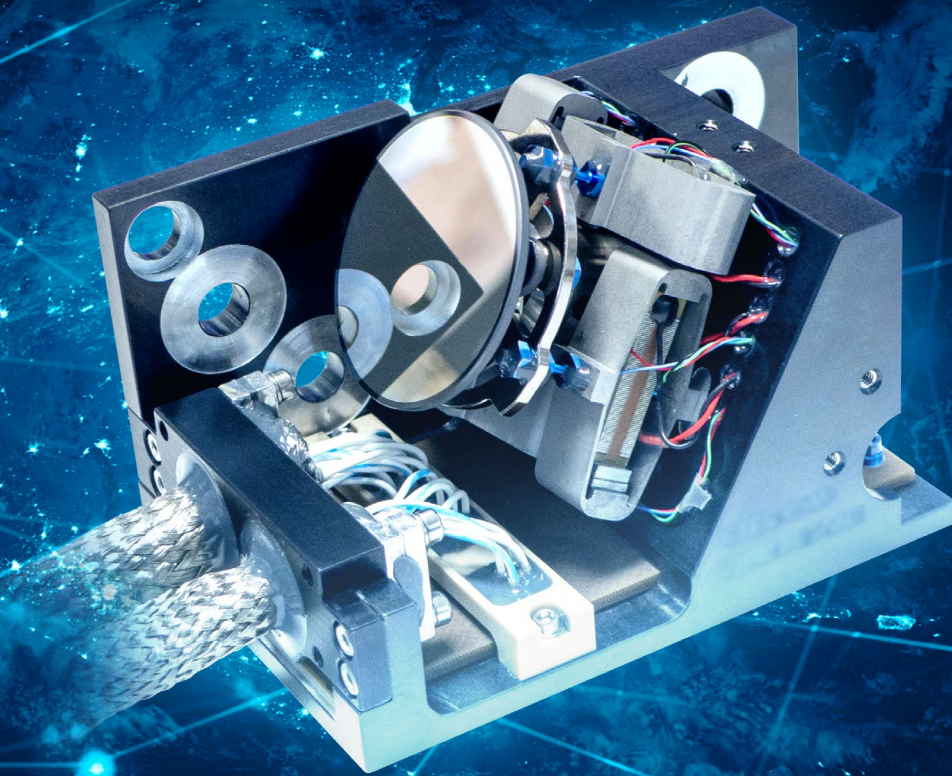


Program



ACTUATOR 26

International Conference and Exhibition on
New Actuator Systems and Applications

Kurhaus Wiesbaden
Wiesbaden, Germany
June 30 – July 01, 2026

www.actuator.de

Organized by:

Society of Microelectronics,
Microsystems and Precision
Engineering (VDE/VDI GMM)

VDE **VDI**¹ GMM

Welcome to the new ACTUATOR Conference 2026

The ACTUATOR Conference 2026 – may we inform you ...

ACTUATOR is a major biennial event bringing together leading experts, suppliers and users in the field of new actuators from all over the world. The invitation to attend ACTUATOR is aimed at executives and researchers from industrial companies as well as institutes, colleges and universities who are interested in the transfer of R&D results into innovative actuator applications and drive technologies.

ACTUATOR 2026 – together with you on an international stage

With about 200 participants from more than 20 countries, the International Conference on New Actuator Systems and Applications has been the most important place to meet leading international specialists, to share their expertise and to start business co-operations in the field of new actuator technologies.

ACTUATOR – the key forum for actuators

based on smart materials and micro technologies as well as their applications in all areas of engineering for thirty years now. Over the years, a huge variety of excellent ideas and results have been reported. A lot of them have been raised from vision to mass product. Among the success stories you will find established applications of new actuators, in their use in fuel injection, adaptive shock absorbers, nanopositioning, precision engineering like camera lenses and other applications of miniaturized drives.

New product generations

In this way, ACTUATOR has launched the realization of new product generations with outstanding compactness and high performance properties which so far have not been achieved in conventional technologies.

The Exhibition

The exhibition will present components, system approaches and applications of smart actuators and low-power electromagnetic drives based on conventional (electromagnetic) and innovative working principles (new actuators), and associated subjects. The range of topics also includes measurement techniques, control concepts and circuits, driver components and units, system integration, layout and simulation tools etc.

ACTUATOR 2026 Steering Committee

*Manfred Kohl, Jürgen Maas, Salvador Pané i Vidal,
Emmanuel Vander Poorten,
Ulrike Wallrabe, Yoko Yamanishi*

List of contents

ACTUATOR 2026 Program Committee.....	4
Organizer	4
Program Overview	6
ACTUATOR 2026 – Keynote Speaker.....	8
Tuesday, June 30 th , 2026.....	11
Wednesday, July 01 st , 2026	21
General Information	28
ACTUATOR 2026 Office	28
ACTUATOR Project Management	28
Conference Fees	28
Payment of Conference Fees	28
Cancellation	28
Conference Venue	28
Get Together	28
Sponsors and Exhibitors	29

The ACTUATOR 2026 Program Committee

We appreciate the support of the following experts:

Steering Committee Members

Kohl, Manfred | Karlsruher Institut für Technologie, Germany
Maas, Jürgen | Technische Universität Berlin, Germany
Vander Poorten, Emmanuel | Katholieke Universiteit Leuven, Heverlee, Belgium
Wallrabe, Ulrike | University of Freiburg, Department of Microsystems Engineering – IMTEK, Germany
Yamanishi, Yoko | Kyushu University, Japan

Program Committee Members

Biedermann, Miriam | Bürkert Werke GmbH & Co. KG, Karlsruhe, Germany
Chikhaoui, M. Taha | Université Grenoble-Alpes, France
Choi, Seung-Bok | The State University of New York, Korea (SUNY Korea), Incheon, South Korea
Claeyssen, Frank | CEDRAT Technologies S.A., Meylan, France
Goldasz, Janusz | BWI Beijing West Industries Technical Center Kraków, Poland
Jager, Edwin | Linköping University, Sweden
Kanda, Takefumi | Okayama University, Japan
Kohl, Manfred | Karlsruher Institut für Technologie, Germany
Lötters, Joost | Bronkhorst High-Tech B.V., Ruurlo, Netherlands
Maas, Jürgen | Technische Universität Berlin, Germany
Manfredi, Luigi | University of Dundee, Great Britain
Marienfeld, Peter | ContiTech Deutschland GmbH, Hannover
Merlo, Sabina | University of Pavia, Italy
Milana, Edoardo | University of Freiburg, Department of Microsystems Engineering (IMTEK)
Monner, Hans Peter | German Aerospace Center (DLR), Braunschweig, Germany
Morishima, Keisuke | Osaka University, Yamadaoka, Japan
Morita, Takeshi | The University of Tokyo, Japan
Müller, Bert | University of Basel, Switzerland
Nienhaus, Matthias | Universität des Saarlandes, Saarbrücken, Germany
Pagounis, Emmanouel | ETO MAGNETIC GmbH, Stockach, Germany
Pané i Vidal, Salvador | Swiss Federal Institute of Technology (ETH) Zurich, Switzerland
Pott, Peter | University of Stuttgart, Germany
Price, Aaron | The University of Western Ontario, Canada
Renaud, Pierre | Institut National des Sciences Appliquées Strasbourg INSA, Strasbourg, France
Schubert, Franz | PI Ceramic GmbH, Lederhose, Germany
Seelecke, Stefan | Universität des Saarlandes, Saarbrücken, Germany
Spomer, Waldemar | Physik Instrumente (PI) GmbH & Co. KG, Karlsruhe, Germany
Takasaki, Masaya | Saitama University, Japan
Uchino, Kenji | The Pennsylvania State University, USA
Ugurlu, Barkan | Ozyegin University, Çekmeköy - Istanbul, Turkey
Vander Poorten, Emmanuel | Katholieke Universiteit Leuven, Heverlee, Belgium
Vergani, Giorgio | SAES Getters S.p.A., Lainate, Italy
Vorrath, Markus | Technische Universität Dresden, Germany
Wallrabe, Ulrike | University of Freiburg, Department of Microsystems Engineering – IMTEK, Germany
Wapler, Matthias | Otto-von-Guericke University Magdeburg, Germany
Yamanishi, Yoko | Kyushu University, Japan

Organizer

VDE VDI-Society Microelectronics Microsystems and Precision Engineering (GMM)

Dr. Ronald Schnabel
Merianstraße 28, 63069 Offenbach am Main, Germany
Phone: +49 69-6308-227
Fax: +49 69-6308-9828
e-Mail: gmm@vde.com

During the conference: Mobile: +49 171 4695 118

SMA Actuation for Compact Systems

Highly integrated actuator solutions for
intelligent and energy-efficient drive systems.



Functions

Latching & Unlatching

Switching

Positioning

Controlled Motion




MEET US AT
ACTUATOR
2026 BOOTH NO. 7

Discover next-generation SMA actuator solutions.

→ www.ingpuls-dynamics.com



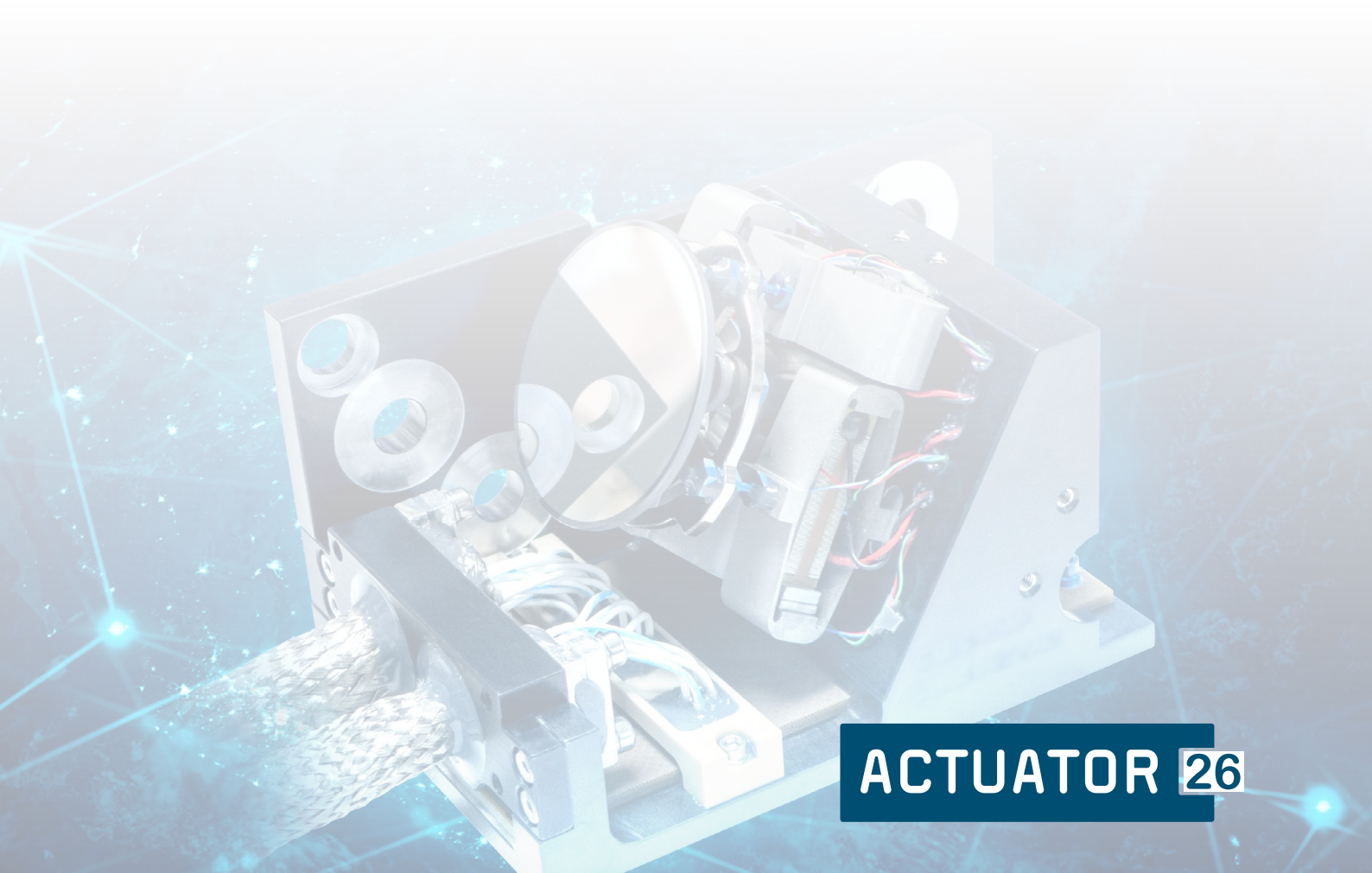
Program Overview

Time	Christian Zais Saal	Salon Carl Schuricht	Fjodor-Dostojewski Saal
Tuesday, June 30			
08:00–08:45	Foyer Registration		
08:45–09:00	Opening		
09:00–09:30	Keynote p. 11		
09:30–10:00	Keynote p. 11		
10:00–10:30	Keynote p. 11		
10:30–11:00	Foyer Coffee Break		
11:00–12:40	A1: KOMMMA (1) Dielectrics  p. 12	B1: Electromagnetics p. 13	C1: Thermal Shape Memory p. 14
12:40–13:50	Foyer Lunch Break		
13:50–15:50	A2: KOMMMA (2) Shape Memory & Electrostatics  p. 15	B2: Aerospace & Civil Engineering p. 16	C2: Polymers p. 17
15:50–16:15	Foyer Coffee Break		
16:15–17:55	A3: KOMMMA (3) Polymers  p. 18	B3: Novel Magnetics and Dielectrics p. 19	C3: Optics & Photonics p. 20
18:00–21:00	Exhibition of ACTUATOR , Kurhaus Wiesbaden Get Together		
Wednesday, July 01			
09:00–09:30	Keynote p. 21		
09:30–10:00	Keynote p. 21		
10:00–10:30	Keynote p. 21		
10:30–11:00	Foyer Coffee Break		
11:00–12:00	Foyer Poster Pitches p. 21		
12:00–13:30	Foyer Poster Session p. 21		
13:30–14:30	Lunch Break		
14:30–16:10	A5: Medical Devices p. 26	B5: Piezoelectrics p. 27	

Automated manufacturing solutions for actuators



Laser Soldering
Laser Welding
Heat Staking
Press-Fitting
Greasing
Potting
AOI



ACTUATOR 26



Nanometer-precise actuators and sensors for the key technologies of our world

Dr. Rainer Gloess (Physik Instrumente (PI) SE & Co. KG, Karlsruhe, Germany)

Rainer Gloess is Head of Advanced Mechatronics at Physik Instrumente (PI) SE & Co.KG Karlsruhe in the department Global Innovation & Scouting.

In 1970, he began his studies at the Technical University Dresden in “Electrical Technology and Fine Mechanics”, and received his PhD in the field of “Optoelectronic metrology in high dynamic motion processes.

From 1976 to 1991, he held a position at the Academy of Science, Berlin, Central Institute of Cybernetics and Information Processes, where he developed data recorder for near earth and deep space satellite missions.

Since 1991 he has been working in different R&D positions at Physik Instrumente, Karlsruhe. He developed piezo positioners, 6-DOF nano-positioning systems for semiconductor and photonics industry as well as for astronomy. Newest developments involve magnetic levitation with sub-nanometer resolution.

He is sustainable member of the American Society for Precision Engineering (ASPE) and member of two VDI/VDE technical committees.



The Multiplicity of Electrostatic Microactuation

Prof. Martin Hoffmann (Ruhr University Bochum, Germany)

Martin Hoffmann has been a full professor at the Ruhr University Bochum for Microsystems Technology since 2017.

After his work at the TU Dortmund, he joined MEMS companies and returned to academia in 2006 as a full professor for Micromechanical Systems at the TU Ilmenau.

Microactuators have always been a key area of interest in combination with sensors and optical waveguides from visible to THz. The application-specific MEMS are mainly based on thermal and electrostatic effects and demonstrators have been realized in an own cleanroom.



Piezoelectric and Piezoelectret Actuators and Microsystems

Prof. Liwei Lin (University of California/USA)

Professor Liwei Lin is the James Marshall Wells Academic Chair in Mechanical Engineering, and Co-Director at Berkeley Sensor and Actuator Center (BSAC) at UC Berkeley.

His research interests are in design, modeling, and fabrication of micro/nano structures; sensors and actuators; as well as mechanical issues in micro/nano systems including heat transfer, solid/fluid mechanics, and dynamics.

Dr. Lin is the recipient of the 1998 NSF CAREER Award for research in MEMS Packaging and the 1999 ASME Journal of Heat Transfer best paper award for his work on micro scale bubble formation. He led the effort to establish the MEMS division in ASME and served as the founding Chairman of the Executive Committee from 2004~2005. He is an ASME Fellow and has 23 issued US patents in MEMS. He was the general co-chair of the 24th IEEE international conference on Micro Electro Mechanical Systems at Cancun, Mexico in 2011.

He is currently serving as a subject editor of Microsystems & Nanoengineering published by the Nature group.



Actuation Challenges and Options in Medical Robotics

Prof. Arianna Menciassi (Scuola Superiore Sant'Anna, Pisa, Italy)

Arianna Menciassi (Fellow, IEEE) received the M.Sc. degree in physics from the University of Pisa, Pisa, Italy, in 1995, and the Ph.D. degree in bioengineering from Scuola Superiore Sant'Anna (SSSA), Pisa, Italy, in 1999. She is currently a Professor of bioengineering and biomedical robotics with SSSA, where she is the Team Leader of Surgical Robotics & Allied Technologies within The BioRobotics Institute. She served as Coordinator of the Ph.D. in BioRobotics in the period Feb. 2019-Feb. 2025, and in April 2019 she was appointed as the Vice-Rector of the SSSA for 6 years. Her research interests include surgical robotics, microrobotics for biomedical applications, biomechatronic artificial organs, and smart and soft solutions for biomedical devices. She pays special attention to the combination of traditional robotics, targeted therapy, and wireless solutions for therapy (e.g., ultrasound- and magnetic-based solutions). She has served for many years as the Co-Chair of the IEEE Technical Committee on Surgical Robotics. Prof. Menciassi is an Editor for the IEEE Transactions of Robotics and APL Bioengineering and she is an Associate Editor for Soft Robotics. She received the Well-tech Award (Milan, Italy) for her research on endoscopic capsules, and she was awarded by the Tuscany Region with the Gonfalone D'Argento, in 2007, as one of the best 10 young talents of the region. In 2020, she has been awarded with the KUKA Innovation Award, for her activities on robotic assisted focused ultrasound.



Life from Technology – From Micro-Actuator Modules to Non-Biological Organisms

Prof. Oliver Schmidt (Chemnitz University of Technology, Germany)

Professor Oliver G. Schmidt is the Scientific Director of the Research Center for Materials, Architectures and Integration of Nanomembranes (MAIN) and holds the Chair of Material Systems for Nanoelectronics at the Chemnitz University of Technology, Germany. He is an elected member of the German Academy of Science and Engineering and has received several international prizes and awards, among them the Leibniz-Prize of the German Research Foundation in 2018, and an Advanced Grant of the European Research Council (ERC) in 2019. He is a pioneer in microrobotics, its biomedical applications and its potential for creating artificial life. He achieved several Guinness World Records (e.g. smallest man-made jet engine and smallest microelectronic robot) and has made major scientific contributions to small scale energy storage devices, flexible electronics and integrated multi-functional microsystems. He has been an ISI highly cited researcher in 2018, 2019, 2022, 2024, 2025 and has authored and co-authored > 900 papers with a citation index > 68.000 and an H-index of 134.



Living Muscle Actuators: A New Frontier in Biohybrid Robotics

Prof. Shoji Takeuchi (University of Tokyo, Japan)

Shoji Takeuchi is Professor in the Department of Mechano-Informatics, Graduate School of Information Science and Technology, The University of Tokyo, Japan. He has received numerous honors, including the JSPS Prize, TIME Best Inventions 2025, and the Springer Nature Test of Time Award 2025. His research focuses on cultivated meat, 3D tissue fabrication, bioMEMS, implantable devices, and biohybrid robotics.

TWO TRAINING SESSIONS

ON JUNE 29TH AT ACTUATOR 2026

PIEZOELECTRIC ACTUATORS

Introductory course
Dr. Frank CLAEYSSEN

Basic knowledges

- Basics on piezoelectric materials bulk and MLA
- Piezo materials for actuators
- Constitutive laws / Equivalent electric circuit

Review of piezoelectric actuators

- Review of direct and amplified piezoelectric actuators
- Piezo mechanisms
- Exercises

Review of piezoelectric motors

- Piezoelectric motors
- Resonant structure
- Tribology of piezoelectric motors



Practises

LINEAR MAGNETIC ACTUATORS

Introductory course
Dr. Xavier DE LÉPINE

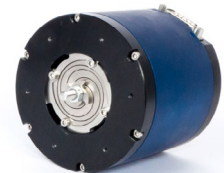
Basics of magnetism for actuators

- Magnetic effects and laws
- Magnetic forces
- Magnetic materials

Linear magnetic actuators

- The different kinds of linear actuators
- Design and performance of:
 - Moving coil actuators,
 - Moving magnet actuators,
 - Moving iron actuators.
- Introduction to other magnetic actuators:
 - MRF,
 - ...

Practises



ACTUATOR 26

International Conference and Exhibition on
New Actuator Systems and Applications



Contact and registration

CEDRAT TECHNOLOGIES: Mrs. Sandrine HUGI
training.ct@cedrat-tec.com
+33 (0)4 56 58 04 00
www.cedrat-technologies.com

Venue

June 29th, 2026, from 9 am to 5 pm
Kurhaus Wiesbaden
Kurhausplatz 1
65189 Wiesbaden

Who should attend

Engineers in a research department
Electronics and mechanical engineers

Participation fee

650€ for participants from industry
550€ for participants from university
Including documentation, coffee and lunch breaks

Foyer

08:00 **Registration**

08:45 **Opening**

Prof. Manfred Kohl (Karlsruher Institut für Technologie, Germany)

Christian Zais Saal

09:00 **Living Muscle Actuators: A New Frontier in Biohybrid Robotics**

Prof. Shoji Takeuchi (University of Tokyo, Japan)

09:30 **The Multiplicity of Electrostatic Microactuation**

Prof. Martin Hoffmann (Ruhr University Bochum, Germany)

10:00 **Piezoelectric and Piezoelectret Actuators and Microsystems**

Prof. Liwei Lin (University of California/USA)

10:30 - 11:00 Coffee Break

Christian Zais Saal

A1

KOMMMA (1) – Dielectrics

Chairs: Martin Richter (Fraunhofer EMFT, Germany);
Manfred Kohl (Karlsruhe Institute of Technology (KIT), Germany)



-
- 11:00 **Closed-loop cooperative control of dielectric elastomer actuator arrays**
*Alberto Priuli*¹, *Saverio Addario*¹, *Benjamin Zemlin*², *John Heppe*², *Gianluca Rizzello*¹
¹ Saarland University, Department of Systems Engineering, Saarbrücken, Germany
² University of Applied Sciences, Department of Sensors and Thin Films, Saarbrücken, Germany.
-
- 11:20 **Towards Downscaling of Cooperative Dielectric Elastomer Actuator Systems**
*Saverio Addario*¹, *Alberto Priuli*¹, *Benjamin Zemlin*², *John Heppe*², *Stefan Seelecke*¹, *Gianluca Rizzello*¹
¹ Saarland University, Department of Systems Engineering, Saarbrücken, Germany
² University of Applied Sciences, Department of Sensors and Thin Films, Saarbrücken, Germany.
-
- 11:40 **Modelling and control of a multi-actuator array based on balloon-shaped dielectric elastomer actuators**
*Bingzhi Wang*¹, *Andreas Hubracht*¹, *Chen Jiao*², *Ashwani Sharan Tripathi*², *Uwe Marschner*², *Andreas Richter*², *E. F. Markus Vorrath*², *Jürgen Maas*¹
¹ Mechatronic Systems Lab, Technische Universität Berlin, Germany
² Institute of Semiconductors and Microsystems, Technische Universität Dresden, Germany
-
- 12:00 **Integrated Pneumatic Dielectric Elastomer Switches for Soft Dielectric Elastomer Transducers**
*Chen Jiao*¹, *Ashwani Sharan Tripathi*¹, *Andreas Lars Peter Hubracht*², *Bingzhi Wang*², *Uwe Marschner*¹, *Andreas Richter*¹, *Jürgen Maas*², *E.-F. Markus Vorrath*^{1,3}
¹ Institute of Semiconductors and Microsystems, Technische Universität Dresden, Germany
² Mechatronic Systems Lab, Technische Universität Berlin, Germany
³ Biomimetics Lab, Auckland Bioengineering Institute, The University of Auckland, New Zealand
-
- 12:20 **3D printing of multilayer dielectric elastomer transducers with adapted layer thickness for multi-actuator configurations**
*Andreas Hubracht*¹, *Bingzhi Wang*¹, *Chen Jiao*², *Ashwani Sharan Tripathi*², *Uwe Marschner*², *Andreas Richter*², *E.-F. Markus Vorrath*², *Jürgen Maas*¹
¹ Mechatronic Systems Lab, Technische Universität Berlin, Germany
² Institute of Semiconductors and Microsystems, Technische Universität Dresden, Germany
-

12:40 - 13:50 Lunch Break

Salon Carl Schuricht**B1****Electromagnetics**

Chairs: Emmanuel Vander Poorten (KU Leuven, Belgium); Janusz Goldasz (Cracow University of Technology, Poland)

11:00

Conceptual design of a Tunable Magnet-based Reluctance Actuator

Endre Peder Ronaes, Andres Hunt, Ron van Ostayen, Hassan Hossein Nia (Delft University of Technology, The Netherlands)

11:20

Design and control of motion stage driven by nonlinear reluctance actuator

Mohammad Saaideh¹, Natheer Alatawneh¹, Mohammad Al Janaideh²

¹ *University of Guelph*

² *Fraunhofer Institute for Applied Optics and Precision Engineering, Germany and University of Toronto*

11:40

Theoretical and experimental investigations regarding small electric drive systems overload potentials in short-term operation

Ulrike Kurz¹, Andreas Wagener², Bernd Gundelsweiler¹

¹ *Institute of Design and Production in Precision Engineering, University of Stuttgart, Germany*

² *Dr. Fritz Faulhaber GmbH & Co. KG, Germany*

12:00

Magnetic fast steering mirrors for tracking and optical communication for defense and aerospace industries

Xavier De Lépine, Timotéo Payre, Clément-Joseph Galteau, Nabil Bencheikh, Patrick Meneroud, Florian Bonnet, Hugo Gardel, Pierre Personnat, Sylvain Chardon, Guillaume Mansuy, Arnaud Gilson, Frank Claeysen (CEDRAT TECHNOLOGIES S.A.S, France)

12:20

Development of a highly dynamic and precise actuator with magnetic weight compensation for 3D-wafer scanning

Maik Kadias¹, Heiko Knoll¹, Matthias Böhle², Dr. Rolf Slatter¹

¹ *ITK Precisioning GmbH, Germany*

² *ELSOMA GmbH, Germany*

12:40 - 13:50 Lunch Break

Fjodor-Dostojewski Saal**C1 Thermal Shape Memory**

Chairs: Paul Motzki (Saarland University, Germany); Frank Wendler (Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany)

- 11:00 **Investigation of bistable mechanisms for energy-free holding using shape memory alloys for 3D-printed valves**
Andreas Erben, Kenny Pagel, Christoph Nitschke, Niklas Brömme, Welf-Guntram Drossel (Fraunhofer Institut für Werkzeugmaschinen und Umformtechnik IWU, Germany)
-
- 11:20 **Antagonistic bistable actuator based on shape memory alloy beams**
Yasmina Frey, Zeliha Arabul, Ulrike Wallrabe (University of Freiburg, Germany)
-
- 11:40 **Modeling of bistable out-of-plane SMA-based microactuators**
Stephan Wulfinghoff¹, Muhammad Shamim²
¹ Kiel University, Germany
² Kiel University, Germany (former)
-
- 12:00 **Assembly-oriented redesign of a shape memory alloy driven bistable gripper**
Tom Gorges^{1,2}, Fabian Adler³, Sarah Zimmer³, Sophie Nalbach¹, Paul Motzki^{1,2}
¹ Depart. Smart Material Systems, ZeMA – Center for Mechatronics and Automation Technology, Saarbruecken, Germany
² Depart. Systems Engineering, Saarland University, Saarbruecken, Germany
³ Depart. Assembly Systems, ZeMA – Center for Mechatronics and Automation Technology, Saarbruecken, Germany
-
- 12:20 **Shape Memory Alloy drives for micro-electronical actuator systems**
Andreas Erben¹, Daniel Hoffmann², Kenny Pagel¹, Sven Spieth², Alexander Jähnigen², Welf-Guntram Drossel¹, Alfons Dehè²
¹ Fraunhofer Institut für Werkzeugmaschinen und Umformtechnik IWU, Germany
² Hahn-Schickard Gesellschaft, Villingen-Schwenningen, Germany
-

12:40 - 13:50 Lunch Break

Christian Zais Saal

A2 KOMMMA (2) – Shape Memory & Electrostatics

Chairs: Martin Hoffmann (Ruhr University Bochum, Germany);
Stephan Wulfinghoff (Kiel University, Germany)

13:50 **A Multi-Tile Origami-Inspired Microsystem**

Vincent Gottwald¹, Marlon Rupp¹, Lars Bumke², Yizheng Liu³, Eckardt Quandt², Jürgen Rühle³,
Manfred Kohl¹

¹ Institute of Microstructure Technology, Karlsruhe Institute of Technology (KIT), Germany

² Department of Materials Science, Kiel University, Germany

³ Department of Microsystems Engineering, University of Freiburg, Germany

14:10 **Simulation of shape memory alloy folding actuators fo programmable origami microsystems**

Frank Wendler¹, Rundong Jia¹, Ning Zhang¹, Shajin Thankaswamy¹, Vaibhav Gavate¹,
Vincent Gottwald², Manfred Kohl²

¹ Institute of Materials Simulation (WW8), Friedrich-Alexander-Universität Erlangen-Nürnberg,
Germany

² Institut für Mikrostrukturtechnik (IMT), Karlsruhe Institute of Technology (KIT), Germany

14:30 **Shape Memory Microactuator for Large In-plane Displacements**

Akis Rachoutis¹, Gowtham Arivanandhan¹, Elaheh Akbarnejad², Alfred Ludwig², Manfred Kohl¹

¹ Institute of Microstructure Technology, Karlsruhe Institute of Technology (KIT), Germany

² Institute for Materials, Ruhr University Bochum (RUB), Germany

14:50 **Electrostatically Actuated Liquid Lenses for an Anamorphic Zoom**

Debatri Das, Martin Hoffmann (Microsystems Technology, Ruhr University Bochum, Germany)

15:10 **Robust and Efficient Finite Element Modeling of an Electrostatic Microactuator Relying on the Pull-In Effect**

Arwed Schütz¹, Dwarakesh Sudhahar², Martin Hoffmann², Tamara Bechtold¹

¹ Jade University of Applied Sciences, Wilhelmshaven, Germany

² Microsystems Technology, Ruhr University Bochum, Germany

15:30 **Electrostatic MEMS actuator for controlled Quasi-Static spherical Rotation**

Dwarakesh Sudhahar¹, Arwed Schütz², Tamara Bechtold², Martin Hoffmann¹

¹ Lehrstuhl für Mikrosystemtechnik, RUHR University Bochum, Germany

² Jade University of Applied Sciences, Wilhelmshaven, Germany

15:50 - 16:15 Coffee Break

Salon Carl Schuricht**B2****Aerospace & Civil Engineering**

Chairs: Matthias Nienhaus (Saarland University, Germany); Frank Claeysen (CEDRAT Technologies S.A., France)

-
- 13:50 **Development and experimental Validation of a lightweight Shape Memory Wire Actuator for UAV Battery Sled Locking**
Benjamin John¹, Jannik Stanke², Peter Henning², Welf-Guntram Drossel¹
¹ Fraunhofer-IWU, Germany
² Vectorbirds airborne systems GmbH & Co. KG
-
- 14:10 **Compact piezo-driven inchworm rotary mechanism with high rotational accuracy for LISA Space mission**
Narendra Mahavar^{1,2}, Shashwat Kushwaha^{1,2}, Dominiek Reynaerts^{1,2}
¹ KU Leuven, Belgium
² Member Flanders Make, Belgium
-
- 14:30 **High-resolution rotating piezo motors for LISA large interferometer space antenna**
Nicolas Bourgeot, Jocelyn Rebufa, Alexis Gierczak, Clément Cote, Olivia Stadler, François Barillot, Frank Claeysen (CEDRAT TECHNOLOGIES S.A.S, France)
-
- 14:50 **Energy efficient electro-mechanical wing ice protection system for future aircrafts**
Denis Becker¹, Thorsten Koch¹, Christopher Davies², Valerian Palanque³, Matthias Schmidt¹, Valentin Mees¹, Michael Matthias¹
¹ Fraunhofer LBF, Darmstadt, Germany
² Parker Meggitt, Shepshed, Loughborough, United Kingdom
³ Airbus, Toulouse, France
-
- 15:10 **Mechanisms of hygromorphic actuation: from analysis to tuning of biomimetic actuators for adaptive facades**
Eleonora Galli, Mohamed Abdelrasoul, Jürgen Rühle (University of Freiburg, Germany)
-
- 15:30 **Piezoelectric Fine Steering Mirrors and electronics for Optical Inter-Satellite Links**
Xavier De Lépine¹, Jocelyn Rebufa¹, David Ferris¹, Aurore Loubet¹, Frank Claeysen¹, Sylvain Chardon¹, Arnaud Gilson¹, Thomas Maillard¹, Pascal Mexe², Francis Bortolaso²
¹ CEDRAT TECHNOLOGIES S.A.S, France
² MICROTEC S.A.S, France
-

15:50 - 16:15 Coffee Break

Fjodor-Dostojewski Saal**C2 Polymers***Chair: Jürgen Rühle (University of Freiburg, Germany)*

-
- 13:50 **4D printing of bioinspired multistimuli-responsive polymer actuators for adaptive façade systems**
Mohamed Abdelrasoul^{1,2}, Jürgen Rühle^{1,2}
¹ *Laboratory for Chemistry and Physics of Interfaces, Department of Microsystems Engineering (IMTEK), University of Freiburg, Germany*
² *Cluster of Excellence livMatS @ FIT – Freiburg Center for Interactive Materials and Bioinspired Technologies, University of Freiburg, Germany*
-
- 14:10 **Optimizing laser-induced graphene microstructure to enhance ion diffusion and actuation performance in PI-LIG-Ppy ionic actuators**
David Morales, Alejandro Vega, Sergio Gabriel Flores (CIMA, Mexico)
-
- 14:30 **Multilayered electrohydraulic soft actuators for safe-to-touch wearables and underwater systems**
Chinmay Gupta¹, Krishnaprasad Rajagopalan¹, Gaurav Khandelwal^{1,2}, Ajay Giri Prakash Kottapalli¹
¹ *Department of Bioinspired MEMS and Biomedical Devices (BMBD), Engineering and Technology Institute (ENTEG), University of Groningen, Netherlands*
² *Department of Engineering Science, University of Oxford, United Kingdom Motivation*
-
- 14:50 **Adaptive surface actuation via magnetoactive elastomer membranes**
Ina Bregu, Jürgen Maas (TU Berlin, Germany)
-
- 15:10 **Asymmetric inflatable snapping actuator**
Xin Li, Edoardo Milana (livMatS@FIT, University of Freiburg, Germany)
-

15:50 - 16:15 Coffee Break

Christian Zais Saal

A3

KOMMMA (3) – Polymers

Chairs: Edoardo Milana (University of Freiburg, Germany);
Christine Selhuber-Unkel (Heidelberg University, Germany)

16:15

Multi-State pH-responsive Hydrogel Microactuators

H.B. Duc Tran^{1,2}, Christoph A. Spiege^{1,2}, Eva Blasco^{1,2}

¹ Institute of Organic Chemistry (OCI), Heidelberg University, Germany

² Institute for Molecular Systems Engineering and Advanced Materials (IMSEAM), Heidelberg University, Germany

16:35

Stimuli-responsive microactuators for dynamic microfluidics

Chantal Barwig, Annabelle Sonn, Tobias Spratte, Sadaf Pashapour, Christine Selhuber-Unkel
(Institute for Molecular Systems Engineering and Advanced Materials (IMSEAM), Heidelberg University, Germany)

16:55

Highly Conductive Metallic Thin Films on Flexible Substrates

Benjamin R. Zemlin¹, Jonas Hubertus¹, Dirk Göttel¹, Alberto Priuli², Saveria Addario²,
Gianluca Rizzelo², Stefan Seelecke², Günter Schultes¹, John Heppe¹

¹ University of Applied Sciences of Saarland, Saarbruecken, Germany

² Saarland University, Saarbruecken, Germany

17:15

Energy-Free Micro-Latching Mechanisms for Bidirectional SMA Actuators

Yizheng Liu¹, Vincent Gottwald², Eleonore Stier¹, Manfred Kohl², Jürgen Rühle¹

¹ Department of Microsystems Engineering, University of Freiburg, Germany

² Institute of Microstructure Technology, Karlsruhe Institute of Technology (KIT), Germany

17:35

A Gym for cells – Direct laser writing of magnetic multilayered micro actuators for mechanical stimulation of cells

Nicolas Geid^{1,2}, Ayman Husari³, Eleonore Galli^{1,2}, Lukas Leffler¹, Pascal Tomakidi³, Jürgen Rühle^{1,2}

¹ Department of Microsystems Engineering University of Freiburg (IMTEK), Germany

² Cluster of Excellence livMatS @ FIT – Freiburg Center for Interactive Materials

³ Division of Oral Biotechnology University Medical Center Freiburg Faculty of Medicine, University of Freiburg, Germany

18:00-21:00 Get Together - Exhibition of ACTUATOR , Kurhaus Wiesbaden

Salon Carl Schuricht**B3 Novel Magnetics and Dielectrics**

Chairs: Jürgen Maas (Technical University Berlin, Germany); Jingyuan Xu (Karlsruhe Institute of Technology (KIT), Germany)

- 16:15 **A miniature-scale thermomagnetic actuator driven by low-grade heat**
Athira Kattiparambil Sivaprasad¹, Joel Joseph¹, Amir-Abbas Haghighirad², Manfred Kohl¹,
 Jingyuan Xu¹
¹ Institute of Microstructure Technology (IMT), Karlsruhe Institute of Technology (KIT), Germany
² Institute for Quantum Materials and Technologies (IQMT), Karlsruhe Institute of Technology (KIT),
 Germany
-
- 16:35 **An AlN piezoelectric thermomagnetic generator for waste heat recovery**
Maxim Wischniewski¹, Erik Mackensen², Dirk Meyners², Manfred Kohl¹
¹ Karlsruhe Institute of Technology (KIT), Germany
² Christian-Albrechts-Universität (CAU), Kiel, Germany
-
- 16:55 **Change in stress-strain-characteristics of MSM-alloys in weak magnetic fields for adaptive interfaces**
Marco Hutter¹, Lukas Fuchs², Peter Schmid², Thomas Maier², Bernd Gundelsweiler¹
¹ Institute of Design and Production in Precision Engineering, University of Stuttgart, Germany
² Institute for Technical Design and Industrial Design, University of Stuttgart, Germany
-
- 17:15 **Investigation of the influence of dynamic magnetic excitation during drag finishing using abrasive magnetorheological fluids**
Fabian Sordon, Jürgen Maas (Mechatronic Systems Lab, Technische Universität Berlin, Germany)
-
- 17:35 **Pellicle dielectric actuators (PDA) based on CNT ultra-thin Films**
Marcio Dias Lima (Intec of America, United States of America)

18:00-21:00 Get Together - Exhibition of ACTUATOR , Kurhaus Wiesbaden

Fjodor-Dostojewski Saal**C3****Optics & Photonics***Chairs: Ulrike Wallrabe (University of Freiburg, Germany); Sabina Merlo (University of Pavia, Italy)*

-
- 16:15 **Prototype of a camera focusing mechanism driven by a polyimide bimorph thin-film actuator**
Daisuke Yamaguchi, Saki Takamura, Shuichi Wakimoto, Takefumi Kanda
(Okayama University, Japan)
-
- 16:35 **Giving voice to flat plastic panels with piezoceramic actuators: vibrational analyses with feedback interferometry**
Elisabetta Bodo¹, Carlo Anelli², Valentina Bello², Sabina Merlo²
¹ *Eindhoven University of Technology, The Netherlands*
² *University of Pavia, Italy*
-
- 16:55 **3D nano-printed optical MEMS with closed-loop control**
Florian Lux, Elijah Ditchendorf, Çağlar Ataman (University of Freiburg, Germany)
-
- 17:15 **Displacement control for Piezo-based Deformable Mirrors with Unmodelled Hysteresis and Actuator Coupling**
Mohammad Saaideh¹, Matthias Goy², Mohammad Al Janaideh³
¹ *University of Guelph*
² *Fraunhofer Institute for Applied Optics and Precision Engineering, Germany*
³ *Fraunhofer Institute for Applied Optics and Precision Engineering, Germany & University of Toronto*
-
- 17:35 **Dual-chevron optothermal rotary microactuator for high force and large displacement actuation**
Yanze Li¹, Alex J Thompson¹, Alfredo Fantetti², Belal Ahmad¹
¹ *Department of Surgery and Cancer, Imperial College London, United Kingdom*
² *Department of Mechanical Engineering, Imperial College London, United Kingdom*
-

18:00-21:00 Get Together - Exhibition of ACTUATOR , Kurhaus Wiesbaden

Christian Zais Saal

- 09:00 **Actuation Challenges and Options in Medical Robotics**
Prof. Arianna Menciassi (Scuola Superiore Sant'Anna, Pisa, Italy)
- 09:30 **Life from Technology – From Micro-Actuator Modules to Non-Biological Organisms**
Prof. Oliver Schmidt (Chemnitz University of Technology, Germany)
- 10:00 **Nanometer-precise actuators and sensors for the key technologies of our world**
Dr. Rainer Gloess (Physik Instrumente (PI) SE & Co. KG, Karlsruhe, Germany)

10:30 - 11:00 Coffee Break**Foyer**

- 11:00 **Poster Pitches**

Foyer

- 12:00 **Poster Session**

- P1 **Engineering liquid crystal elastomer fibers for the next generation of soft robotics: A comparative analysis of fabrication techniques**
Manuel Reis Carneiro^{1,2,3}, Rafael Molter², Anibal T. de Almeida², Mahmoud Tavakoli²
¹ Soft Machines Lab, Department of Mechanical Engineering, Carnegie Mellon University, Pittsburgh, USA
² Institute of Systems and Robotics, Department of Electrical and Computer Engineering, University of Coimbra, Portugal;
³ Biomedical and Mobile Health Technology Lab, Department of Health Sciences and Technology, ETH Zürich, Switzerland
- P2 **Advanced interfaces through reversible adhesion**
Eleonore Stier^{1,2}, Jürgen Rühle^{1,2}
¹ Cluster of Excellence livMatS, University of Freiburg, Freiburg im Breisgau, Germany
² Laboratory for Chemistry and Physics of Interfaces, Department of Microsystems Engineering (IMTEK), University of Freiburg, Germany
- P3 **Reliability and drift behaviour of CNT-modified grippers for soft robotics applications**
Ivica Kolaric¹, Rolf Nothelfer-Richter¹, Takushi Sugino², Hirosato Monobe²
¹ Fraunhofer IPA, Germany
² National Institute of Advanced Industrial Science and Technology (AIST), Japan
- P4 **Thermal Impact on the Dynamic Model of a Magnetorheological Elastomer: Analysis and Experiments**
Paweł Orkisz¹, Janusz Goldasz², Bogdan Sapiński¹
¹ AGH University of Science and Technology, Poland
² Cracow University of Technology, Poland

13:30 - 14:30 Lunch Break

Foyer

Poster Session (Continuation)

- P5 **Lead free 4-layered piezoelectric motor**
Bülent Delibas, Burhanettin Koc
Physik Instrumente GmbH & Co. KG, Germany
-
- P6 **Lumped modelling of loss mechanisms in piezoelectric transducers**
Jan Holterman¹, Bas Jansen², Henry Schmidt²
¹ VIRO, The Netherlands
² ASML, The Netherlands
-
- P7 **Coupled resonance dynamics when designing with vibrotactile actuators**
Thorsten A. Kern, Ali El-Nwegy El-Nwegy, Maximilian Becker, Ornella Tortorici, Juliana Lüer
Hamburg University of Technology, Germany
-
- P8 **Dual-Joint Cable-Driven Soft actuator for Miniaturized Flexible Endoscopy**
Zijian Liu, Luigi Manfredi
University of Dundee, United Kingdom
-
- P9 **Piezoelectric ultrasonic mirror tip tilt stage**
Jan Homborg, Alexej Wischnewski, Bülent Delibas
Physik Instrumente GmbH & Co. KG, Germany
-
- P10 **Soft and monolithic variable Stiffness Clutches to enhance Serial Elastic Actuators**
Johannes Frey, Mohsen Jafarpour, Hugo Oliveira, Edoardo Milana
Department of Microsystems Engineering - IMTEK, Cluster of Excellence livMatS, University of Freiburg, Germany
-
- P11 **Interlocking-based multistable actuators as fluidic memristors**
Ayberk Yükses^{1,2}, Mohsen Jafarpour^{1,2}, Edoardo Milana^{1,2}
¹ Freiburg Center for Interactive Materials and Bioinspired Technologies, Germany
² Department of Microsystems Engineering (IMTEK), University of Freiburg, Germany
-
- P12 **Experimental setup for piezo relations validation**
Bas Jansen¹, Ivan Staykov², Paul Vrancken², Hans Butler^{1,2}, Siep Weiland¹
¹ ASML, The Netherlands
² TU/e, Eindhoven, The Netherlands,
-
- P13 **Piezoelectric transducer for high intensity reversible acoustic rotational field generation**
Piotr Vasiljev², Dalius Mažeika¹, Andrius Čeponis¹, Regimantas Bareikis², Sergejus Borodinas²
¹ Vilnius Gediminas Technical University, Lithuania
² Vytautas Magnus University, Lithuania
-
- P14 **Design methodology for electromechanical functional interfaces**
Tom Migliaccio, François Pigache, Thomas Huguet
Laplace, France
-

13:30 - 14:30 Lunch Break

Foyer

Poster Session (Continuation)

- P15 **Pneumatic cylinder speed control system using particle-excitation flow control valve**
Daisuke Hirooka, Naomichi Furushiro, Tomomi Yamaguti
Kansai University, Japan
-
- P16 **Design and characterization of a tactile multi-element dielectric elastomer actuator**
Lukas Moritz Roth¹, Sebastian Gratz-Kelly¹, Daniel Bruch¹, Sophie Nalbach², Paul Motzki^{1,2}
¹ Saarland University, Germany
² Center for Mechatronics and Automation Technology – ZeMA gGmbH, Germany
-
- P17 **A steerable concentric push-pull suction device for single-port surgery**
Finn Hoffmann², Bob Lathrop¹, Mouloud Ourak¹, Wouter Everaerts³, Emmanuel Vander Poorten¹, Paul Breedveld²
¹ Department of Mechanical Engineering, KU Leuven, Belgium
² Department of Mechanical Engineering, TU Delft, The Netherlands
³ Department of Urology, University Hospitals Gasthuisberg, Katholieke Universiteit Leuven, Belgium
-
- P18 **Cascaded membrane transducer based on multilayer dielectric elastomers**
Tim Krüger, Jürgen Maas
Technical University Berlin, Mechatronic Systems Lab
-
- P19 **Amplified Piezo Actuators with embedded Eddy Current Sensor for cryo space De-SPIN mechanism**
Olivia Stadler, Jocelyn Rebufa, Alexis Gierczak, Clément Cote, David Ferris, François Barillot, Frank Claeysen, Boris Laluc, Guillaume Mansuy
CEDRAT TECHNOLOGIES S.A.S, France
-
- P20 **Piezo actuated jet for stealth aircraft applications**
David Ferris¹, Guillaume Mansuy¹, Boris Laluc¹, Jan Rohac²
¹ CEDRAT TECHNOLOGIES S.A.S, France
² ESC Defence, Czech Republic
-
- P21 **Bistable Piezoelectric Energy harvester with embedded power management electronics for railway monitoring**
Timoteo Payre¹, Boris Laluc¹, Nicolas Decroix², Quentin Demouron², Celestin Metral³, Romane Anseume¹, Guillaume Mansuy¹
¹ CEDRAT TECHNOLOGIES S.A.S, France
² USMB, France
³ VOSSLOH, France
-
- P22 **Improving the reliability of piezoelectric actuators and motors subjected to significant self-heating and several billion actuation cycles or severe environments**
Nicolas Bourgeot¹, Frank Claeysen¹, Boris Laluc¹, Rasmus Lou-Møller², François Barrot³, Iman Mehdipour², Yves Ruffieux³, Guillaume Mansuy¹
¹ CEDRAT TECHNOLOGIES S.A.S, France
² CTS Corporation, Denmark
³ CSEM, Switzerland

13:30 - 14:30 Lunch Break

Foyer

Poster Session (Continuation)

- P23 **Three-phase SMA model with optimized fit for both strain and resistance**
Max Hauber, Arif Kazi
Hochschule Aalen, Germany
-
- P24 **Electromagnetic characterization of Magnetorheological Dampers**
Gabriel Dias Mendes
Cracow University of Technology, Poland
-
- P25 **Enhancing the reliability of piezoelectric actuators and motors under severe self-Heating, high-cycle operation, and harsh environmental conditions**
Rasmus Lou-Møller¹, Iman Mehdipour¹, Charles Mangeot¹, Nicolas Bourgeot², Frank Claeysen², Boris Laluc²
¹ CTS Denmark, Denmark
² Cedrat Technologies, France
-
- P26 **Magnetolectric fluxguide with reduced bending mitigates power nulls in WPT systems**
Hidelberto Macedo Zamudio, Ulrike Wallrabe
University of Freiburg, Germany
-
- P27 **Amplification of piezoelectric ac-tuator for elevated performance**
Shubhangini Awasthi, Wolfgang Zoels, Georg Bachmaier
Metismotion GmbH, Germany
-
- P28 **Thermal deformations in linear motors under extreme motion profiles**
Stefan Geelen, Mitrofan Curti, Elena Lomonova
Eindhoven University of Technology, The Netherlands
-
- P29 **Engineered shape memory behavior in Nb-doped lead zirconate titanate piezoelectric actuators**
M. Ugalde-Reygadas, M. Acuautla
Engineering and Technology Institute Groningen, University of Groningen, The Netherlands
-
- P30 **Encapsulated PICMA® Actuators and their Applications**
Franziska Dolke, Kevin Speer, Bernd Broich, Ivo Zunke, Daniel Kopsch
PI Ceramic GmbH, Lederhose, Germany
-
- P31 **Battery-powered high-voltage electronics with a PCB-integrated transformer for driving dielectric elastomer actuators**
Andreas Hubracht, Jürgen Maas
Mechatronic Systems Lab, Technical University Berlin, Germany
-

13:30 - 14:30 Lunch Break

Foyer

Poster Session (Continuation)

- P32 **Metamaterial for a localized simulated button-click**
 Mondher Ouari¹, Frédéric Giraud², Charles Croënne³, Jean-Luc Bruyelle²,
 Christophe.giraud-Audine²
¹ UMR 8520 - IEMN, Univ. Polytec hnique Hauts-de-France, CNRS, Univ. Lille, Valenciennes,
 F-59313, France
² Univ. Lille, Arts et Metiers Institute of Technology, Centrale Lille, Junia, ULR 2697 - L2EP,
 F-59000 Lille, France
³ UMR 8520 - IEMN F-59000 Lille, France
-
- P33 **Data-Driven Thermal State Monitoring of PMSMs using Artificial Neural Networks**
Matthias Nienhaus, Saeed Farzami Sarcheshmeh
 Laboratory of Actuation Technology (LAT), Saarland University, Germany
-
- P34 **Response Surface Modeling and Multi-Response Optimization of PVDF/BaTiO3/CNT Films for Flexible Actuator Applications**
Ahmed Attaoui^{1,2}, Ayda Bouhamed^{3,4}, Chokri Bouraoui², Olfa Kanoun¹
¹ Professorship of Measurement and Sensor Technology (MST), Chemnitz University of
 Technology, Chemnitz, Germany
² Laboratory of Mechanics of Sousse (LMS), National Engineering School of Sousse (ENISo),
 University of Sousse, Technopole de Sousse, Sousse, Tunisia
³ Faculty of Sciences of Gafsa (FSGF), University of Gafsa, Gafsa, Tunisia
⁴ Laboratory of Electromechanical Systems (LASEM), National Engineering School of Sfax,
 University of Sfax, Sfax, Tunisia
-
- P35 **SUPERPOSITION-BASED FORCE MODELING OF A MULTI-STABLE MAGNETIC LIFT ACTUATOR**
Pascal M. Weber¹, Michael Olbrich², Yannik T. Rüde¹, Christoph Ament², Ulrike Wallrabe¹
¹ Laboratory for Microactuators, IMTEK – Department of Microsystems Engineering, University
 Freiburg, Germany
² Chair of Control Engineering, Faculty of Applied Computer Science, University of Augsburg,
 Germany
-
- P36 **Why do SMA-based Actuator Projects (often) fail?**
Harald Buchalla, Christoph Kellner
 Ingpuls Dynamics GmbH, Bochum (member of brandgroup)
-
- P37 **Design for Assembly as a Foundation for Automated Actuator Manufacturing**
Ernst Wolf
 Wolf Produktionssysteme GmbH & Co. KG, Freudenstadt, Germany
-

13:30 - 14:30 Lunch Break

Christian Zais Saal**A5****Medical Devices**

Chairs: Yoko Yamanishi (Kyushu University, Japan); Hans Peter Monner (German Aerospace Center (DLR), Braunschweig, Germany)

-
- 14:30 **Dual-mode electrosurgical device for selective tissue perforation via electrically-induced bubbles and discharge**
Shigeaki Miura, Yuudai Aokusa, Mayu Nakahigashi, Nobutoshi Ota, Yoko Yamanishi
 Kyushu University, Japan
-
- 14:50 **Soft robotic artificial muscles for end-stage heart failure management**
Javad Foroughi^{1,2}, Arjang Ruhparwar²
¹ School of Mechanical and Manufacturing Engineering, University of New South Wales, Sydney, Australia;
² Department of Cardiothoracic Transplantation and Vascular Surgery Hannover Medical School, Germany
-
- 15:10 **Multi-DOF steerable endoscope for robot-surgeon collaborative control**
Robert Lathrop, Mouloud Ourak, Emmanuel Poorten
 KU Leuven, Belgium
-
- 15:30 **Handling of micropumps to minimize surface-related disturbances**
Martin Richter, Mohammadhossein Sheikhsarraf
 Fraunhofer EMFT, Germany
-
- 15:50 **Plasmid delivery to suspension cells through electromechanical poration induced by a microbubble generator**
Nobutoshi Ota¹, Kei Tateishi¹, Shigeo Sugano², Niko Kimura³, Shinya Sakuma¹, Yoko Yamanishi¹
¹ Kyushu University, Japan
² National Institute of Advanced Industrial Science and Technology, Japan
³ Tokyo University of Agriculture and Technology, Japan
-

Salon Carl Schuricht**B5****Piezoelectrics**

Chairs: *Keisuke Morishima (Osaka University, Japan); Matthias Wapler (Otto-von-Guericke University Magdeburg, Germany)*

-
- 14:30 **Compact piezoelectrically driven inchworm motor with large forces and strokes using advanced control**
Ulrich Mescheder¹, Sonja Müller^{1,2}, Jahangir Khosravi¹, Bahman Azarhoushang¹
¹ Hochschule Furtwangen, Germany
² Universität Freiburg, Germany
-
- 14:50 **Creep modeling and stability of PNZT shape memory piezoelectric actuators**
Jurien Keulen, Mireny Ugalde Reygadas, Bayu Jayawardhana, Monica Acuautla Meneses
 University of Groningen, The Netherlands
-
- 15:10 **Effect of long-term operation on Actuator Pretension of Silicon Micropumps**
Nora Weigel, Daniel Anheuer, Martin Richter
 Fraunhofer EMFT, Germany
-
- 15:30 **Miniature robots with piezoelectric actuators: Autonomous locomotion and embedded trajectory Control**
Jose Luis Sanchez-Rojas², Byron Ricardo Zapata Chancusig¹, Jaime Rolando Heredia Velastegui¹, Víctor Ruiz-Díez²
¹ Universidad Politécnica Salesiana, Quito, Ecuador
² INAMOL-Universidad de Castilla la Mancha
-
- 15:50 **Non-contact micro-mechanical stimulation of Arabidopsis root cap using ultrasonic standing waves for mechanotransduction analysis**
Keisuke Morishima, Koki Ogawa
 The University of Osaka, Japan
-

General Information

ACTUATOR 2026 Office

For detailed information please contact:
VDE VDI-Society Microelectronics Microsystems and
Precision Engineering (GMM)
Dr. Ronald Schnabel
Merianstraße 28
63069 Offenbach am Main, Germany
Phone: +49 69-6308-227
Fax: +49 69-6308-9828
E-Mail: gmm@vde.com
During the conference:
Mobile: +49 171 4695 118

ACTUATOR Project Management

VDE-Conference Service
Merianstraße 28
63069 Offenbach am Main, Germany
Nicolas Parisel
Phone: +49 69 6308 479
E-Mail: nicolas.parisel@vde.com

Conference Fees

(The conference fee includes admission to all sessions as well as to the daily coffee-breaks, lunches and conference banquet dinner as well as the Conference Proceedings)

	Early Bird Registration by May 29, 2026	Registration after May 29, 2026
Non-Member	1040,- €	1140,- €
VDE/VDI Members*	950,- €	1050,- €
Authors, Program Committee Members, Session Chairs	630,- €	730,- €
Students**	150,- €	230,- €

* Participants applying for the membership fee must include a copy of their membership card to the registration form.

** A copy of the student's certification card has to be endorsed by a supervisor or head of department and must be attached to the registration form.

Payment of Conference Fee

Payment for registration, including bank charges and processing fees, must be made in Euro. The conference fee has to be fully paid in advance by credit card. Your registration can only be confirmed if VDE-Conference Services has recorded receipt of your full payment.

Cancellation

In case of cancellation, provided that written notice has been given to VDE-Conference Services before May 29, 2026, the registration fee will be fully refunded less a handling fee of EURO 80.00. After May 29, 2026, no refund will be made.

Conference Venue

Kurhaus Wiesbaden
Kurhausplatz 1
65189 Wiesbaden, Germany



©: Wiesbaden Congress & Marketing GmbH

Get Together

June 30, 2026 from 18:00
Exhibition of ACTUATOR,
Kurhaus Wiesbaden.

Sponsors and Exhibitors

The VDE GMM and the members of the ACTUATOR 2026 Program Committee would like to thank all the sponsors and exhibitors for their support.

Ingpuls Dynamics GmbH

Platinum Partner



Who Ingpuls Dynamics is a joint venture between brandgroup, a globally leading supplier of technical springs and spring assemblies, and Ingpuls, a technology leader in the field of highly functional and customized shape memory alloys (SMA).

The company develops, manufactures, and markets turnkey SMA actuators, assemblies, and systems – making the outstanding properties of this technology broadly accessible for a wide range of applications. Thanks to the vertical integration within the joint venture, the complexity of implementing SMA solutions is significantly reduced on the customer side.

www.ingpuls-dynamics.com

Wolf Produktionssysteme GmbH & Co. KG

Gold Partner



Wolf Produktionssysteme develops and manufactures custom machines for the automated assembly of electromechanical components, such as actuators or sensors.

Headquartered in Freudenstadt, the company employs over 100 people and manufactures systems for customers worldwide, particularly in the automotive and electronics industries.

A particular focus is on laser joining processes, especially laser soldering and laser welding, as well as on the integration of thermal processes into in-line production.

Wolf sees itself not only as a machine builder but also as a process specialist.

Following extensive process verification in its own Tec Center, the company delivers customized, complete systems with a process guarantee. The modular Sky-Line machine platform stands for quality, precision, and high process security.

www.wolf-produktionssysteme.de

Sponsors and Exhibitors

CEDRAT TECHNOLOGIES

Silver Partner



Cedrat Technologies (CTEC) is a French high-tech SME specialized in smart actuators, sensors, and mechatronic systems.

With more than 80 employees, CTEC develops innovative solutions based on smart materials such as piezoelectric, magnetic and magnetostrictive technologies. The company designs and manufactures actuators, motors, sensors, and integrated mechatronic mechanisms for high-performance applications including precision positioning, vibration control, acoustic generation, and micro-motion systems. Combining strong R&D expertise with engineering and prototyping capabilities, CTEC provides both standard products and customized solutions to accelerate the development of advanced systems. Its technologies are widely used in demanding sectors such as space, new space, defense, optronics, instrumentation and industrial equipment, where compact, dynamic, and highly reliable actuation and sensing solutions are required.

www.cedrat-technologies.com

CeramTec GmbH

Silver Partner



CeramTec has been a manufacturer and supplier of technical ceramics with a focus on advanced ceramic (HPC) solutions since 1903 and specialises in the development, manufacture and distribution of parts, components and products made from ceramic materials.

With more than a century of development and production experience in the HPC industry, CeramTec is a world leader in the manufacture of advanced ceramics and develops these materials for use in a wide range of applications. CeramTec's advanced ceramics are used in a number of areas, including medical applications such as hip prostheses, other orthopaedic implants, dental implants and medical devices, as well as in the mobility and electronics industries, and also in other industrial applications. With production sites and subsidiaries in Europe, North and South America and Asia, CeramTec has a global presence as a manufacturer and supplier. CeramTec's headquarters are located in Plochingen near Stuttgart. In 2024, CeramTec generated revenue of €746 million. CeramTec employs nearly 3,800 people worldwide, including around 2,000 in Germany.

www.ceramtec-group.com

Sponsors and Exhibitors

TDK Electronics AG

Silver Partner



TDK Corporation is a leading global electronics company headquartered in Tokyo, Japan, with worldwide operations serving diverse industries including automotive, industrial, ICT, and consumer electronics.

Specializing in advanced electronic components and materials, TDK is among others recognized for its cutting-edge piezoelectric technology. Its unique feature patented copper inner electrode technology in multilayer actuators, delivering superior displacement, higher reliability, excellent humidity resistance, and long lifetime compared to conventional ones.

TDK excels in providing custom-designed piezoelectric solutions for high-end applications in the semiconductor, AI, and space industries, enabling precision motion control, nano-positioning, and mission-critical systems under demanding conditions.

Piezo Solutions | TDK Electronics - TDK Europe

www.tdk-electronics.tdk.com/piezo_solutions

baier & michels GmbH & Co. KG

Exhibitor Partner



The baier & michels Group (b&m) supports the manufacturing industry with fastener technology innovations.

They are based on cold extruded parts such as high-performance screws and sealing systems from our own development and production. Our customers include OEMs and suppliers, especially from the automotive, electrical and medical technology as well as tool and plant construction.

b&m is not only a producer, but also a forward-thinking partner – with fastener tests in our laboratories, with application consulting and with technical training. Our mission: to achieve a significantly improved interplay of quality, cost efficiency and eco-balance, whilst reducing risks and the use of resources in your components – with connections that last.

www.baier-michels.com

Sponsors and Exhibitors

MDPI

Exhibitor Partner



MDPI is a leader in the transition to open science by making more research free and accessible to everyone.

Over 4.5 million researchers have entrusted us with publishing their scientific discoveries.

Our aim is to ensure that high-quality research is verified and made available to the research community as quickly as possible. MDPI stands at the forefront of the open access movement, having launched its first online journal *Molecules* in 1996. Today, MDPI is a leader in open access publishing with more than 500 journals across all research disciplines. Every article is published under a Creative Commons Attribution License.

www.mdpi.com

NTK Ceratec Co., Ltd.

Exhibitor Partner



Niterra Group

NTK CERATEC CO., LTD. is a leading Japanese specialist in advanced ceramics and a proud member of the Niterra Group (formerly NGK SPARK PLUG CO., LTD.).

We provide high-precision ceramic solutions that power modern industries for several fields. At this conference, we display lead-free piezoelectric ceramics. While many lead-free solutions remain in the laboratory, we have already transitioned to mass production.

Our products are not just concepts — they are proven, components ready for integration into your next-generation applications.

www.ceratech.co.jp

VDE Association for Electrical,
Electronic & Information Technologies

Merianstraße 28
63069 Offenbach am Main
Tel. +49 69 6308-0
service@vde.com
www.vde.com

VDE **VDI**⁷ GMM