pulse lasers has also opened up the realm of multiphoton materials processing, enabling the fabrication of subsurface structures inside functional dielectric hosts, laser direct write techniques and true nanoscale materials engineering, where structures of sub-wavelength dimensions can be designed and produced using photons. This symposium will focus on the inherent interdisciplinarity of laser and plasma materials processing, and will engage across the broadest range of topic areas. There will be great emphasis on the scope for research collaboration between laser scientists and those in the biological and life sciences arenas, where the challenge exists for building bridges across these otherwise dissimilar fields. A dedicated session will address hot topics within the bioscience area, where laser and plasma processing can make significant inroads.

List of topics:
- Ultrashort laser pulse interaction with materials: diagnostics, modeling, materials processing and characterization
- Laser processing of polymers, biomolecules and biomaterials
- Laser assisted fabrication for sensors (bio-, chemical- and environmental-)
- Lasers for synthesis, structuring and manipulation of new materials: nanotubes, clusters and nanoparticles
- Pulsed laser deposition of thin films: new materials and applications
- Nanoscale processing by near-field techniques
- 3D micro-structuring for MEMS, MOEMS, photonic crystals and photonic applications
- Direct laser printing and laser lithography
- Laser and plasma processing and characterization of nano-structured materials
- Laser-based spectroscopy of nanomaterials and thin films
- Diagnostics of laser induced plasmas.

List of invited speakers (tentative list):
- Alberto Pique, Naval Research Laboratory, Washington, "Laser Direct Printing"
- Costas Grigoropoulos, University of California Berkeley, "Laser Scaffolding of tissue engineering"
- Maryline Guilloux-Viry, Université de Rennes "New ferroelectric oxide films by PLD"
- Ionut Enculescu, National Institute of Materials Physics, Bucharest, "Nanowires with tailored properties by a template approach"
- Georg Müller, Forschungszentrum Karlsruhe GmbH, Karlsruhe, "Surface modification of materials with pulsed electrical discharges"
- Anton Plech, Fachbereich Physik der Universität Konstanz, "Femtosecond pulse near-field ablation of metal nanoparticles"
- Y. Bellouard, Eindhoven University of Technology, "Ultrafast laser in micro and nanoscale engineering for MEMS"

International Advisory Committee:
S. Amoruso - CNR-INFM Napoli (Italy), P. Atanasov - Institute of Electronics, Sofia (Bulgaria), C. Boulmer-Leborgne – GREMI Université d'Orléans (France), I. Boyd - University College, Londres (UK), B.Chichkov - Lazer Centrum Hannover (Germany), V. Craciun - University of Florida (USA), P.Delaporte - LP3-CNRS Marseille (France), M. Dinescu - National Institute for Laser Plasma and Radiation Physics (Romania), E. Fogarassy - ENSPS Strasbourg (France), H. Fukumura - Tohoku university (Japan), H. Helvajian - Aerospace Corporation L.A. (USA), T. Lippert - Paul Scherrer Institute (Switzerland), J. G. Lunney - Trinity College Dublin (Ireland), E. Millon - Université d'Orléans (France), J. Reif - Brandenburg Technical University, Cottbus (Germany), P.Schaaf - Zweites physikalishes institut Göttingen (Germany), R. Serna - CSIC, Instituto de Optica (Spain), T. Szoreny - Hungarian Academy of Sciences (Hungary).

Accepted contributed papers will be published in Applied Surface Science.

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Deadline for abstract submission: January 19, 2010

Symposium S:
Shape memory materials for smart systems III

Recent progress in research and fabrication of shape memory materials has opened the opportunity to develop novel smart systems, which are capable of sensing and actuating and thus may respond to their thermal, mechanical and magnetic environment in a controllable way. Meeting the demands of smart systems requires an entirely interdisciplinary approach including the development of new multifunctional materials, material characterization, workable material models and viable technologies.
The Symposium is a follow-up to successful 2005 and 2007 E-MRS Fall Meeting Symposia. It covers all the multi-faceted aspects of SMA materials science and technology. In particular, it addresses the recent progress in research and development of shape memory materials from basic physics to early engineering developments and applications of smart structures and systems responding to thermal, mechanical and magnetic stimuli. It emphasizes the interdisciplinary dialogue between basic research and engineering as well as the stimulation of practical applications in this challenging and rapidly developing field. Experts from the material science, mechanics and application communities are encouraged to participate.

The **topics of interest** include:
- Shape Memory Materials: Shape memory alloys (SMAs) and polymers; magnetic SMAs, high temperature SMAs, Ni-free SMAs, nanocrystalline SMAs, composites
- Characterization: Transformation behavior, phase states, microstructure, domains, composition, constitutive behavior, fatigue, failure mechanisms, corrosion
- Modeling: Micromechanical models, multi-physics materials modeling, finite element implementation
- System Design: Simulation, optimization, hybrid systems, adaptive systems, distributed systems
- Technologies: Thin and thick films, magneto-thermo-mechanical treatment, laser technologies, micro- and nanometer-scale processing, interconnection technologies
- Devices and Systems: Actuators, sensors, novel applications, micro- and nanometer-scale systems

Scientific Committee:
- Franka Albertini (Italy)
- Manuel Barandiaran (Spain)
- Vasiliy Buchelnikov (Russia)
- Eduard Cesari (Spain)
- Jan Dutkiewicz (Poland)
- Laurent Hirsinger (France)
- Jan van Humbeeck (Belgium)
- Tomoyuki Kakeshita (Japan)
- Yinong Liu (Australia)
- Victor L'vov (Ukraine)
- Lluis I. Manosa (Spain)
- Robert C. Pond (UK)
- E.K. Polychroniadis Statis (Greece)
- Eckhard Quandt (Germany)
- Qing-Ping Sun (Hong Kong)
- Stefan Seelecke (USA)
- Toshiyuki Takagi (Japan)
- Andrzej Ziolkowski (Poland)

Invited Speakers:
- Petr Sittner (FZU, Prague, Czeck Rep)
- Jose San Juan (University of Basque Country, Spain)
- Ichiro Takeuchi (University of Maryland, USA)
- Yasukazu Murakami (Tohoku University, Japan)
- Stefan Fähler (IFW Dresden, Germany)
- Peter Mullner (Boise State University, USA)
- Oliver Kastner (Ruhr-University Bochum, Germany)
- Dimitris Lagoudas (Texas A&M University, USA)
- Pekka Mäkelä (Adaptamat, Finland)
- Frederick T. Calkins (The Boeing Company, USA)

Proceedings:
The presenters will be encouraged to submit a manuscript for publication in a special issue of
Physics Procedia http://www.elsevier.com
All manuscripts will be peer-reviewed according to the standards of the Journal. The paper length is limited to about 6 pages for contributed and about 8 pages for invited papers including Figures and Tables. Three camera-ready copies should be submitted by regular mail to the symposium organizers. The preliminary submission deadline is **May 31, 2010**. Please address all correspondence to:
Karlsruhe Institute of Technology
IMT
Attn: Manfred Kohl
Hermann-von-Helmholtz-Platz 1
Bld. 301
76344 Eggenstein-Leopoldshafen
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E-MRS 2010 SPRING MEETING, June 7 - 11 / Congress Center, Strasbourg, France

Symposium T:
Advanced hybrid materials : stakes and concepts

Aim of the symposium:
Hybrid Materials, i.e. nano-sized units assembled to yield combination of chemical and physical properties is becoming one of the most challenging areas of materials science. Accordingly, hetero-structured hybrids such as Organic/Inorganic (O/I) and Bio/Inorganic systems have attracted considerable research interests during the last few decades. In these materials each sub-network, organized at a nano-scale level, might exhibit its own properties or contribute to new physical phenomena and novel applications. O/I compounds are particularly under scope in molecular and solid-state chemistry and also in physics to design multi-functional materials. Major breakthroughs in materials science are currently in progress using O/I hybrids strategies. Hybrid molecular crystals and films are already employed as field-effect transistor or in spintronics. Nano-hybrids, like functionalized magnetic nano-particles, are thoroughly investigated for bio-imaging and therapeutics.

The growing importance of the field in materials science stimulated us organizing a European conference devoted to «Hybrid Materials » covering the state-of-the-art, developments and open issues for this exciting class of systems.
The symposium is aimed to give an up-to-date view of hybrid organic/inorganic (O/I) materials from their synthesis to rational design through advanced characterizations and computational approaches, study of their properties, together with their societal impact.
Because the interfaces generally control surface reactions, charge transfers and/or synergistic effects, a key point will be the way interactions are established between inorganic and organic components, leading to outstanding variety and combination of chemical and physical properties. Applications will be tackled in electronics, optics, magnetic systems, energy and environment, mechanics, and diagnosis and therapeutics.
This symposium will be a very valuable forum for researchers in bioscience, chemistry, physics, materials science and engineering where to discuss the latest advances and issues in the design of smart Organic/Inorganic devices. The field of Organic – Inorganic materials is essentially multidisciplinary which makes its force and its complexity.

Topics relevant to the symposium:
1) Strategy 1: Synthesis (the toolkits, bottom up, ship in a bottle, bio-inspired, ...)
2) Strategy 2 : Structure – properties – bonding relationships (Molecular materials, intercalation compounds, nanoscale hybrids, covalent vs non-covalent interactions)
3) Advanced characterizations (Computational approaches, in situ Microscopies & Spectroscopies,...)
4) Electronics, optics, magnetism and combination of functionalities (Fundamentals, integrated devices, complex and adaptable functions...)
5) Energy and Environmental concern (storage, materials and membranes, sensors, photofunctional materials, cement-related materials, ..)
6) Hybrid materials as reactive and/or functionalized filler (fire delaying, mechanical reinforcement, antistatic and bio-films, ...)
7) Bio-concern (Biomaterials, nanohybrids for diagnosis or drug delivery, bio-chips...)

Invited speakers:
Franck Artzner, Rennes, France
Helmut Cölfen, Postdam, Germany
Carlo Massobrio, Strasbourg, France
Dirk Zahn, Dresden, Germany
Luis Carlos, Aveiro, Portugal
Christian Serre, Versailles, France
Nicola Pinna, Aveiro, Portugal
Catherine Amiens, Toulouse, France
Emmanuel Giannelis, Cornell, USA
Toni Cheetham, Cambridge, UK
Mihai Barboiu, Montpellier, France
Dermot O'Hare, Oxford, UK

International advisory board:
André Vioux (F), Jeffrey Brinker (USA), Richard Catlow (UK), José Kenny (I), Danielle Gonbeau (F), Jacques Livage (F), Markus Niederberger (CH), Michael Poppal (D), Eduardo Ruiz Hitzky (E).

Call for papers:
The symposium will consist in a set of invited talks together with oral and poster presentations selected among the abstracts submitted through the conference website.
There will be no proceedings but a themed issue of Journal of Materials Chemistry will be produced in connection with the 2010 E-MRS Symposium T on Hybrid Materials, including a large set of invited papers. All meeting participants presenting a contribution will be able to contribute to the issue should they wish to do so by submitting one regular paper in the usual way for the journal http://www.rsc.org/Publishing/Journals/jm/ . The deadline for submission of papers of participants will be the beginning of the conference on June 7th, 2010.

Symposium organizers:

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Deadline for abstract submission: January 19, 2010

E-MRS 2010 SPRING MEETING, June 7 - 11 / Congress Center, Strasbourg, France

E-MRS 2010 SPRING MEETING, June 7 - 11 / Congress Center, Strasbourg, France

Young Scientist Tutorial on Characterization Techniques for Thin-Film Solar Cells

TUTORIAL of SYMPOSIUM M

(open for participants from all other symposia)

Friday, June 11, 2010, 1:00 – 5:45 p.m.

This uniquely formatted tutorial is intended for young researchers (students and postgraduates within three years of degree completion) who are active in the field of thin-film solar cells and would like to learn the fundamentals of characterization methods that are being used in research and development of these materials and devices. Presentations will be given mainly by young researchers who are active in the characterization of thin-film solar cells based on Si, CdTe or chalcopyrites. The presentations will focus on the characterization techniques and should be of interest to participants of other symposia as well.

The intent of the Tutorial is to facilitate discussion of common characterization techniques by scientists at all levels of understanding. Each topic will be introduced by a young, yet knowledgeable instructor, followed by an extensive discussion session. The Tutorial will allow all attendees to ask questions that they might be reluctant to ask in a regular session at the E-MRS meeting, helping to develop a deeper understanding of research results in the field of thin-film science.

The topics are:

Fundamental Characterization and Modelling of Thin-Film Solar Cells

Basic principles of photovoltaic energy conversion–

– Principles of device modelling of solar cells

Applications from a-Si– thin-film solar cells

Photoluminescence: Characterization of Solar Absorbers and Solar Cells

Basic principles of photoluminescence (PL)–

Practical– aspects, steady-state and time-resolved measurement techniques

PL imaging– and mapping

Results for Si and Cu(In,Ga)Se2 thin film materials and cells–

Thin-Film Solar Cells analysed by Ellipsometry

Basic– principles of ellipsometry

Practical aspects and set-ups for thin-film– analyses

Examples from measurements on CdTe and Cu(In,Ga)Se2 thin films–

Instructors:

Bart Pieters
Forschungszentrum Jülich
Germany

b.pieters@fz-juelich.de

Thomas Unold
Helmholtz Center Berlin for Materials and Energy
Germany

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Contact for all inquiries:

Daniel Abou-Ras
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Deadline for abstract submission: January 19, 2010

GENERAL INFORMATION

For general information regarding the conference contact the E-MRS Conference Secretariat
Or visit **http://www.emrs-strasbourg.com**

CONFERENCE SECRETARIAT

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67200 Strasbourg
France

Contact person:
P. Siffert +33 (0)3 88 10 63 72

CONFERENCE LANGUAGE IS ENGLISH.

CONFERENCE VENUE

The Conference will be held at the Congress Center (Palais de la Musique et des Congrès), Place de Bordeaux, Strasbourg, France from June 7 to June 11, 2010.

Palais de la Musique et des Congrès (Erasme entrance) place de Bordeaux - Strasbourg www.strasbourg-events.com

REGISTRATION HOURS

On-site registration will begin on **Sunday June 6 from 15:00 to 19:30**
Pre-registration is recommended to avoid long queue.

Monday June 7	07.30 to 18.00
Tuesday June 8	08.00 to 18.00
Wednesday June 9	08.00 to 18.00
Thursday June 10	08.00 to 18.00
Friday June 11	08.00 to 12.30

EXHIBITION HOURS

Installation: Monday June 7 (14:00 – 18:00)

Tuesday June 8	9.00 to 18.00
Wednesday June 9	9.00 to 18.00
Thursday June 10	9.00 to 16.00

TRAVEL INFORMATION

Strasbourg has regular flights to many European towns and all European capital cities.
The city is also within easy reach from intercontinental airports such as Frankfurt and Zurich, each being 230 km away by motorway, and the Basel-Mulhouse Euroairport is just 120 km away. Strasbourg is a hub on the central European motorway network on the Hamburg-Munich and Paris-Munich axes.

The best price for your air ticket

AIRFRANCE KLM
PARTENAIRES OFFICIELS OFFICIAL PARTNERS

Get the best price for your flight with Air France and KLM Global Meetings.
Event ID Code to keep for the booking: ***07977AF***
More details **http://www.emrs-strasbourg.com**

Travel by Rail from Strasbourg Airport-Entzheim to Strasbourg Railway Station
Airport railway station is only 5 minutes walking distance from the airport terminal.
The train runs regularly about every half an hour from 5:34 through 20:42. It is a 14 minutes ride from Airport Station to downtown Strasbourg

Travel by Tram
The Relay-Tram parking lots offer parking next to a tram station and access the city center within a few minutes.

To get to Palais des Congrès de Strasbourg from the Strasbourg railway station
Take Tram Line A or D (towards Illkirch Lixenbuhl or Aristide Briand) and get off at Tram Stop Homme de Fer. Transfer to Tram Line B (towards Hoenheim Gare) and get off at either Tram Stop Lycée Kléber, which is within walking distance and just before the Palais de la Musique, or Tram Stop Wacken, which is just after the Palais des Congrès.

Travel throughout Europe
Rail Europe allows you to book all types of European rail passes and tickets online. Eurail passes, Euro passes, Single country passes, Point to Point tickets, Rail'n Drive passes, Night trains, Special trains, High Speed trains, Eurostar, etc.

Travel by Car
The French freeway network to the west and to the north, consisting of the A4, A34, A31 and A32 freeways, permits easy access of Strasbourg from Paris, Amsterdam, Brussels, Luxembourg et Bonn via Metz and Sarrebruck. The south, the axis Strasbourg-Mulhouse and the A36 intersection of the A6 freeway of Beaune, opens routes in direction of Italy and Spain. The German freeway network permits access to Hamburg, Frankfort, Basel, Geneva and Milan and is less than 15 minutes from Strasbourg via Kehl. Keep some change with you as some motorways require toll fees to be paid as you travel.

Parking
There are 500 parking spaces at the Palais de la Musique et des Congrès. Parking at the Congrès Centre is complimentary.

Taxi
The Taxicabs are present at the airport until about 23.00 (arrival of the last flight).

HOTEL ACCOMMODATION

Hotels for E-MRS 2010 will be assigned by "Carlson Wagonlit Event", by using the online form available through internet:
When making your reservation, you will request a class of hotel, and "Carlson Wagonlit Event" will assign you to a hotel in your requested class of service. Choice of individual hotels is not available through this service.
Average prices on the hotel reservation form are given per night per room, without breakfast, taxes, and services. In order to guarantee your reservation, a hotel deposit have to be paid for each room. No reservation will be made without the hotel deposit and reservation fee payment.
Upon receipt of payment, you will receive a voucher indicating the name and address of the hotel you are confirmed at.

VISA ASSISTANCE

Citizen having passports from certain countries need a visa to enter Europe. If you need any assistance to obtain your visa, please contact us as soon as possible (indicate your address, date and place of birth, your passport number and date of expiration):
By email emrs@emrs-strasbourg.com
Subject: VISA ASSISTANCE
All letters of invitation will be sent by airmail and by PDF e-mail attachment unless a courier account number is provided with the original request. **E-MRS is not able to contact Embassies in support of an individual attempting to gain entry to attend the meeting**. Because the application for a visa can be a lengthy process, we recommend that you start your visa application process as soon as you have been notified that your paper has been accepted. We also recommend that you secure your travel visa before registering for the symposium.

PLENARY SESSION

A plenary session is scheduled for Wednesday June 9, 2010 - afternoon. During this session, the E-MRS Graduate Student Award Winners will be honored.

CONFERENCE RECEPTION

A reception is being arranged for all the conference participants on Wednesday evening June 9 starting at 19:30. All conference attendees are invited to this reception as a chance to meet and renew relationships with colleagues. Music and food will be provided, free of charge.

COFFEE BREAKS

Coffee will be served during the morning and afternoon breaks. Please check the individual technical conference listings for exact times. On Wednesday afternoon (during plenary session), coffee will be served near the lecture room (room Schweitzer on the Ground Floor). On Friday afternoon, coffee will be served in the main entrance hall.

POSTERS

REMINDER: A PRINTING OFFICE WILL BE AT YOUR DISPOSAL DURING THE CONFERENCE. YOU WILL HAVE THE OPPORTUNITY TO PRINT DIRECTLY YOUR POSTER PRESENTATION ON SITE AT LOW COST.

The viewable size of the poster board is : vertical 1.10 m and horizontal 0.90 m. The poster board will be full white board. Pins are not allowed. Please use tape! Attendees can preview the posters during the morning before the formal presentation.

Authors need to be present at their posters for discussion with attendees during the session. Subsequently, **it is each author's responsibility to remove his/her poster immediately at the end of the session**. E-MRS assumes no responsibility for posters left up after this time.

INTERNET ACCESS / WIFI

A large number of internet access terminals will allow attendees to access their internet e-mail during the conference. There will be a 10-minute time limit per each person's internet session.
E-MRS is pleased to provide complimentary wireless access to the internet for all conference attendees bringing their own laptops.

AUDIOVISUAL PACKAGE

The standard audio-visual package in each symposium room will consist of:
- video projector, screen, laser pointer & microphone
- PC windows XP pro / windows 2000 with office pack (including power point), USB plug and CD-Rom

ABSTRACT SUBMISSION

Deadline for abstract submission January 19, 2010

IN FAIRNESS TO ALL POTENTIAL AUTHORS, LATE ABSTRACTS WILL NOT BE ACCEPTED
Abstract Length: Web-site submissions are limited to 1500 characters. (only plain text, no figures, no formulae...)
Note: All abstracts must be submitted via the E-MRS Web site.

The submission site is open at **www.emrs-strasbourg.com**
Submitting abstracts via the E-MRS Web site is easy and convenient. Follow the easy step-by-step instructions on the template, making sure that complete mailing address information is included for the presenting and contact authors. After submitting your abstract, please use your Control ID number in all communications with E-MRS regarding the abstract UNTIL a paper number (e.g., A-IV.8) is later assigned.
Because major revisions may affect a symposium organizer's decision to accept your abstract, please review it carefully before submission. In the unusual circumstance of having to revise your original abstract, the online submission center enables authors to revise their abstracts up to and including the submission deadline of January 19.
After that date, the change must be submitted to: **emrs@emrs-strasbourg.com (Subject: Abstract Revision) and must include your Control ID number and the name of the symposium.** Please state exactly where the revisions are located (e.g., title, author, body, etc.).

Papers will be selected by the scientific committee of each symposium.

Authors will be notified of acceptance and mode of presentation of their papers by March 3, 2010.

MANUSCRIPTS AND PROCEEDINGS

Full length papers will be published as special issues in appropriate journals, and are reprinted as E-MRS hardbound Proceeding Volumes for symposia delegates. Submitted papers will be refereed to journals standards. Instructions to Authors will be dispatched together with the notification of acceptance of the abstract.

The decision of which journals shall publish the symposia proceedings will be made jointly by symposium organisers and journal editors. An announcement of these journals will be published online.

CONFERENCE SCIENTIFIC PROGRAM

The complete scientific program will be available starting April 2010 on the website.

GRADUATE STUDENT AWARDS

E-MRS announces the availability of awards (up to 2 per symposium) for graduate students conducting research and a topic to be addressed in the symposia planned for the E-MRS 2010 SPRING Meeting.
-Application form under http://www.emrs-strasbourg.com

REGISTRATION

Each attendee

(including symposium organizers, chairpersons, authors, presenting authors, Invited Speakers, Scientific Committee members...) has to be registered.

Register via Online: **http://www.emrs-strasbourg.com**

Online must be submitted by 5 pm (EST) on April 21, 2010 to be eligible for pre-registration rates

Register at the Meeting
On-site registration will begin on Sunday, June 6 at Congress Center, Strasbourg, France

Cancellation
To cancel your meeting registration, you must notify E-MRS in writing of your request for a refund. Refunds will be made, less a 25 € service charge, upon receipt of written notice. E-MRS will not honour requests made more than one calendar month after the close of the meeting. Payment should be made in Euro for the net total amount due.

REGISTRATION FEES

1. FULL RATE

including one proceeding, breaks, lunches,reception, E-MRS membership for one year.

BEFORE APRIL 21, 2010	**550 Euro net**
AFTER APRIL 21, 2010	**620 Euro net**

2. STUDENT RATE

including breaks, lunches, reception.
Students will be required to provide their University Card on the registration desk

BEFORE APRIL 21, 2010	**300 Euro net**
AFTER APRIL 21, 2010	**350 Euro net**

E-MRS is a non-profit organization and it is no subject to VAT.

- online registration www.emrs-strasbourg.com

PAYMENT OF FEES

Payment should be made in euro for the net total amount due. The following possibilities are offered:

- Credit card (Carte Bleue, Visa, Eurocard/ Mastercard) (mode preferred)
- Cheque (to the order of E-MRS)
- Bank transfer:

Bank:	BANQUE POPULAIRE ALSACE
Address:	BPALS CRONENBOURG France
Account:	ASS. EMRS CONFERENCES – BP 20 – 67037 STRASBOURG CEDEX 2 - FRANCE
IBAN	FR76 1760 7000 0111 1913 8543 911
BIC	CCBPFRPPSTR

N.B. Purchase order from your company are accepted, too.

IMPORTANT DEADLINES

- January 19, 2010: Deadline for abstract submission.
- March 3, 2010: Notification of acceptance and mode of presentation.
- April 21, 2010: Deadline of registration fees discount:
  Please notice that the discount rate is only applicable for REGISTRATION FORM AND PAYMENT received by April 21, 2010.
- After April 21, 2010: Additional charge for registration fees.
- April 30, 2010: Registrations received after this date will not be included in the list of participants.
- June 6, 2010: Registration desk open from 3:30pm to 7:30pm
- June 7, 2010: Registration desk open from 7:30am to 6:00pm. Symposium begin at 9:00pm
- June 8, 2010: Exhibition

E-MRS
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