

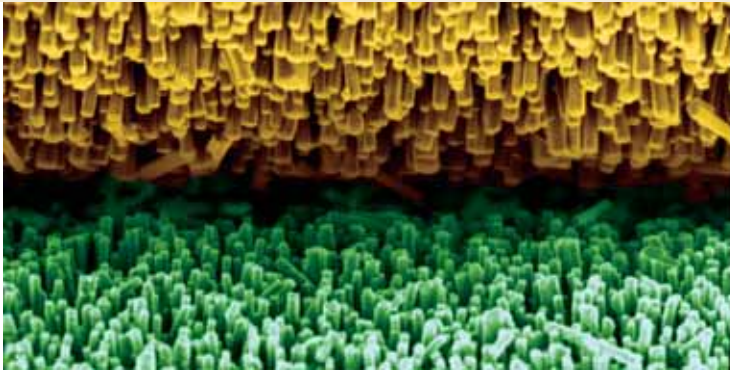
# Call for Papers

**SPIE Europe**   
**Microtechnologies**  
for the New Millennium

**Conferences: 4–6 May 2009**

Maritim Hotel  
Dresden, Germany

PRESENT YOUR RESEARCH — PUBLISH IN THE WORLD BODY OF SCIENTIFIC LITERATURE



- 
- ▶ **Smart Sensors, Actuators, and MEMS**
  - ▶ **VLSI Circuits and Systems**
  - ▶ **Nanotechnology**
  - ▶ **Bioengineered and Bioinspired Systems**
  - ▶ **Photonic Materials, Devices, and Applications**
-

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Participate in a cutting-edge regional forum focused on the latest advances in microtechnologies.

## Share your research

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## Collaborate with your colleagues

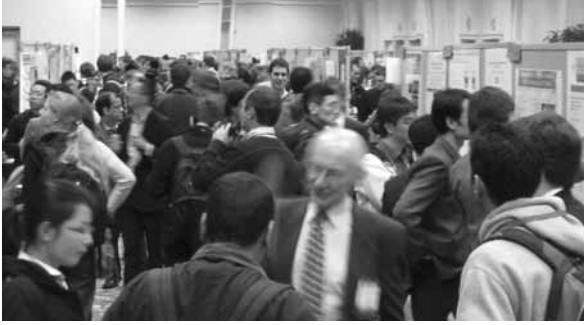
Take advantage of the synergies being created by engineers, scientists, researchers, and managers working on various aspects of microtechnologies. Meet with your colleagues in Dresden, Germany, to help shape the future of these vital technologies.

## Publish your research

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### Critical Dates

► **Abstract Due Date:**  
**31 October 2008**

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Due Date:**  
**3 April 2009**

**Please note:** Submissions imply the intent of at least one author to register, attend the symposium, present the paper as scheduled (either orally or in poster format), and submit a full-length manuscript for publication in the Proceedings of SPIE.

**Abstract Text:** Please submit a text-only abstract with approximately 500 words (one page). This abstract will be reviewed by the conference organizers and may be included in the abstract digest which will be available onsite.

Left cover image courtesy of Z. L. Wang and X.D. Wang, Georgia Institute of Technology.

# Call for Papers

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Take this opportunity to submit your latest research work to the 4th SPIE *Europe Microtechnologies for the New Millennium*.

Meet colleagues from academia and industrial research groups in the heart of Europe, to share your latest ideas in technological fields, really essential for shaping the new millennium. Feel the inspiring atmosphere of Dresden at the river Elbe, being a cultural, scientific and industrial center last but not least for micro-, bio- and nanotechnology.

Five exciting conferences in the field of microtechnologies are linked together, namely, Smart Sensors, Actuators and MEMS; VLSI Circuits and Systems; Nanotechnology; Bioengineered and Bioinspired Systems; and Photonic Materials, Devices and Applications. Take advantage of the synergies being created by engineers, scientists, researchers, and managers working on various aspects of microtechnologies.

You will have a unique opportunity to hear about the latest advances in autonomous sensors, low-power high-data-rate communications, molecular electronics, micro-manipulation and implantable bio-chips, nanophotonic materials, nanoelectromechanical systems, and many other cutting-edge R&T results.

Exchange new ideas, address your shared concerns, and get access to information not yet published in these topical areas. Submit your abstract by 31 October 2008. If accepted, your paper will be permanently archived in the SPIE Digital Library, where it will be made available to others in the international scientific community who seek to learn, make discoveries, and innovate.

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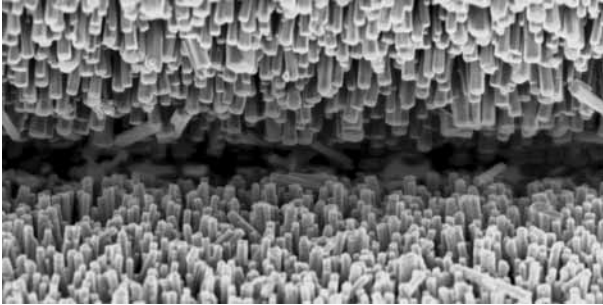
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München (Germany)

**Achim Wixforth**, Univ. of Augsburg, Germany

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# Microtechnologies

## Smart Sensors, Actuators and MEMS (EMT101)

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This biannual conference is the fourth in series following its successful launch in 2003. Due to the interdisciplinary spirit of the event a wide range of topics is covered related to the design, fabrication, packaging and system integration of MEMS and NEMS-based sensors and actuators applying smart approaches. Furthermore, basic as well as more application-oriented research topics are addressed, thus stimulating in a cooperative atmosphere the exchange between academia and industry.

Topics include, but are not limited to:

- material research: polymers, piezoelectric materials, nitrides, shape memory alloys, thermoelectric materials, other functional thin film materials, optical thin films, metallic thin films
- processes and fabrication technologies for MEMS: deposition techniques, lithography, self alignment and masking techniques, etching and ablation techniques
- functional surfaces: hydrophobic/hydrophilic functionalisation, tribological functions, anti-adhesion, biomimetic surfaces, gecko effect
- modelling and simulation of Microsystems from packaged systems down to device level, CAD tools
- physical sensors, mechanical sensors, oscillators, tactile sensing
- optical MEMS (MOEMS), RF MEMS, millimeter/submillimeter-wave and infrared devices
- chemical and biosensors, microfluidic devices, lab-on-chip
- actuators, aeroMEMS, artificial muscles
- energy harvesting, low power architectures, power management, autonomous sensor nodes
- calibration, characterisation and testing techniques.
- reliability, nanotribology, failure analysis, degradation mechanisms, life time prediction
- system integration, packaging and assembly, electronic integration, substrate technologies, metallization systems, 3D integration techniques, RFID, man-machine interface
- applications and markets.

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## VLSI Circuits and Systems (EMT102)

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This conference will foster cross-fertilization by bringing together researchers from every aspect of the VLSI area, from devices to systems, including design, modeling, test, design methods, etc.

Topics include, but are not limited to:

### VLSI systems and applications

- transistor circuits techniques; digital and analog signal processors and cores; digital arithmetic; digital filters; memories; low power VLSI; DSPs.

### Multimedia systems and applications

- image and video processing; image and video compression and transmission; real-time architectures and processors; multimedia-specific embedded systems; multimedia applications; emerging trends.

### Circuits and systems for data communications

- transceiver architectures; switching; backplane design; circuit design for wireless (GSM, CDMA, UMTS, Bluetooth, WLAN, UWB, multiband, TV, radio, satellite); circuits and systems for wired communications (LAN, WAN, Ethernet, xDSL, powerline, cable modem); RF design: antennas, power amplifiers, digital radio techniques, etc.

### Systems on Chip challenges

- Reconfigurable Systems, On Chip interconnects, Networks on Chip, Platform based designs

### Analog circuit design

- amplifiers; continuous time and discrete-time filters; Nyquist-rate and over-sampled data converters; nonlinear circuits; references; low-power and low-voltage circuit techniques.

### Technology directions

- deep submicron; compound semiconductor technologies and systems; emerging technologies; process integration; chip packaging; mixed systems; sensors and sensor interfaces.

### Modeling and simulation

- circuit, timing, logic, functional and system simulation; signal integrity; analog and RF modeling and simulation; mixed-signal and multilevel simulation; device and block modeling; parasitic extraction and analysis; substrate modeling and analysis; interconnect; packaging.

### CAD tools and design methodologies

- architectural and logic synthesis; IP generation and verification; analog, RF- and mixed signal design; physical design; verification; hardware design languages; design for manufacturability.

### Test

- test generation; testing of cores, SoCs, MCMs, SiPS, boards, heterogeneous systems; analog and mixed-signal test, RF testing; fault modeling and defect analysis; yield analysis; test metrics; on-line testing; design-for-testability; BIST; diagnosis and repair; industrial test case-studies.

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## Nanotechnology (EMT103)

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Nanotechnology has certainly overcome its stages of infancy. Novel fabrication techniques and hybridization of different materials reveal a wealth of new applications or experimental findings that could not be envisioned a few years ago. The Nanotechnology Conference aims towards bringing together research scientists, engineers, and visionaries in this exciting field. Special emphasis is given to technologies and techniques that are bridging the different worlds of electronics, mechanics, photonics and biology or soft matter in general.

The conference covers, but is not limited to the following areas of research:

### Nanofabrication

- novel techniques and technologies, self assembly based fabrication techniques, (bio)template techniques, hybridization of different materials etc.

### Nanoelectronics

- electronics exploiting the quantum nature of electronic transport, carbon nanotubes, nanocrystals, molecular electronics, single (few) charge effects, spintronics, plasmonics, magnonics, phononic electronics etc.

### Nanophotonics

- few photon sources / detectors, nanoresonators, photonic crystals, waveguides etc. with emphasis on nanotechnological fabrication techniques.

### Nanomechanics

- NEMS employing nanotubes, nanocrystals, membranes, and artificially fabricated systems.

### Nano-bio Hybrid Systems

- systems bridging the gap between solid and soft matter, hybridization techniques, biological assembly techniques, molecular devices, biomimetics etc.

## Bioengineered and Bioinspired Systems (EMT104)

*Conference Chair:* **Ángel B. Rodríguez-Vázquez**, AnaFocus and Instituto de Microelectrónica de Sevilla-CNM-CSIC (Spain)

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The development of a human-oriented intelligent environment, and, in particular, of medical micro-implants for patient monitoring, illness control and smart drug delivery, and other aids for citizens with health concerns, relies upon the evolution of micro- and nano-sensors and actuators. In this field, natural systems provide inspirational examples on solving the complex problem of interacting with the real world under serious constraints on power consumption and physical profile.

At the same time, the border between micro-electromechanical implantable devices and their living environment remains under continuous research. A synergetic approach covering applied physics, electronics, biochemistry, medicine and neuroscience, is rendering the most promising results in areas such as bioinspired sensory processing, sensor array systems, neural and cognition systems implementation, biomimetics, microfluidics, biosensors, chips for genomics and proteomics and smart materials for medical applications.

This conference is intended to bring together experts in different disciplines, linked by the strong motivation of contributing to this multidisciplinary scenario.

- bioinspired VLSI processing architectures
- VLSI implementations of neuromorphic systems
- bioinspired sensory-processing-actuating circuits and systems
- circuits for medical applications
- implantable electronics
- biochemical sensors
- bioMEMS
- interface circuits for biosensors
- biomedical instrumentation
- biosignal processing
- microfluidics
- lab-on-chip
- wireless technology for medical applications
- telemedicine systems
- electronic and electromechanical prosthesis
- smart materials for biomedicine.

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## Photonic Materials, Devices, and Applications (EMT105)

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Photonics is having a tremendous impact on society, spanning a wide range of applications such as telecommunications, diagnostics, sensing, storage, and displays. Recent advances in the development of new photonic materials, devices, systems, and techniques, especially those related to micro- and nanotechnologies suggest that these areas will play an increasingly important role in the future.

The aim of this conference will be to bring together research scientists and engineers who work on the different aspects of this fascinating field - and thus to provide an interdisciplinary update and review of innovations in photonic materials, devices, systems, and their applications. The scope of the conference will include micro- and nanotechnological manufacturing advances, as well as work on theoretical and experimental tools that support and enable these innovations.

The conference includes, but is not limited to, the following topics:

- all optical signal processing
- advanced optical fibers, fiber devices, systems, sensors
- laser material synthesis and processing, laser-induced fabrication of photonic materials
- microcavities, microresonators, photonic atoms, and photonic molecules
- nanophotonics, nanostructured materials and devices, plasmonics
- organic, semiconductor, and hybrid photonic materials and devices, lasers and LEDs
- photonic bandgap materials, complex materials, metamaterials
- photonic devices, systems for telecommunication, sensing, biomedicine and environment
- quantum photonic devices, quantum information and computing
- silicon photonics
- THz photonics, longwave infrared optics.

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# General Information

## Facility/Venue

SPIE *Europe* Microtechnologies for the New Millennium will take place at the Maritim Hotel & International Congress Centre, Dresden, FR Germany. Dresden is the centre of the German Baroque par excellence. Dresden's highlights include the magnificent palatial buildings around the Theaterplatz and the Brühl Terraces, and the many art treasures at the state museums. Today, Dresden offers a unique blend of stunning architecture, world-famous art collections and living traditions of both music and the fine arts – plus the great natural beauty of the countryside along the Elbe river, dotted with wonderful castles and villas.

## Registration Information

All participants, including invited speakers, contributed speakers, session chairs, co-chairs and committee members must pay a registration fee. Estimated pre-registration fees for authors and technical participants range from 400 Euros to 600 Euros depending on attendee category and proceedings/CD choice. Estimated student pre-registration fees range from 75 Euros to 100 Euros depending on attendee category and do not include a Proceedings. Final pre-registration fees will be available in February 2009 both online and in the printed advance technical programme. Fees will increase 75 Euros after the pre-registration deadlines (20 Euros for students).

## Technical Programme

The comprehensive Advance Technical Programme will be available in February 2009 and will list conferences, paper titles, and authors in order of presentation; an outline of all planned special events; and hotel and registration information. All those who submit an abstract will receive a copy.

## Catering

Coffee will be served during the appropriate breaks. Exact times and location will be announced in the Advance Technical Programme.

## Hotel/Accommodations

Details concerning hotel accommodations and hotel reservation forms will be included in the Advance Technical Programme.

## Travel

Dresden is serviced by all major airlines on numerous direct flights from across Europe as well as a large number of connecting flights via Frankfurt. Alternatively, Leipzig-Halle Airport offers further connections with transfer via Leipzig city centre.

Dresden lies in the zone of moderate climate, intermediate between the marine and continental climates and weather can be quite changeable. The weather in May can be rather diverse with temperature averaging around 14°C; however, it can range between 7°C and up to over 20°C. Germany lies in Central European Time, the same as Spain and France.

## Currency

Currency and Credit Cards: The currency unit is the Euro which is subdivided into 100 cents (ct). Delegates may change foreign currency and travellers cheques in banks located in the centre of the city as well as in many exchange bureaus, at the railway station, at the airport or in many other places. International credit cards (VISA, MasterCard, American Express) are accepted in many hotels, restaurants, and cash machines.

## Visa Information

Passport and Visa: Nationals of all Western European countries can visit the Federal Republic of Germany without a visa; US, Canadian, and Australian passport holders can stay up to 90 days without a visa. For additional details and specific visa requirements, please contact the German Embassy in your country.

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## 1. By submitting an abstract, I agree to the following conditions:

- An author or coauthor (including keynote, invited, and solicited speakers) will register at the reduced author registration rate, attend the meeting, and make the presentation as scheduled. (Current SPIE Members receive an additional discount on the registration fee.)
- Authors and coauthors attending the meeting must obtain funding for their registration fees, travel, and accommodations, independent of SPIE, through their sponsoring organizations before submitting abstracts.
- All clearances, including government and company clearance, have been obtained to present and publish. If you are a DoD contractor, allow at least 60 days for clearance.
- SPIE is authorized to circulate your abstract to conference committee members for review and selection purposes.
- Accepted abstracts may be published with the printed Final Programs or on a CD-ROM for distribution at the meeting. Please submit only 500-word abstracts that are suitable for publication.
- Please also submit a 100-word abstract suitable for early release. If accepted, this abstract text will be published prior to the meeting in online or printed programs promoting the conference.
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## Critical Dates

▶ **Abstract Due Date:**  
**31 October 2008**

▶ **Proceedings Manuscript Due Date:**  
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**Please note:** Submissions imply the intent of at least one author to register, attend the symposium, present the paper as scheduled (either orally or in poster format), and submit a full-length manuscript for publication in the Proceedings of SPIE.

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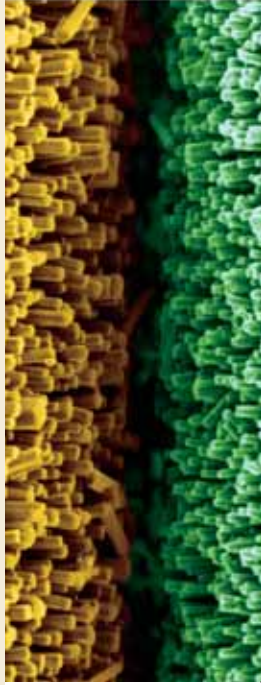
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