

# CALL FOR PAPERS

58<sup>th</sup> IWK

Ilmenau Scientific Colloquium  
Technische Universität Ilmenau



08 – 12 September 2014

## Shaping the Future by Engineering



Department of  
Mechanical Engineering

*thi*

TECHNISCHE UNIVERSITÄT  
ILMENAU

*We will be delighted to welcome you at the 58<sup>th</sup> Ilmenau Scientific Colloquium, 8 - 12 September 2014 at Technische Universität Ilmenau.*



Univ.-Prof. Dr. rer. nat. habil. Dr. h. c. Prof. h. c. mult. Peter Scharff

**(Professor Peter Scharff)**

President of the Technische Universität Ilmenau



Univ.-Prof. Dr.-Ing. Christian Weber

**(Professor Christian Weber)**

Dean of the Department of Mechanical Engineering

Technische Universität Ilmenau is pleased and excited to invite you to the 58<sup>th</sup> Ilmenau Scientific Colloquium, which will be held at the campus of Technische Universität Ilmenau from 8<sup>th</sup> to 12<sup>th</sup> September 2014.

The Ilmenau Scientific Colloquium has had an unbroken tradition of more than 50 years and is the „flagship“ event of our university, having an excellent reputation. In 2014, the Ilmenau Scientific Colloquium is again organised by the Department of Mechanical Engineering. The title of the conference is:

***“Shaping the Future by Engineering”***

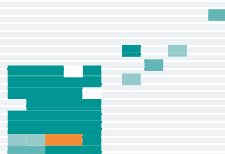
The title reflects both the breadth and the depth of modern mechanical engineering and at the same time the increasing integration of engineering disciplines. In three main topics many research areas of innovative mechanical engineering and adjacent fields are addressed. They also mirror the research strategy and technological fields established by Technische Universität Ilmenau.

As always in this conference series, we invite and encourage contributions from both academia and industry.

No matter whether you are an experienced professional or a novice in innovative mechanical engineering – we are sure that the 58<sup>th</sup> Ilmenau Scientific Colloquium will be of benefit to you.

***Come and join us in Ilmenau!***

**58<sup>th</sup> IWK**  
Ilmenau Scientific Colloquium  
Technische Universität Ilmenau



## Scientific Committee

**Andreasen, Mogens Myrup** - Technical University of Denmark, Denmark  
**Augsburg, Klaus** - Technische Universität Ilmenau, Germany  
**Barthelmä, Frank** - The Society for Production Engineering and Development (GFE e.V.), Schmalkalden, Germany  
**Bergmann, Jean Pierre** - Technische Universität Ilmenau, Germany  
**Bolotnik, Nikolai N.** - Institute for Problems in Mechanics of the Russian Academy of Sciences, Moscow, Russia  
**Fan, Kuang-Chao** - National Taiwan University, Taiwan  
**Fröhlich, Thomas** - Technische Universität Ilmenau, Germany  
**Gao, Wei** - Tohoku University, Japan  
**Grünwald, Rainer** - Technische Universität Ilmenau, Germany  
**Günster, Jens** - BAM Federal Institute for Materials Research and Testing Berlin, Germany  
**Hausotte, Tino** - Universität Erlangen-Nürnberg, Germany  
**Heim, Hans-Peter** - Universität Kassel, Germany  
**Hildebrandt, Jörg** - Bauhaus Universität Weimar, Germany  
**Hofmann, Dietrich** - Jena, Germany  
**Holub, Jan** - Czech Technical University Prague, Czech Republic  
**Jäger, Gerd** - Technische Universität Ilmenau, Germany  
**Jahn, Simon** - Günter-Köhler-Institut für Füge- und Werkstofftechnik GmbH Jena, Germany  
**Jywe, Wenyuh** - National Formosa University, Taiwan  
**Kaufeld, Michael** - Hochschule Ulm, Germany  
**Kletzin, Ulf** - Technische Universität Ilmenau, Germany  
**Koch, Michael** - Technische Universität Ilmenau, Germany  
**Krüger, Helmut** - c/o ETH Zürich, Switzerland  
**Kuosmanen, Petri** - Aalto University, Finland  
**Kurtz, Peter** - Technische Universität Ilmenau, Germany  
**Längle, Thomas** - Fraunhofer Gesellschaft IOSB Karlsruhe, Germany  
**Lepikson, Herman Augusto** - Escola Politécnica da Universidade Federal da Bahia, Brazil  
**Liefeith, Klaus** - Institut für Bioprocess- und Analysenmesstechnik e.V. (iba), Germany  
**Linß, Gerhard** - Technische Universität Ilmenau, Germany  
**Manske, Eberhard** - Technische Universität Ilmenau, Germany  
**Marjanović, Dorian** - University of Zagreb, Croatia  
**Moritzer, Elmar** - University of Paderborn, Germany  
**Muravyov, Sergey** - Tomsk Polytechnic University, Russia  
**Pavlović, Nenad D.** - University Niš, Serbia

**Rädlein, Edda** - Technische Universität Ilmenau, Germany  
**Regtin, Paul** - University of Twente, Netherlands  
**Rothe, Hendrik** - Helmut-Schmidt-Universität/Universität der Bundeswehr Hamburg, Germany  
**Sattel, Thomas** - Technische Universität Ilmenau, Germany  
**Savaidis, Georgios** - Aristotle University Thessaloniki, Greece  
**Schmitz, Josef** - Universität Bielefeld, Germany  
**Schwartz, Roman** - Physikalisch-Technische Bundesanstalt Braunschweig, Germany  
**Sinzinger, Stefan** - Technische Universität Ilmenau, Germany  
**Sommer, Klaus** - Physikalisch-Technische Bundesanstalt Braunschweig, Germany  
**Stadnyk, Bogdan I.** - Lviv Polytechnic National University, Ukraine  
**Ströhla, Tom** - Technische Universität Ilmenau, Germany  
**Theska, René** - Technische Universität Ilmenau, Germany  
**Ulrich, Wilhelm** - Carl Zeiss AG, Germany  
**Wang, Yung-Cheng** - National Yunlin University, Taiwan  
**Weber, Christian** - Technische Universität Ilmenau, Germany  
**Weiß, Mathias** - Technische Universität Ilmenau, Germany  
**Witte, Hartmut** - Technische Universität Ilmenau, Germany  
**Yacoot, Andrew** - National Physical Laboratory Teddington, United Kingdom  
**Zentner, Lena** - Technische Universität Ilmenau, Germany  
**Zhang, Hong-Jun** - China Jiliang University, China  
**Zimmermann, Klaus** - Technische Universität Ilmenau, Germany

## Organising Committee

<b>Chairman:</b>	Prof. Christian Weber
<b>Head of Organisation:</b>	Prof. Mathias Weiß
<b>Members:</b>	Prof. Stefan Sinzinger
	Prof. René Theska
	Dr. Beate Schlütter
	Andrea Schneider

**Contact:** [conferences@tu-ilmenau.de](mailto:conferences@tu-ilmenau.de)

**TOPIC 1**

## Precision Engineering and Precision Measurement Technology

**SESSION 1.1**

CHAIRMAN  
**Prof. Eberhard Manske**



### Nanopositioning and Nanomeasuring Machines

- » Nanopositioning and Nanomeasuring Machines
- » Nanometrology
- » Probes and Tools
- » Laser Measurement
- » Control and Visualisation in NPM Devices

CHAIRMEN  
**Prof. René Theska**  
**Prof. Stefan Sinzinger**



### Precision Engineering and Optics

**SESSION 1.3**

- » Precision Machines
- » Devices and Sensors
- » Precision Bearings and Guideways
- » Automated Assembly and Adjustment
- » Optical and Optomechanical Design
- » Optical Devices

**SESSION 1.2**

CHAIRMAN  
**Prof. Thomas Fröhlich**



### Measurement and Sensor Technology

- » Process Measurement
- » Force Measurement
- » Weighing Technology
- » Temperature Measurement
- » Measurement Dynamics

**SESSION 1.4**

CHAIRMAN  
**Prof. Gerhard Linß**



### Image Processing and Quality Assurance

- » Colour and Spectral Imaging
- » Recognition of Natural Objects
- » Image Processing for Geometrical Objects
- » Sensorfusion, Performance, Optimization
- » Quality Management and Statistical Process Control
- » 2D- and 3D-Image Processing

**TOPIC 2**

## Mechatronics, Biomechatronics and Mechanism Technology

**SESSION 2.1**

CHAIRMAN  
**Prof. Thomas Sattel**


**Mechatronic Systems**

- » Smart Actuators
- » Sensors and Control
- » Vibrations and Elastic Structures
- » Energy Efficiency
- » Robotics
- » Automotive Engineering

**SESSION 2.3**

CHAIR  
**apl. Prof. Lena Zentner**


**Mechanism Technology**

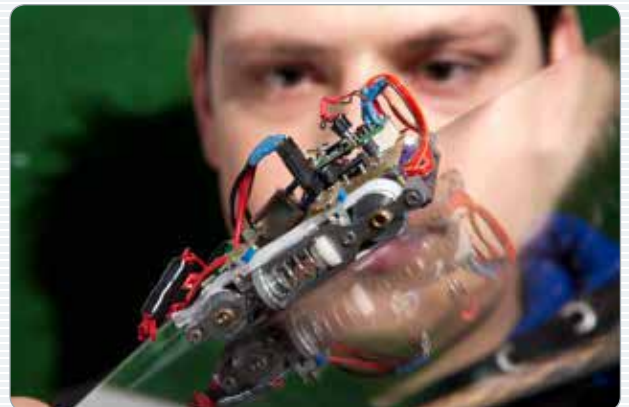
- » Rigid Body Mechanisms
- » Compliant Mechanisms
- » Fluid-Mechanical Actuators
- » Coherent Joints
- » Stable and Instable Mechanisms
- » Non-linear Modelling

**SESSION 2.2**

CHAIRMAN  
**Prof. Hartmut Witte**


**Assistance Systems**

- » Biology – Biomimetics - Engineering
- » Mobility of the Elderly
- » Unconventional Locomotion
- » Morphological Computation



## TOPIC 3

## Systems Technology

## SESSION 3.1

CHAIRMAN  
Prof. Christian Weber



## Components, Systems and Processes

- » Advanced Components in Mechanical Engineering and Mechatronics
- » Procedures, Methods and Tools for the Design of Intelligent Systems
- » Design for X
- » Computer Support
- » System Integration and Interfaces
- » Machine Elements (Calculation, Simulation, Testing)
- » Springs and Spring Technology
- » Wire Material

## SESSION 3.2

CHAIRMAN  
Prof. Klaus Augsburg



## Sustainable Mobility

- » Electric Vehicle Drive Systems
- » Fuel Reduction Methods
- » Power Management and Emission Reduction
- » Range Extending Drive Systems
- » Advanced Brake and Suspension Systems
- » Light Weight Vehicle Materials, Manufacturing and Design
- » Advanced Driver Assistance Systems

## SESSION 3.3

CHAIRMAN  
Prof. Michael Koch



CHAIRMAN  
Prof. Jean Pierre Bergmann



## Production and Processing Technologies

- » Cutting and Chipping of High Strength Materials and Fibre Reinforced Materials
- » Joining of Hybrid Joints and High Strength Materials
- » Production Methods for Light Weight Components
- » Innovative Manufacturing Chains
- » Plastics and Biopolymer Processing for Improved Material
- » Properties in Advanced Functional Applications
- » Fibre Reinforced Plastics and Multimaterial Composite Technology
- » Energy Efficiency in Plastics and Metal Processing
- » Innovative Quality Assurance Methods for Advanced Production Technologies

## WORKSHOPS

58<sup>TH</sup> IWK  
www.tu-ilmenau.de/iwk

## WORKSHOP

CHAIR  
Prof. Edda Rädlein

## Living Glass Surfaces

- » Glass Surfaces
- » Glass Processing
- » Glass Storage and Cleaning
- » Glass Corrosion
- » Degradation in Solar Applications

## WORKSHOP

CHAIRMEN  
Prof. Christian Weber  
Prof. Hartmut Witte

## Design Science and Biomimetics (Bionics) – State and Perspectives

- » New developments in Design Science for Biomimetic design
- » Contributions of Biology and Biomimetics Research to support product development
- » Methods, tools, organisational aspects for the transfer into development processes
- » Applications in practice (in material development, surface and micro technologies, actuators and sensors, locomotion and robotics, biomedical systems, human-machine-interfaces etc.)

## WORKSHOP

CHAIRMEN  
Prof. Christian Weber  
Dr. Stephan Husung

## Virtual Engineering throughout the Product Life-Cycle

- » Requirements of Virtual Engineering (VE) in Practice
- » VE Applications in Different Product Life-Phases and Industries
- » Special Aspects, e.g. VE in Acoustical Optimisation
- » Usability and Integration of VE Tools





## Author's Guidelines

# 58TH IWK

### Schedule and Deadlines

Online Submission opens	1 <sup>st</sup> January – 31 <sup>st</sup> March 2014
Review Process	1 <sup>st</sup> - 30 <sup>th</sup> April 2014
Notification of Acceptance	to 9 <sup>th</sup> May 2014
Submission of full papers	to 31 <sup>st</sup> July 2014
Early Bird Rate	to 31 <sup>st</sup> July 2014
Final Programme	August 2014
Conference	8 <sup>th</sup> - 12 <sup>th</sup> September 2014

*The conference language is English.*

### Important Notice for Authors/Co-Authors

The transfer of the conference fee is required by 31<sup>st</sup> July, 2014 at the latest.

The papers which have been accepted by the Scientific Committee will be published in the conference timetable booklet and the conference proceedings on USB stick only if the money appears in our account in time.

### Instructions for Paper Submissions

Register and submit papers via: [www.tu-ilmenau.de/iwk](http://www.tu-ilmenau.de/iwk)

**STEP 1** Please send us an abstract (two pages) by 31<sup>st</sup> March, 2014 as PDF file (without Layout Guidelines).

#### After notification of acceptance:

**STEP 2** We need your full paper (6 to 20 pages) until 31<sup>st</sup> July, 2014 as PDF file for publication on USB stick and with Uniform Resource Name (URN, given by the Library of the Technische Universität Ilmenau) for publishing online after the conference.

The following templates are available at:

[www.tu-ilmenau.de/iwk](http://www.tu-ilmenau.de/iwk)

» [msword template](#)      » [pdf template](#)

Detailed information on how to format your paper is given in the template itself and on our website.

**STEP 3** We also need a short abstract of 2300 characters (including spaces) as ASCII file for publication in the conference programme.

### Review Process and Publication of Papers

Abstracts (two pages) submitted to 58<sup>th</sup> Ilmenau Scientific Colloquium will be subjected to a peer review process, carried out by the members of the International Scientific Committee.

#### Review criteria are:

- » novelty and level of contribution
- » validity of conclusions
- » applicability of conclusions to further research or practice
- » formal qualities of the contribution.

Every full paper accepted which is discussed at the conference - is given its own URN and will be published after the conference online ([www.db-thueringen.de](http://www.db-thueringen.de)). This process is organised by the Library of the Technische Universität Ilmenau.

Please note - for the convenience of all participants all papers will be available as PDF files on a USB memory stick.



## Fee and Payment for the Conference

[www.tu-ilmenau.de/iwk](http://www.tu-ilmenau.de/iwk)

	FULL TIME	SINGLE DAY
<b>EARLY BIRD RATE 5 May - 31 July, 2014</b>		
Participants, authors/co-authors	300 EUR	150 EUR
Undergraduate and postgraduate students, people on scholarships (authors/co-authors, participants)	50 EUR	50 EUR
Members and students of the Technische Universität Ilmenau (authors/co-authors, participants)	Free of Charge	Free of Charge

	FULL TIME	SINGLE DAY
<b>STANDARD RATE after 31 July, 2014</b>		
Participants, authors/co-authors	400 EUR	200 EUR
Undergraduate and postgraduate students, people on scholarships (authors/co-authors, participants)	50 EUR	50 EUR
Members and students of the Technische Universität Ilmenau (authors/co-authors, participants)	Free of Charge	Free of Charge

<b>Fee and Payment for the Accompanying Programme</b>	
Admission to the welcome reception (8 September, 2014)	Free of Charge
Admission to the academic gala concert (9 September, 2014)	10 EUR
Admission to excursion and banquet (10 September, 2014)	59,50 EUR <small>The price includes 50,00 EUR net and 19% VAT (9,50 EUR)</small>

### Money Transfer

Please transfer your conference fee to following account:

**Beneficiary:** Technische Universität Ilmenau  
**Bank name:** Landesbank Hessen-Thüringen (HELABA)  
**Bank code:** 820 500 00  
**Account number:** 300 4444 281  
**Code number:** 1581 / 7150 396 / invoice number  
**IBAN:** DE17820500003004444281  
**BIC (SWIFT):** HELADEF820

### Cancellation

A cancellation fee of 50 EUR per person will be charged until July 31, 2014.

A cancellation fee of 100 EUR per person will be charged after July 31, 2014 and up to August 22, 2014.

It will not be possible to repay any fees if cancellation is made later than August 22, 2014.

The deciding date will be that of the arrival of the written cancellation at the Conference Management of the Technische Universität Ilmenau via Mail to:

[conferences@tu-ilmenau.de](mailto:conferences@tu-ilmenau.de)

[www.tu-ilmenau.de/iwk](http://www.tu-ilmenau.de/iwk)

## Company Presentations and Sponsoring

Companies are welcome to take the opportunity of presenting their products in the context of the 58<sup>th</sup> Ilmenau Scientific Colloquium 8 -12 September, 2014. There is space for stands in the foyer of the conference building and at other sites on the University campus. It is also possible for companies to bring their own exhibition vehicle. A member of exhibiting companies' staff is invited to take part in the scientific programme of the IWK with no extra charge. You are also welcome to advertise your products or services while sponsoring the 58<sup>th</sup> IWK. If you are interested in supporting the 58<sup>th</sup> IWK please select one or more of the sponsorship package, given at:

[www.tu-ilmenau/iwk](http://www.tu-ilmenau/iwk) » [Invitation for Companies](#)

### IMPRINT

**PUBLISHER:**

President of the Technische Universität Ilmenau  
Univ.-Prof. Dr. rer. nat. habil. Dr. h. c. Prof. h. c. mult.  
Peter Scharff

**EDITORS:**

Department of Mechanical Engineering  
Marketing Division

**PHOTOS:**

Technische Universität Ilmenau, ari, Chris Liebold, Stephan Pöhler, Ingo Herzog

**LAYOUT:**

Torsten Weilepp, [www.formplusraum.de](http://www.formplusraum.de)

© Technische Universität Ilmenau (Thür.) 2013



[www.tu-ilmenau.de/iwk](http://www.tu-ilmenau.de/iwk)