

Special Events

Exhibition

In the course of the congress, an exhibition will take place in the centrally situated Franconia Foyer of the Congress Centrum Würzburg, accompanying to the lecture program. Congress participants obtain the opportunity to present their products, manufacturing solutions, and range of services in the field of the technology MID to the international expert audience of manufacturers and users. For the necessary application (until July 25th, 2016) and further information, please contact the 3-D MID's office.

Evening Event

Following the lecture program a wine tasting including dinner takes place at the 'Staatlicher Hofkeller Würzburg' in the evening of September 28th, 2016. After a welcome drink and a guided tour through the historical vault, a wine tasting with suitable culinary specialties awaits you in the magnificently adorned wine cellar.

MID Advancement Award 2016 / Best Paper Award

To award an outstanding development work in the area of the MID technology, the Research Association 3-D MID e. V. confers the MID Advancement Award 2016 in the framework of the congress. Additionally, the best scientific congress contribution will be honored with the Best Paper Award.

Technical Tour

In extension to the conference program, a Technical Tour to Germany's largest plastic institute - the 'Süddeutsche Kunststoff-Zentrum SKZ' - is offered on Friday, September 30th, 2016. Since the number of participants is limited, we recommend an early registration via the online registration tool (Admission fee is 70,- € for the tour, transfer and catering).

Organization Committee

- Prof. J. Franke – University of Erlangen-Nuremberg, FAPS, DE
- Dr. C. Goth – Conti Temic microelectronic GmbH, DE
- T. Kuhn – Research Association 3-D MID e. V., DE
- Dr. A. Pojtinger – 2E mechatronic GmbH & Co. KG, DE

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General Information

Congress Venue

The conference will take place at the Congress Centrum in Würzburg. The airports of Frankfurt a. M. and Nuremberg are reachable within about an hour by train or car. From the main station, you can reach the Congress Centrum either by tram (tramway 2, towards 'Zellerau', Stop 'Congress Centrum'), by taxi (about 1 km) or on foot (through the 'Ringparkanlage', approx. 10 walking minutes).

Congress Languages

The conference languages are English and German. In the Industrial Track a simultaneous translation in English and German will be provided. In the Scientific Track all presentations will be in English.

Opening Hours of the Conference Office

Tuesday, September 27th 3.00 p.m. – 8.00 p.m.
Wednesday, September 28th 8.00 a.m. – 7.00 p.m.
Thursday, September 29th 8.30 a.m. – 4.30 p.m.

Registration

After registering via the online registration tool, the participation can take place. The registration tool can be found at www.3dmid.de in the menu item **CONGRESS MID / Registration**.

Participation Fees and Service

The participation fee has to be paid on receipt of the invoice to the account as indicated. It includes the attendance at the congress and the exhibition, the conference proceedings as well as the lunches, beverages during breaks and the evening event. If the payment of the congress fee is not received before the beginning of the congress, a copy of the bank transfer is required.

Registration	until July 15 th , 2016	after July 15 th , 2016
Standard	750,- €	850,- €
Members 3-D MID e.V.	590,- €	700,- €
Speakers and University Members	350,- €	480,- €

Exempt from VAT according to § 4, Nr. 22a UStG

Cancellations can only be accepted in written form. The following processing fees will be charged:

- until July 15th, 2016: 200,- €
- after July 15th, 2016: total fee, the conference proceedings will be sent.

Liability

The congress organization is only authorized to act as an agent and will not be liable for any loss, accident, damage or injury to persons or property, irrespective of the cause.

The liability of persons and companies commissioned with the organization will remain unaffected hereby. The guest participates in all tours and events at his / her own risk. Verbal agreements will not be binding, unless they are confirmed in writing.

Sole place of jurisdiction is Erlangen, applicable is German law. The decisive date in all cases is that on which incoming mail is stamped by the congress organization in Erlangen. Program changes are reserved.

INVITATION



Bionic ANTs - Festo AG & Co. KG

12th International Congress

Molded Interconnect Devices

Congress Centrum Würzburg

September 28th – 30th, 2016

organized by

Research Association

Molded Interconnect Devices 3-D MID e. V.

in cooperation with

University of Erlangen-Nuremberg

Institute for Factory Automation and

Production Systems – FAPS



MID – Mechatronic Integrated Devices

Functional Integration by MID

Due to a direct application of conductor tracks and functional structures on randomly shaped substrates, the technology MID (Molded Interconnect Devices / Mechatronic Integrated Devices) enables the production of highly integrated mechatronic products. The varied possibilities for combining electrical / electronical, mechanical, optical, thermal and fluidic functions in one unit offer enormous potential to meet the increasing requirements regarding miniaturization and function density, reliability and costs in the various fields of application.

Standard Technology MID

The significant increase of series applications in the last years and the growing offer of intelligent manufacturing solutions strongly emphasize the growing market success of the MID technology. Agile and innovative suppliers of mechatronic systems, reliable assembly and component manufacturers as well as competent machine and system producers consistently use the attractive growth rates of the MID technology:

- Use of printing technologies for the serial production of MID
- Advanced diversity of materials for substrates and metallization
- Competent supplier base established worldwide
- Alternative manufacturing process chains available
- Automated and flexible production systems available

Latest Technology Developments from both an Industrial and a Scientific Perspective

Advanced mechatronic systems are characterized by the intelligent integration of different functions in miniaturized installation space and use the latest developments in materials, manufacturing processes as well as production technology. The extensive conference program provides an excellent overview of the current state of the art - from both the industrial and the scientific perspective by target-group-oriented sessions:

- Potentials through MID for various fields of application
- Presentations of innovative MID applications
- New application potentials through printed electronics
- Latest developments in the field of MID materials
- Additive manufacturing and MID prototyping
- Methodology of development and testing

MID 2016: Platform for Experts and Beginners

The international conference has established itself as a world wide recognized forum for the MID technology:

- Lectures from manufacturers, users and research institutes
- Intensive exchange of information and experience
- Direct information at the accompanying exhibition
- Attractive social program for informal contacting
- Technical tour to Germany's largest plastic institute 'SKZ'

Wednesday, September 28th

green = Industrial Track blue = Scientific Track

Opening Session (Prof. J. Franke, University of Erlangen-Nuremberg, FAPS / Chairman of the Research Association 3-D MID e. V.)

09.15 **Welcome and Official Opening of the Conference,**

Prof. J. Franke, University of Erlangen-Nuremberg, FAPS / Chairman of the Research Association 3-D MID e. V., DE

09.30 **Keynote: Challenges and Opportunities for the Development of Interconnected Mechatronic Applications in Asia,**

Prof. M. Tseng, Feng Chia University Taichung, TW

10.00 **Keynote: Potentials and Pitfalls for MID in Automation Technology,** Dr. V. Nestle, Manager Future Technology at Festo AG, DE

10.30 **MID Advancement and Best Paper Award 2016,** Dr. I. Kriebitzsch, BMW AG / Chairman of the Research Committee of 3-D MID e. V., DE

10.45 **Coffee Break**

Session 1: Potentials & Solutions (H. Rohde, Robert Bosch GmbH)

11.15 **Integration of a Data and Power Supply System for Aerospace Applications Using Printing Processes,** P. Rollfink, Airbus Group Innovations, DE

11.40 **LDS Manufacturing Technology for Next Generation Radio Frequency and Sensor Applications – A Discussion on Requirements and Solutions,** A. Friedrich, Leibniz University of Hannover, HFT / M. Fengler, LPKF Laser&Electronics AG, DE

12.05 **LDS Packaging: Value Adding Solution for Advanced Microelectronic Packages,** M. Fengler, LPKF Laser&Electronics AG, DE

12.30 **Automated MID Assembly – From Prototype to Series Production,** U. Schulz, Haecker Automation GmbH, DE

12.55 **Lunch Break and Poster Session**

Session 2a: Design & Prototyping (Dr. A. Pojtinger, 2E mechatronic GmbH & Co. KG)

14.15 **CAD/CAM for 3D Printed Electronics,** Dr. T. Krebs, Mecadtron GmbH, DE

14.40 **3D-MID Layout Design and Prototyping,** M. Martin, Beta LAYOUT GmbH, DE

15.05 **Generative Processes for Rapid Prototyping of MID: Methods and Potentials,** H. Mueller, Hahn-Schickard, DE

15.30 **MID Prototyping Using the Example of a Quadcopter,** J.-E. Pauleweit, enders Ingenieure GmbH / H. Knor, KRTechnologies, DE

Session 2b: Materials & Prototyping (Dr. K. Kuhmann, Evonik Industries AG)

14.15 **Polymer Films for Laser Structured Circuit Carriers,** A. Fischer, University of Erlangen-Nuremberg, LKT, DE

14.40 **Electronic Meets Polymer – With Thermal Conductive Plastics to Fully-integrated Circuit Carriers,** C. Heckel, RF Plast GmbH, DE

15.05 **Additive Manufacturing of Electric Circuits Based on Graphene Polymer Nanocomposites,** C. Staudigel, SKZ-KFE gGmbH, DE

15.30 **Classification of MID-Prototypes,** C. Juergenhake, Fraunhofer IEM, DE

15.55 **Coffee Break**

Session 3a: Materials & Assembly (Dr. R. Krueger, LPKF Laser&Electronics AG)

16.25 **LDS Additives: Properties, Function and Technical Notes,** Dr. J. White, Shepherd Technologies, US

16.50 **Additives for Bright and Colored LDS Applications,** U. Quittmann, Merck KGaA, DE

17.15 **Optimizing Solderability of PC-based LDS Applications,** Dr. B. Schrauwen, MEP Europe B.V., NL / U. Palin, Sunway Communications AB, SE

17.40 **Surface Mount Technology Components Assembly on Low Temperature Molded Plastic Substrate,** W. Wu, Jabil Circuit Inc., MY

Session 3b: Manufacturing (Dr. C. Goth, Conti Temic microelectronic GmbH)

16.25 **Manufacturing of Sandwich Structures for the Integration of Electronics in In Mold Labelling Components – Results of the Research Project FOLTRONIC,** A. Wimmer, Hochschule Hof - University of Applied Science, ifm / B. Rauch, MID-TRONIC Wiesauplast GmbH, DE

16.50 **The Electrical Properties of Partially Metallized Plastics Parts and their Influencing Factors Produced with the In-Mould-Metal-Spraying (IMMS),** P. Ochotta, RWTH Aachen University, IKV, DE

17.15 **A New Technology for Rigid 3D Free-Form Electronics Based on the Thermoplastic Deformation of Flat Standard PCB type Circuits,** Prof. J. Vanfleteren, Ghent University, IMEC, BE

17.40 **Laser-induced Selective Metal Plating on PP and PC/ABS Surfaces,** K. Ratautas, Center for Physical Sciences and Technology, LT

18.05 **End of Sessions**

19.30 **Evening Event:** Wine Tasting and Dinner at “Staatlicher Hofkeller Würzburg“

Thursday, September 29th

Special Session 4a: Printed Electronics (W. Mildner, MSWtech)

09.00 **Printed Electronics: Current State of the Art, Applications, and Technology,** W. Mildner, MSWtech, DE

09.25 **Flexible Manufacturing of 3D MIDs via Print Driven Process Chains,** Dr. M. Hedges, Neotech AMT GmbH, DE

09.50 **Structural Electronics using Printed Electronics Technologies,** J. van den Brand, Holst Center, NL

10.15 **Functional Integration in Polymer-Based Electronic Packaging Technologies,** A. Fischer, Robert Bosch GmbH, DE

Session 4b: Additive Manufacturing (Prof. D. Drummer, University of Erlangen-Nuremberg, LKT)

09.00 **Additive Manufacturing of Laser-Direct-Structured Components,** K. Wudy, University of Erlangen-Nuremberg, LKT, DE

09.25 **Fast and Flexible Production of Mechatronic Integrated Devices with Embedded Structures by Means of Additive Manufacturing,** B. Niese, Bayerisches Laserzentrum GmbH, DE

09.50 **Laser Sintering of LDS Material,** Y. Sun, University of Tokyo, IIS, JP

10.15 **Is Selective Laser Melting an Alternative for High-temperature Mechatronic Integrated Devices? Methodology, Hurdles and Prospects,** A. Syed-Khaja, University of Erlangen-Nuremberg, FAPS, DE

10.40 **Coffee Break**

Session 5a: Applications (Dr. I. Kriebitzsch, BMW AG)

11.10 **Smart Series Applications in 3D Shape,** U. Remer, 2E mechatronic GmbH & Co. KG, DE

11.35 **Further Development of the MID Component in the Pressure Sensor DS8 and Essential Testing Strategies of Safety critical Sensor with MID Parts,** M. Schlitzkus, Robert Bosch GmbH, DE / S. Rimmel, Robert Bosch GmbH, DE

12.00 **A Decade of Laser Direct Structuring (LDS) Sevicees – What are the Ingredients for Successful LDS Projects?,** T. Lietz, LaserMicronics GmbH, DE

12.25 **A Novel 3D Design Approach for Active Patch Antennas Using 3D-MID Technology in Context of a Vehicular Application,**

A. Friedrich, Leibniz University of Hannover, HFT, DE

Session 5b: Printing Technologies (Prof. A. Zimmermann, Hahn-Schickard)

11.10 **Evaluation of Application Limits for Inkjet-printed MIDs,** J. Schirmer, University of Applied Sciences Nuremberg, OHM-CMP, DE

11.35 **Inkjet Printing of Highly Conductive Nanoparticle Dispersions for Organic Electronics,** P. Maisch, ZAE Bayern, DE

12.00 **Integration of Polymer Optical Waveguides by Using Flexographic and Aerosol-Jet-Printing,** T. Reitberger, University of Erlangen-Nuremberg, FAPS, DE

12.25 **Mechanical Issues in 3D Microcontact Printing for Molded Interconnect Devices,** Dr. M. Cabrera, Institut des Nanotechnologies de Lyon, FR

12.50 **Lunch Break**

Session 6a: Metallization (Dr. J. Heyer, hc-heyerconsulting)

14.00 **Improving Electroless Copper Properties for Advanced MID Structures,** J. Kologe, MacDermid Enthone Electronics Solutions, US

14.25 **Zero-defect Strategy for the Metallization of 3D-MID,** C. Baumer, Collini AG, CH

14.50 **Final Finish Solutions for Molded Interconnect Devices,** R. Stuhler, MacDermid Enthone Electronics Solutions, Asia

15.15 **3D-HiPMAS – Pilot Factory for 3D High Precision MID Assemblies,** Dr. W. Eberhardt, Hahn-Schickard, DE

15.40 **Non-Planar LED Substrates Produced by Thermal Spray Technology,** Dr. D. Dunker, LPKF Laser&Electronics AG, DE

Session 6b: Quality & Realization (Dr. W. John, ProMID Consult)

14.00 **Reliability in MID - Barriers, Potentials, Fields of Action,** C. Fechtelpeter, Fraunhofer IEM, DE

14.25 **Investigation of Adhesion Strength of Metallization on Thermoplastic and Ceramic LDS Substrates,** A. Brose, Otto-von-Guericke-University Magdeburg, IMOS, DE

14.50 **Modeling and Characterization of 2D and 3D Inductors Made in Molded Interconnect Devices Technology for Proximity Sensing by Near Field Inductive Measurement,** S. Komotesov, S2P – Smart Plastic Products, FR

15.15 **Randomly Shaped 3D Electronics Using Innovative Combination of Standard Surface Mount Technologies and Polymer Processing,** Dr. L. Tenchine, IPC-Centre Technique Industriel de la Plasturgie et des Composites, FR

15.40 **Heat Dissipation for MID Applications in Lighting Technology,** M. Barth, Hahn-Schickard, DE

16.05 **Closing Words:** Prof. J. Franke, University of Erlangen-Nuremberg, FAPS / Chairman of the Research Association 3-D MID e. V., DE

16.15 **End of Congress**