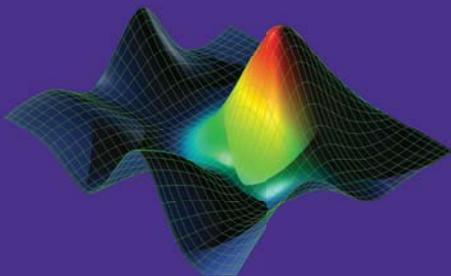


2013 Optical Metrology

Call for Papers

- Optical Measurement Systems for Industrial Inspection
- Modeling Aspects in Optical Metrology
- O3A: Optics for Arts, Architecture, and Archaeology
- Videometrics, Range Imaging, and Applications
- Optical Methods for Inspection, Characterization and Imaging of Biomaterials
- Automated Visual Inspection



13–16 May 2013

MUNICH ICM
International Congress Ctr.
Munich, Germany

www.spie.org/omcall2

21st International Congress on Photonics in Europe
Collocated with LASER 2013 World of PHOTONICS

WORLD OF PHOTONICS CONGRESS

www.photonics-congress.com



2013 Optical Metrology

Advance your research on
Measurement Systems,
Modeling, Videometrics,
and Inspection

13–16 May 2013

MUNICH ICM
International Congress Ctr.
Munich, Germany



Technologies

- Optical Measurement Systems for Industrial Inspection
- Modeling Aspects in Optical Metrology
- O3A: Optics for Arts, Architecture, and Archaeology
- Videometrics, Range Imaging, and Applications
- Optical Methods for Inspection, Characterization and Imaging of Biomaterials
- Automated Visual Inspection

SPIE 
Optical Metrology

Call for Papers

Submit your abstract by **17 December 2012**

2013 Symposium Chairs:



Wolfgang Osten
Univ. Stuttgart
(Germany)



Karsten Buse
Fraunhofer-Institut
für Physikalische
Messtechnik IPM
(Germany)



Andrew J. Moore
Heriot-Watt Univ.
(United Kingdom)

Plan to Participate

Your input is crucial!

Take this opportunity to submit your research to SPIE Optical Metrology 2013. Come to Munich to meet with users and researchers to discuss the latest inventions and applications in the field of optical metrology. The conference focuses on new optical principles and systems for metrology, videometrics and machine vision with applications in industrial design, production engineering, process monitoring, maintenance support, biotechnology, vehicle navigation, multimedia technology, architecture, archaeology and arts. Special emphasis is directed to model-based, remote and active approaches, sensor fusion, robot guidance, image sequence processing and scene modelling, biomaterials characterization as well as to the preservation of our shared cultural heritage. Find out about new approaches that push optical principles of measurement and testing at the macro, micro- and nanoscales to the forefront of metrology. Exchange new ideas, address your shared concerns, and get access to information not yet published in the mentioned topical areas. Submit your abstract by 17 December 2012 and share your research with other engineers, scientists, researchers, and managers. 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.

We invite all those involved in related industries to join their colleagues and share the most recent developments and applications at SPIE Optical Metrology 2013.



Submit your abstract by | 17 December 2012

Conferences

EOM101: Optical Measurement Systems for Industrial Inspection (<i>Lehmann</i>)	3	EOM105: Optical Methods for Inspection, Characterization and Imaging of Biomaterials (<i>Ferraro, Ritsch-Marte</i>)	8
EOM102: Modeling Aspects in Optical Metrology (<i>Bodermann</i>)	4	EOM106: Automated Visual Inspection (<i>Beyerer, Puente</i>)	10
EOM103: O3A: Optics for Arts, Architecture, and Archaeology (<i>Pezzati, Targowski</i>)	5	Workshop: Industry meets Academia (<i>Reingand/Osten</i>)	7
EOM104: Videometrics, Range Imaging, and Applications (<i>Remondino, Shortis</i>) . . .	6	General Information	11
		Abstract Submission	12

Technical Committee

- Armando Albertazzi Goncalves, Jr.**, Univ. Federal de Santa Catarina (Brazil)
- Jürgen Beyerer**, Fraunhofer Institute of Optronics, System Technologies and Image Exploitation (Germany)
- Bernd Bodermann**, Physikalisch-Technische Bundesanstalt (Germany)
- Karsten Buse**, Fraunhofer-Institut für Physikalische Messtechnik IPM (Germany)
- Pietro Ferraro**, Istituto Nazionale di Ottica Applicata (Italy)
- Peter Lehmann**, Univ. Kassel (Germany)
- Andrew J. Moore**, Heriot-Watt Univ. (United Kingdom)
- Wolfgang Osten**, Univ. Stuttgart (Germany)
- Luca Pezzati**, National Institute of Applied Optics/CNR (Italy)

- Fernando Puente**, Karlsruhe Institute of Technology (Germany)
- Fabio Remondino**, FBK Trento (Italy)
- Monika Ritsch-Marte**, Medizinische Univ. Innsbruck (Austria)
- Richard M. Silver**, NIST (United States)
- Mark Shortis**, RMIT Univ. (Australia)
- Piotr Targowski**, Nicolaus Copernicus Univ. (Poland)

Advisory Committee

- Pietro Ferraro**, Istituto Nazionale di Ottica Applicata (Italy)
- Werner Jüptner**, Bremer Institut für Angewandte Strahltechnik (Germany)
- Malgorzata Kujawinska**, Warsaw Univ. of Technology (Poland)
- Ralph P. Tatam**, Cranfield Univ. (UK)

Optical Measurement Systems for Industrial Inspection (EOM101)



Conference Chairs: **Peter H. Lehmann**, Univ. Kassel (Germany)

Conference Co-Chairs: **Wolfgang Osten**, Univ. Stuttgart (Germany);

Armando Albertazzi, Univ. Federal de Santa Catarina (Brazil)

Programme Committee: **Astrid Aksnes**, Norwegian Univ. of Science and Technology (Norway); **Oleg Vyacheslavovich Angelsky**, Yuriy Fedkovych Chernivtsi National Univ. (Ukraine); **Anand Krishna Asundi**, Nanyang Technological Univ. (Singapore); **Klaus-Friedrich Beckstette**, Carl Zeiss AG (Germany); **Ralf B. Bergmann**, Bremer Institut für angewandte Strahltechnik GmbH (Germany); **Harald Bosse**, Physikalisch-Technische Bundesanstalt (Germany); **Karsten Buse**, Rheinische Friedrich-Wilhelms-Universität Bonn (Germany); **Yuri V. Chugui**, Technological Design Institute of Scientific Instrument Engineering (Russian Federation); **Wim M. J. Coene**, ASML Netherlands B.V. (Netherlands); **Jürgen W. Czarske**, Technische Universität Dresden (Germany); **Peter J. de Groot**, Zygo Corporation (United States); **Pietro Ferraro**, Istituto Nazionale di Ottica (Italy); **Cosme Furlong**, Worcester Polytechnic Institute (United States); **Marc P. Georges**, Univ. de Liège (Belgium); **Christophe Gorecki**, FEMTO-ST (France); **Andreas Heinrich**, Carl Zeiss AG (Germany); **Richard M. Kowarschik**, Friedrich-Schiller-Universität Jena (Germany); **Malgorzata Kujawska**, Warsaw Univ. of Technology (Poland); **Eberhard Manske**, Technische Universität Ilmenau (Germany); **Fernando Mendoza Santoyo**, Centro de Investigaciones en Óptica, A.C. (Mexico); **Andrew John Moore**, Heriot-Watt Univ. (United Kingdom); **Gunther Notni**, Fraunhofer-Institut für Angewandte Optik und Feinmechanik (Germany); **Ryszard J. Pryputniewicz**, Worcester Polytechnic Institute (United States); **Eduard Reithmeier**, Leibniz Universität Hannover (Germany); **Christian Rembe**, Polytec GmbH (Germany); **Robert Schmitt**, RWTH Aachen University (Germany); **Jörg Seewig**, Technische Universität Kaiserslautern (Germany); **Pierre Slangen**, Ecole des Mines d'Alès (France); **Marcus Steinbichler**, Steinbichler Optotechnik GmbH (Germany); **Mitsuo Takeda**, The University of Electro-Communications (Japan); **Cristina Trillo**, Univ. de Vigo (Spain); **Rainer Tutsch**, Technische Universität Braunschweig (Germany)

This conference addresses optical metrology methods and their application for the solution of measurement problems in industrial design, production engineering, and process monitoring. Relevant applications range from the optical inspection of large scale industrial components to the investigation of microsystems and nanostructures involving both, optical and technical surfaces. Special emphasis shall be placed on the implementation of new methods, algorithms and sensor components into complete measurement systems. The design and implementation of robust optical systems close-to-production is of general interest. Furthermore, new approaches for resolution enhancement and uncertainty reduction of optical measurement systems, as well as their implementation and application are in the focus of this conference.

General items

- optical metrology
- reliable and robust measurement systems
- process integrated and in-process measurement
- resolution enhancement
- metrology for efficient use of resources
- measurement uncertainty.

Methodology

- interferometry
- holographic and speckle techniques
- Moiré and structured illumination techniques
- deflectometry
- 3D microscopy
- confocal and focus scanning techniques
- coherence scanning, time-of-flight techniques
- light scattering techniques
- diffraction based analysis
- reconstruction/retrieval algorithms and approaches
- advanced image and signal processing
- digital image correlation techniques
- fiber and micro-optical sensors
- smart sensors
- multi-sensor approaches and sensor fusion.

Applications

- micro-, nanostructure, and roughness measurement
- measurement of precision components
- shape measurement/reverse engineering
- nondestructive testing and fault detection
- thickness measurement
- stress and vibration analysis
- inspection of components for renewable energy systems
- inspection of large-scale objects
- high-speed measurement
- remote laboratories.

Optical Metrology

Modeling Aspects in Optical Metrology (EOM102)

Conference Chair: **Bernd Bodermann**, Physikalisch-Technische Bundesanstalt (Germany)

Conference Co-Chairs: **Karsten Frenner**, Univ. Stuttgart (Germany);

Richard M. Silver, National Institute of Standards and Technology (United States)

Programme Committee: **Markus Bär**, Physikalisch-Technische Bundesanstalt

(Germany); **Jörg Bischoff**, Osires Optical Engineering (Germany); **Harald Bosse**,

Physikalisch-Technische Bundesanstalt (Germany); **Sven Burger**, Konrad-Zuse-

Zentrum für Informationstechnik Berlin (Germany); **Andreas Erdmann**, Fraunhofer-Institut für

Integrierte System und Bauelementetechnologie (Germany); **Christian Hafner**, ETH Zurich

(Switzerland); **Wolfgang Holzapfel**, DR. JOHANNES HEIDENHAIN GmbH (Germany); **Bernd**

H. Kleemann, Carl Zeiss AG (Germany); **Wolfgang Osten**, Univ. Stuttgart (Germany); **Andreas**

Rathsfeld, Weierstrass-Institut für Angewandte Analysis und Stochastik (Germany); **Thomas**

Scherübl, Carl Zeiss SMS GmbH (Germany); **Patrick Schiavone**, Aselta Nanographics (France);

Irwan Setija, ASML Netherlands B.V. (Netherlands); **Michael Totzeck**, Carl Zeiss SMT GmbH

(Germany); **Jari Turunen**, Univ. of Eastern Finland (Finland); **Frank Wyrowski**, Friedrich-Schiller-
Univ. Jena (Germany)



This conference will focus on modeling aspects in optical metrology as a prerequisite for traceable and comparable measurements. One important topic is the development and verification of methods to describe the interaction of light with matter for quantitative characterization of micro- and nanostructures. The verification of these methods often relies on comparison measurements with independent metrology methods, thus so called cross-calibration techniques are of interest, too. Relevant applications range from optical metrology and inspection of nanostructures on masks and wafers in semiconductor and display production to the investigation of grating structures and grating-based devices. In most of the applications nanometer or sub-nanometer measurement uncertainties are required. Special emphasis shall be placed on the description and modeling of new methods, algorithms, components or complete measurement systems.

- optical metrology
- image modeling
- modeling of sensor response, parametric modeling
- modeling of optical metrology systems
- critical dimension (CD) metrology
- new microscopy methods
- high-resolution microscopy
- near-field modeling
- super-resolution
- reference metrology
- measurement uncertainty
- multiprobe characterization

- cross-calibration techniques
- scatterometry (IR, VIS, UV, DUV, EUV)
- ellipsometry and Mueller polarimetry
- inverse problems in optics
- Maxwell equation solving algorithms
- Maxwell solution databases and related stitching methods
- algorithms for real 3D simulations
- modeling of material properties in optics
- modeling of polarization effects
- optimization for diffractive optical elements
- determination of optical constants
- shape metrology of critical features
- placement and registration metrology
- alignment and overlay metrology
- metrology for double patterning/exposure and EUV lithography
- metrology for lithographic masks
- modelling of line edge roughness
- phase metrology, phase retrieval techniques
- flatness metrology, deflectometry
- high-precision interferometry
- high-precision displacement metrology
- grating characterization and modeling
- optical scattering on nanoparticles
- time dependent phenomena
- modeling of ultrafast processes
- surface enhanced Raman scattering
- new materials, metamaterials, photonic crystals.

Optics for Arts, Architecture, and Archaeology (EOM103)



Conference Chairs: **Luca Pezzati**, Istituto Nazionale di Ottica (Italy); **Piotr Targowski**, Nicolaus Copernicus Univ. (Poland)

Programme Committee: **Dario Ambrosini**, Univ. degli Studi dell'Aquila (Italy); **John F. Asmus**, Univ. of California, San Diego (United States); **Brunetto Giovanni Brunetti**, Univ. degli Studi di Perugia (Italy); **Andreas Burmester**; **Marta Castillejo**, Consejo Superior de Investigaciones Científicas (Spain); **Alberto de Tagle**, Netherlands Institute for Cultural Heritage (Netherlands); **John K. Delaney**, National Gallery of Art (United States); **Raffaella E. M. Fontana**, Istituto Nazionale di Ottica (Italy); **Roger M. Groves**, Technische Univ. Delft (Netherlands); **Igor P. Gurov**, National Research Univ. of Information Technologies, Mechanics and Optics (Russian Federation); **Alexander J. Kossolapov**; **Haida Liang**, Nottingham Trent Univ. (United Kingdom); **Nicola Masini**, Consiglio Nazionale delle Ricerche (Italy); **David R. Saunders**, The British Museum (United Kingdom); **Vivi Tornari**, Foundation for Research and Technology-Hellas (Greece)

O3A is the sixth edition of the SPIE optical metrology conference devoted to cultural heritage methods. The conference is now an established event for discussing advanced methodologies for the study, documentation, safeguarding, preservation and conservation of cultural heritage. The symposium will be an ideal place to introduce new applications, to exchange ideas and to discuss methods and best practices for the optical analysis of artworks.

Submissions will be expected to target new techniques, experimental applications and/or case-studies where the integration of many diagnostic approaches plays a key role. We expect to discuss techniques, applications and studies of optical methods for cultural heritage, such as terahertz imaging, optical coherence tomography, imaging spectroscopy (multi-spectral and hyper-spectral imaging), luminescence imaging, 3D analyses, spectroscopy (infrared, LIBS, LIF, Raman), holography, interferometry, colorimetry, laser-based methods and many more.

Contributions are welcome and will be considered in all fields of research for cultural heritage including the following areas of interest:

- surface examination and analysis
- structure and material analyses
- topography and tomography
- stratigraphic and depth-resolved methods
- new portable instruments for in situ applications
- integrated techniques and case studies
- new methods and applications for restoration
- image processing and other digital data processing methods for optics.

Critical Dates

Abstract Due Date:

17 December 2012

Onsite Manuscript Due Date:

11 March 2013

Post-Meeting Manuscripts Due

18 April 2013

Please Note: Submissions imply the intent of at least one author to register, attend the conference, present the paper as scheduled, and submit a full-length manuscript for publication in the conference proceedings.

Optical Metrology

Videometrics, Range Imaging and Applications (EOM104)



Conference Chairs: **Fabio Remondino**, Fondazione Bruno Kessler (Italy);

Mark R. Shortis, RMIT Univ. (Australia)

Programme Committee: **Jean-Angelo Beraldin**, National Research Council Canada

(Canada); **Jan Boehm**, Univ. College London (United Kingdom); **Werner Boesemann**,

AICON 3D Systems GmbH (Germany); **Hirofumi Chikatsu**, Tokyo Denki Univ. (Japan);

Nicola D'Apuzzo, Homometrica Consulting (Switzerland); **Sabry F. El-Hakim**, Carleton Univ.

(Canada); **Gabriele Guidi**, Politecnico di Milano (Italy); **Derek D. Lichti**, Univ. of Calgary (Canada);

Thomas Luhmann, Jade Univ. (Germany); **Hans-Gerd Maas**, Technische Univ. Dresden

(Germany); **Jon P. Mills**, Newcastle Univ. (United Kingdom); **Norbert Pfeifer**, Vienna Univ. of

Technology (Austria); **Stuart Robson**, Univ. College London (United Kingdom); **David Stoppa**,

Fondazione Bruno Kessler (Italy)

For more than two decades the Videometrics conference series has been providing a unique forum for computer vision, 2D and 3D image analysis, vision metrology and photogrammetry researchers, developers and practitioners to present the latest advances in precise 3D measurement and accurate modeling from imaging and range sensors. This conference was originally focused on the metric performance of sensors and algorithms to produce the most accurate and reliable geometric measurements and models. Topics such as sensor calibration, performance evaluation, and accurate object reconstruction were dominant. This has now been expanded to encompass all phases of precise 3D optical and range imaging for the accurate modeling of real scenes, including automation of data collection and processing, improving the visual quality and realism, visualization, animation and data management for real-time manipulation. This is in response to the fast growing interest in processing and modeling technology and the increasing demands of these accurate 3D models in applications such as rapid product development, 3D digitizing, material and component testing, virtual museums, documentation of monuments and architecture for cultural heritage, motion analysis, marketing and tourism, human body modeling, medicine and the exploration of remote and hazardous sites, just to name a few.

We invite submission of original research contributions, as well as demonstrations of successful applications in, but not limited to, the following technical areas:

3D Sensing and Calibration

- 3D sensors and scanning devices (including both passive imaging and active range-imaging), systems and methods
- mobile and handheld 3D devices and complementary 6DOF sensors

- advances in practical and automatic calibration and orientation techniques
- automatic data acquisition and strategies for next best view planning
- unmanned platforms, sensor integration and data fusion
- accuracy and performance evaluation: methodologies, facilities, standards
- certification and acceptance of optical technologies.

3D Processing and Modeling

- precise object, site and complex environment modeling
- image- and range-based 3D modeling
- fringe projection and phase shift techniques
- assessment of model quality (including view registration and surface modeling)
- automatic matching and segmentation of structured and unstructured scenes
- local, semi-global and global matching strategies
- multi-view registration and integration
- 3D model optimization
- modeling of deformable surfaces
- medical image analysis
- automation and process control

Motion Capture and Animation

- capture, storing, archiving, analysis and display of image sequences
- automated systems and platforms for image capture
- image matching and tracking in motion analysis and surface deformation
- high speed imaging and real time analysis.

Visualization

- hybrid image- and model-based rendering
- multi-resolution 3D representations
- texture acquisition and integration
- viewpoint/illumination dependent texture mapping
- realistic rendering representations and techniques
- remote rendering and web visualization of 3D models.

3D Applications

- 3D applications of videometrics and range imaging in engineering, cultural heritage, entertainment, in the natural and built environment, and in medical and biological sciences, demonstrating the research, development and operation of the techniques are highly welcome.

The Programme Committee will review all abstract submissions. Abstracts should be a minimum of 500 and a maximum of 1000 words (approximately 1-2 pages of single-spaced 12 point font). Authors are encouraged to include figures and diagrams to illustrate the concepts outlined in the abstract.

Workshop: Industry meets Academia

Workshop Chairs: **Nadya Reingand**, Patent Hatchery, United States; **Wolfgang Osten**, Univ. Stuttgart, Germany; **Andreas Ostendorf**, Laser Zentrum, Hannover (Germany)

Photonic technologies and products have been gaining increased impact in all sectors of social and commercial life. Meanwhile, the dissemination of photonic products can only be compared with microelectronics. Universities are supposed to be, and mostly are, “marketplaces of ideas.” One important basis for innovation is the consequent observation of the whole life cycle of products. The question of how technologically progressive industries and new products evolve from birth through maturity has to consider the interaction of different players in various phases of the life cycle. In the early phase the interaction between partners from industry and academia plays a growing role.

This workshop is dedicated to the exchange of experiences among these partners acting actively within collaborative projects. It presents useful information on commercialisation essentials: funding, business plans, technology transfer and intellectual property. This forum provides an opportunity to show exciting new technologies which are ready and available for commercialisation and to discuss which routes would help more inventions move more quickly to market, thereby benefiting society, the university, and the inventors.

Based on the presentation of currently running projects, a vital information exchange will be stimulated and will be followed by specific courses that will address important subjects of cooperation: intellectual property, technology evaluation, contracting and negotiation strategies. Special attention will be paid to the international character of modern scientific and business cooperation.

Learning outcomes

This workshop will enable you to:

- identify your benefits if your idea is commercialised
- confirm market niche and patentability
- maximize the business outcome of your invention
- learn the basic steps in IP protection
- increase the efficiency and limit your legal expenses by doing a large portion of the work yourself
- accelerate the road to market
- optimize your effort in commercialisation by understanding what the process entails.

Intended audience

Those who work in high tech R&D and business, especially in highly competitive areas, will find this workshop extremely valuable.

Optical Metrology

Optical Methods for Inspection, Characterization and Imaging of Biomaterials (EOM105)

Conference Chairs: **Pietro Ferraro**, Istituto Nazionale di Ottica (Italy);

Monika Ritsch-Marte, Innsbruck Medical Univ. (Austria)

Conference Co-Chairs: **Simonetta Grilli**, Istituto Nazionale di Ottica (Italy);

David Stifter, Johannes Kepler Univ. Linz (Austria)



Biocompatible materials (or “Biomaterials”) are substances that are intended to interact with biological systems. For the safe and reliable function of implants, materials are as important as form. Surfaces may require appropriate coatings or functionalization. Therefore the last two decades have seen strong advancements in biomaterials and related science, with capital investments and research efforts into the development of new products in several fields of applications. Biomaterials science embraces several disciplines such as medicine, biology, chemistry, tissue engineering and materials science.

When a new material is designed and created or optimized and adopted for some application process, proper characterization is of paramount importance. The need of imaging and metrological tools is very important in defining and measuring properties of the materials from different points of view: morphological signature and their evolutions, mechanical properties (stress and strain analysis), surface characterization, reaction to stimulus, degradation, assembling, and many more.

INNOVATIVE ASPECTS

Optical techniques have some advantageous features: they are largely non-invasive, non-contact, possibly have a large field of view and high spatial resolution and very high sensitivity for measuring and evaluating most of physical and material parameters. This gives them a prominent role among diagnostic tools. The requirements depend on the situation, varying substantially from single cell and tissue engineering to complex biological systems or components.

In analogy to what occurred in „Photomechanics“ which furnished many decisive answers in the past 40 years, in a variety of engineering problems (in materials engineering, testing and characterization of components and structures for aerospace, automobile industry, optics and micromechanics industries), optical metrology can provide answers for emerging problems and key issues in biomaterials research.

The intention of this conference is to bring together researchers working in the emerging fields of biomaterials, either at microscopic or at macroscopic scale. The conference will provide a rare platform for detailed exchange between groups working on the development of “biomaterials” and experts in “optical metrology”, in order to promote and stimulate stronger interaction between these topics. We plan to invite experts from very different areas, who are usually not attending the same conferences, and we expect new collaborations to come into being from these encounters.

The emphasis of the conference lies on the development of new and smart diagnostic metrological tools of biomaterials, to furnish quantitative data to optimize engineering design, fabrication and characterization of biomaterials.

Expected topics among contributions include:

- characterization of implantable devices and their materials
- visualization and evaluation of self-assembly processes at the nanoscale/microscale of biological/polymeric matter
- biocompatible polymers and their characterization
- biodegradable polymers and their characterization
- mechanical strength, strain, optical and other bone property
- measurements polymer scaffold characterization for tissue engineering
- single cell mechanics, cell motility, cell adhesion and morphological evolution and correlation to biomechanisms and cell fate
- collagen and other tissue investigation
- optics of the eye and vision correction (i.e. characterization of intraocular lenses)
- materials for dental applications
- diagnostic systems on innovative phase-contrast imaging
- optical micro-manipulation for materials characterization

Call for Papers

- study of liquid-solid interfaces by optical/imaging methods
- bioinspired biomimetic and nanobiomaterials
- investigation and characterization of biological nano-diffractive materials/surfaces
- characterization of soft-like biomaterials
- optical method for study fluids at micro and nanoscale.

Contributions are expected but not limited to the following approaches and methods:

- quantitative phase contrast imaging
- digital differential image contrast imaging
- interference microscopy
- holographic interferometry
- SLM-based microscopy
- lensless imaging
- spectroscopy, microscopy, and endoscope optics
- optical absorption, reflection, transmission and scattering techniques
- 3D modeling and profiling
- speckle interferometry and imaging
- optical methods for biomechanics of materials and evaluation of its functionalities
- fluorescence microscopy techniques
- optical coherence tomography
- terahertz imaging
- adaptive optics with SLMs
- wavefront sensing
- fringe projection accurate shape measurement
- topography and 3D shape measurements
- photoacoustic imaging
- fringe pattern analysis for accurate materials properties.

The Future is Faster

**Present and publish.
Online. Onsite. Real-time.**

**SPIE
Digital
Library**

SPIDigitalLibrary.org

Present at SPIE Optical Metrology

- Dynamic
- Diverse
- Current
- Collaborative

Publish in SPIE Proceedings

- Timely
- Relevant
- Cited
- Indexed

Become part of the world's largest collection of optics and photonics research papers

Give your peers the opportunity to read your paper during the conference: Submit your manuscript by **11 March 2013** and, pending Chair approval, your paper will be available in the SPIE Digital Library to registered conference attendees.

Optical Metrology

Automated Visual Inspection (EOM106)



Conference Chairs: **Jürgen Beyerer**, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung und Karlsruhe Inst. of Technology (Germany); **Fernando Puente León**, Karlsruher Institut für Technologie (Germany)

Conference Co-Chair: **Kevin G. Harding**, GE Global Research (United States)

Programme Committee: **Klaus Donner**, Univ. of Passau (Germany); **Christian Frese**, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung (Germany); **Andreas M. Heinrich**, Carl Zeiss AG (Germany); **Michael Heizmann**, Fraunhofer-Institut für Optronik, Systemtechnik und Bildauswertung (Germany); **Bernd Jähne**, Ruprecht-Karls-Univ. Heidelberg (Germany); **Thomas Längle**, Fraunhofer IOSB (Germany); **Markus Maurer**, VITRONIC Dr.-Ing. Stein Bildverarbeitungssysteme GmbH (Germany); **Wolfgang Osten**, Univ. Stuttgart (Germany); **Felix Salazar**, Univ. Politécnica de Madrid (Spain); **Robert Schmitt**, Fraunhofer-Institut für Produktionstechnologie (Germany); **Hugo Thienpont**, Vrije Univ. Brussel (Belgium); **Stefan Werling**, Fraunhofer IOSB (Germany); **Ernst Wiedenmann**, AiMESS Services GmbH (Germany); **Volker Willert**, Technische Univ. Darmstadt (Germany);

This conference addresses image acquisition and image exploitation topics to solve visual inspection tasks automatically. Since elaborated approaches for acquiring images constitute the crucial base to successfully accomplish inspection tasks, particularly illumination, optics, sensors, and the complete acquisition setup composed of these ingredients are within the focus of the conference. Moreover, to extract the inspection-relevant information from images, signal processing and exploitation methods that account for the physical formation of the images are of great interest. As many inspection tasks cannot be solved based on a single image, frequently it is necessary to acquire sequences of images that have to be fused in an adequate manner to draw a final inspection decision. Therefore, the question is not only how to acquire appropriate single images, but how to acquire controlled image series that comprise sufficient information with respect to the inspection task and how such image series can be exploited efficiently.

General items

- automated visual inspection
- robust, high performance inspection
- visual quality monitoring and control
- image acquisition and exploitation.

Methodology

- image data based on diverse optical properties of materials (reflectance, roughness, spectrum, complex refraction index, etc.)
- illumination techniques

- image series
- image fusion
- image processing and exploitation methods
- detection and classification
- physically-based image formation models
- pattern recognition.

Applications

- automated inspection of industrially produced goods
- material recognition and verification
- detection of surface defects
- image-based measurement and control
- safety, security, and biometrics
- medicine
- other application fields.

Critical Dates

Abstract Due Date:

17 December 2012

Onsite Manuscript Due Date:

11 March 2013

Post-Meeting Manuscripts Due

18 April 2013

Please Note: Submissions imply the intent of at least one author to register, attend the conference, present the paper as scheduled, and submit a full-length manuscript for publication in the conference proceedings.

General Information

Technical Programme

Available February 2013

The comprehensive Advance Technical Programme for this symposium will list conferences, paper titles, and authors in order of presentation; an outline of all planned special events; and hotel and registration information.

Registration

Available Online February 2013

All participants, including invited speakers, contributed speakers, session chairs, co-chairs, and committee members, must pay a registration fee.

Fee information for conferences, courses, a registration form, and technical and general information will be available on the SPIE website in February.

Hotel Reservations

Hotel Booking information will be available online in February 2013.

Visa Information

Attendees from certain countries may not require a visa to enter Germany. For more details, please visit our information page: <http://spie.org/x25932.xml> or the website of the German Foreign Office at: http://www.auswaertiges-amt.de/EN/EinreiseUndAufenthalt/Visabestimmungen_node.html, which will list the point of information within your country.

Letters of Invitation

FOR CONFERENCE CHAIRS, TECHNICAL COMMITTEE MEMBERS, AND AUTHORS: If you are listed as an author on a paper, or as a participant in the programme, and you require an Official Invitation Letter for visa application purposes, please fill out and send SPIE the Invitation Letter Request Form.

Invitation Letter Request Form and instructions will be available for download in late January 2013 at the Optical Metrology Website www.spie.org/om following the EOM 2013 acceptance notifications.

NOTE: We recommend that you secure your travel visa before registering for the conference as cancellations after the preregistration cutoff may result in a cancellation fee.



SPIE

Helping engineers
and scientists stay current
and competitive

 Optics & Astronomy	 Biomedical Optics	 Optoelectronics & Communications	 Defense & Security	 Energy	 Lasers	 Nano/Micro Technologies	 Sensors
---	--	---	---	---	---	--	---

**SPIE
Digital
Library**

Find the answer
SPIEDigitalLibrary.org

Submission of Abstract

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

An author or coauthor (including keynote, invited, oral, and poster presenters) will:

- Register at the reduced author registration rate (current SPIE Members receive an additional discount on the registration fee).
- Attend the meeting.
- Make the presentation as scheduled in the programme.
- Submit a full-length manuscript (6 pages minimum) for publication in the SPIE Digital Library, Proceedings of SPIE, and CD-ROM compilations.
- Obtain funding for their registration fees, travel, and accommodations, independent of SPIE, through their sponsoring organizations.
- Ensure that all clearances, including government and company clearance, have been obtained to present and publish. If you are a DoD contractor in the USA, allow at least 60 days for clearance.

Submit an abstract and summary

Browse to locate the conference to which you are submitting at:

www.spie.org/omcall2

Once you choose a conference and click “submit an abstract”, you will be prompted to sign in to the MySPIE system. If you have a MySPIE account, sign in using your username and password. First-time users of MySPIE can create a new account by clicking on the “create new account link”.

- Please submit a 300-word text abstract for technical review purposes that is suitable for publication. SPIE is authorized to circulate your abstract to conference committee members for review and selection purposes.
- Please also submit a 300-word text summary suitable for early release. If accepted, this summary text will be published prior to the meeting in the online or printed programmes promoting the conference.
- Only original material should be submitted.
- Abstracts should contain enough detail to clearly convey the approach and the results of the research.
- Commercial papers, papers with no new research/development content, and papers where supporting data or a technical description cannot be given for proprietary reasons will not be accepted for presentation in this conference.
- Please do not submit the same, or similar, abstracts to multiple conferences.

Critical Dates

Abstract Due Date

17 December 2012

Onsite Manuscripts Due

11 March 2013

Post-Meeting Manuscripts Due

18 April 2013

Please Note: Submissions imply the intent of at least one author to register, attend the conference, present the paper as scheduled, and submit a full-length manuscript for publication in the conference proceedings.

Review, Notification, and Programme Placement Information

- To ensure a high-quality conference, all submissions will be assessed by the Conference Chair/Editor for technical merit and suitability of content.
- Conference Chair/Editors reserve the right to reject for presentation any paper that does not meet content or presentation expectations.
- The contact author will receive notification of acceptance and presentation details by e-mail no later than 18 February 2013.
- Final placement in an oral or poster session is subject to the Chairs’ discretion.

Proceedings of SPIE and SPIE Digital Library Information

- Conference Chair/Editors may require manuscript revision before approving publication and reserve the right to reject for publication any paper that does not meet acceptable standards for a scientific publication.
- Conference Chair/Editors’ decisions on whether to allow publication of a manuscript is final.
- Manuscript instructions are available from the “Author/Presenter Information” link on the conference website.
- Authors must be authorized to transfer copyright of the manuscript to SPIE, or provide a suitable publication license.
- Only papers presented at the conference and received according to publication guidelines and timelines will be published in the conference Proceedings of SPIE and SPIE Digital Library.
- SPIE partners with relevant scientific databases to enable researchers to find the papers in the Proceedings of SPIE easily. The databases that abstract and index these papers include Astrophysical Data System (ADS), Chemical Abstracts (relevant content), Compendex, CrossRef, Current Contents, DeepDyve, Google Scholar, Inspec, Portico, Scopus, SPIN, and Web of Science Conference Proceedings Citation Index.



Plan to attend SPIE Optical Metrology 2013 in Munich

Munich, “the city with a heart,” is the capital of Bavaria, and has established itself as Germany’s high-tech hub (Silicon Bavaria) and is one of the most important industrial and economic centers in the European community. Munich offers its visitors shopping, music, art, gourmet restaurants, beer gardens, outdoor cafes, ethnic restaurants, popular night-spots, grand cathedrals, and opulent palaces.

Read the Call for Papers and take the first step towards submitting an abstract today.

The website has everything you need to know about the meeting—up-to-date call information, author and presenter instructions to develop a successful presentation and manuscript for publication in the Proceedings of SPIE and the SPIE Digital Library. Also find information about hotel, travel, and registration.

www.spie.org/omcall2

Submit your abstract by **17 December 2012**

Call for
Papers

2013 Optical Metrology

13–16 May 2013

MUNICH ICM
International Congress Ctr.
Munich, Germany

Present your paper at the premier
European meeting for the latest
research in Optical Metrology

www.spie.org/omcall2

21st International Congress on Photonics in Europe
Collocated with LASER 2013 World of PHOTONICS



WORLD OF PHOTONICS CONGRESS

www.photonics-congress.com

SPIE Europe

2 Alexandra Gate, Ffordd Pengam,
Cardiff, CF24 2SA, UK