



# DAY 1

## Tuesday 9<sup>th</sup> October 2012

Time 08:00h - 09:00h

### Registration

Time 09:00h to 09:30h

### Opening & Welcome Speeches

- Chairman 4M2012, Dr Humbert Noll, FOTEC and FHWN, Austria
- Dr Gerhard Prahmas, CEO of FOTEC and FHWN, Austria
- Univ. Prof. Dr. Johannes Fröhlich, Vice-Rector for Research, Vienna University of Technology, Austria

Time 09:30h to 10:45h

### Invited Talks

Chair: H. Noll

#### "Horizon 2020"

Cristina FERNANDEZ RAMOS, EC, Directorate for Industrial Technologies , unit for "New forms of production"

#### "Computer Integrated, Automatic Fabrication of Large Area User Defined Periodic Micro/Nano Patterns Using Scanning Particle Lens Array"

Lin Li, Manchester University, UK

Time 10:45h to 11:15h

Coffee Break

Time 11:15h to 12:30h

### Session 1 (Madrid Room)

#### Systems Design

Chair: T. Velten, Fraunhofer Institute of Biomedical Engineering, Germany

#### 273. Development of a microfluidic-based lateral flow immunoassay for the detection of human serum albumin

R. Palkovits, M. Schlauf, S. Assadollahi, P. Pointl, University of Applied Sciences Wiener Neustadt

Thomas Schalkhammer, Attphototonics Biosciences GmbH

Thomas Trapichler, FOTEC GmbH

#### 279. Design and Simulation of an Integrated Micro-Hotplate for Gas Sensing Applications

A. Nemecek, M. Siegele, C. Gamauf, H. Noll, University of Applied Sciences Wiener Neustadt, Austria

J. Teva, J. Kraft, F. Schrank, austriamicrosystems AG, Austria

#### 304. MEMS Magnetic AC Field Detection

M. Stifter, T. Sauter, W. Hortschitz, Austrian Academy of Sciences, Austria

F. Keplinger, H. Steiner, TUWien, Austria.

#### 324. Design and manufacturing of metal micro grids on thin film solar cells

A. Hovestad, P. Voorthuizen, H. Rendering, P.J. Bolt, TNO, The Netherlands

### Session 2 (Moskau Room)

#### Components: Fabrication & Assembly

Chair: Pieter BOLT, TNO, Netherlands

#### 281. Micro wire electrochemical machining with axial electrolyte flow

Y.B. Zeng, D. Zhu, N.S. Qu, H.S. Li, S.H. Wang, Nanjing University of Aeronautics & Astronautics, China

#### 282. Flip Chip Technology applications by solderless processing

Dumitru Ulieru, Elena Ulieru, Adrian Tantau, SITEX 45 SRL, Romania

#### 290. A "Velcro" type of metal based micro connector

H. Schuck, F. Bauerfeld, T. Knoll, T. Velten, Fraunhofer

Institute of Biomedical Engineering, Germany

M. Zwanzig, R. Schmidt, C. Kallmayer, Fraunhofer IZM, Germany

#### 319. Large-area Sub-micron Structured Surfaces Using Micro Injection Moulding Templates of Anodized Aluminium Oxide

N. Zhang, S. Harrison, C. Keogh, P. Meagher, M.D. Gilchrist, University College Dublin, Ireland

Time 12:30h to 14:00h

Lunch and Sponsors Expo.

Time 14:00h to 15:30h

**Session 3** (Madrid Room)

**Electro Discharge Machining**

**Chair:** Giuliano Bissacco OR Samuel Bigot

**301. The influence of electrode shape and material on micro EDM drilling process**

G. D'Urso, G. Maccarini, C. Merla, C. Ravasio, University of Bergamo, Italy

**309. A new modelling framework for die-sinking micro EDM**

S. Bigot, A. Surleraux, Cardiff University, UK  
G. Bissacco, Technical University of Denmark, Denmark  
J. Valentinčič, University of Ljubljana, Slovenia

**313. Fabrication of fine-finish micro-shapes by simultaneous micro-EDM and micro-ECM**

Minh Dang Nguyen, Mustafizur Rahman, Yoke San Wong, National University of Singapore, Singapore

**318. Micro EDM deep drilling with insulated tool electrodes**

E. Ferraris, D. Reynaerts, F. Ceyssens, KU Leuven, Belgium  
V. Castiglioni, M. Annoni, Politecnico di Milano, Italy  
M. Corda, Sarix SA, Switzerland

**Session 4** (Moskau Room)

**MultiLayer Session 1**

**Chair:** Petko PETKOV,  
Cardiff University, UK



**287. A waveguide to microstrip transition design using LTCC at millimetre-wave frequencies.**

T. Pellikka, Omnisys Instruments AB, Sweden  
J. Svedin, Swedish Defence Research Agency, Sweden  
H. Grönqvist, Swerea IVF AB, Sweden

**291. Numerical studies on the thermo-mechanical behaviour of multilayer ceramics during co-sintering**

G. Delette, S. Bredeau, M. Carriquiry, J. Brancillon, CEA, France

**298. Green Tapes Developed for Structuring, Lamination and Inmould Labelling**

A. Kucera, S. Ziesche, H.-J. Richter, T. Moritz, Fraunhofer IKTS, Germany

**299. Development of Micro Fluidic Component by Embossing, Laser Ablation and Screen Printing**

A. Kucera, S. Ziesche, H.-J. Richter, T. Moritz, Fraunhofer IKTS, Germany  
D. Jurkow, K. Malecha, L. Golonka, Wroclaw University of Technology, Poland.

Time 15:30h to 16:00h

Coffee Break

Time 16:00h to 17:30h

**Session 5** (Madrid Room)

**Process Characterisation**

**Chair:** G. Tosello

**267. Replication and characterization of 316L stainless steel micro-structured parts by powder injection moulding**

J. Zhang, M. Sahli, J.-C. Gelin, C. Millot, Femto-ST, France

**280. A novel approach for size up-scaling of Nickel master for the replication of Micro and Nano Features**

K. Popov, H. Hirshy, P. Petkov, Cardiff University, UK

**271. Aluminium foils surface deformation using vibration-assisted micro-forging**

**Session 6** (Moskau Room)

**MultiLayer Session 2**

**Chair:** P. Petkov,  
Cardiff University, UK



**314. Inspection of multilayer ceramic structure lamination quality - comparison of nondestructive methods**

D. Jurkow, K. Malecha, L. Golonka, Wroclaw University of Technology, Poland  
Z. Suszynski, Koszalin University of Technology, Poland  
J. Stiernstedt, G. Wetter, Swerea IVF AB, Sweden

**316. Manufacturing technologies for multi material multi layered ceramic microsystems**

<p>Yang Bai, Ming Yang, Tokyo Metropolitan University, Japan</p> <p><b>307. Replication of an aluminium master for large scale optics</b></p> <p>I. Mizushima, P.T. Tang, K.S. Hansen, IPU, Denmark  S. Gasparin, DTU, Denmark  H. Madsen, Kaleido Technology ApS, Denmark</p> <p><b>302. Process Factors Influence on Residual Layer Uniformity in Hot Embossing</b></p> <p>F. Omar, A. Kolew, E.B. Brousseau, H. Hirshy, Cardiff University, UK</p>	<p>G.Hagen, KMS Technology Center GmbH, Germany  T.Kopp, KMS Automation GmbH, Germany  S. Ziesche, Fraunhofer IKTS, Germany</p> <p><b>328. Direct measurement of drying stresses in colloidal alumina films</b></p> <p>A.C.G. Hopkinson, W.J. Clegg, University of Cambridge, UK</p> <p><b>311. Tape casting process integration – casting on a structured carrier film</b></p> <p>J. Stiernstedt, M. Cristea, E. Carlström, H. Grönqvist, Swerea IVF AB, Sweden</p> <p><b>306. Laser drilling of green ceramic tapes: Pulse duration/shape effects</b></p> <p>P. V. Petkov, A. Kolew, Cardiff University, UK</p>
Time 19:00h to 22:30h	
<b>Visit by bus to a “Heuriger” for Conference Dinner.</b>	



# DAY 2

## Wednesday 10<sup>th</sup> October 2012

**Time 09:00h - 10:15h**

### Invited Talks

**Chair:** Dr Nadja Adamovich, ISAS, Vienna University of Technology, Vienna, Austria.

#### " Additive Manufacturing of high performance ceramic structures "

Juergen Stampfl, Vienna University of Technology, Vienna, Austria

#### " Electron Multi-Beam Mask Writer development for the Semiconductor Industry"

Hans Loeschner, IMS-Nanofabrication, Austria

**Time 10:15h – 11:15h**

### Coffee Break and Sponsors Exhibition

**Time 11:15h - 12:30h**

#### Session 7 (Madrid Room)

##### Metrology: Inspection & Characterisation

**Chair:** Lars Mattsson, KTH, Sweden

#### 266. Synthesis and study of porous carbon foam/Cu(Cu-Sn) nanoparticles composites for electrode materials

T. Petrov, I. Markova-Deneva, I. Denev, University of Chemical Technology and Metallurgy, Bulgaria

O. Chauvet, Institute of Materials, Nantes, France

#### 284. Evaluation of optical inspection methods for non-destructive assessment of embedded microstructures and defects in ceramic materials

R. Su, L. Mattsson, KTH, Sweden

#### 308. A method for doubling vertical resolution in Fused Deposition Modelling

D.B. Pedersen, H.N. Hansen, J. Rasmussen, DTU, Denmark

#### 322. In-vivo characterization of acoustical response of animal middle ear by partially implantable fiber-optic microphone

Z. Djinic, , M. Stojkovic, Integrated Microsystems Austria, Wiener Neustadt, Austria

R. Pavelka, Schwerpunktkrankenhaus, Wiener Neustadt Austria

M. Tomic, University of Belgrade, Serbia

#### Session 8 (Moskau Room)

##### Process Design and Monitoring

**Chair:** A. Schoth

#### 275. Automated laser power control for roughing and finishing in micro laser machining

V. Schulze, P. Weber, Karlsruhe Institute of Technology (KIT), Germany

#### 276. Cutting Temperature Monitoring in Hard Turning by PCBN Inserts with Embedded Micro Sensor Arrays

Linwen Li, K.F. Ehmann, Northwestern University, USA

Bin Li, Huazhong University of Science and Technology, China

Xiaochun Li, University of Wisconsin-Madison, USA

#### 315. Micromilling strategies impact on thin walls geometrical quality

M. Annoni, S. Petrò, L. Rebaioli, Q. Semeraro, R. Solito, Politecnico di Milano, Italy

#### 320. On the Manufacturing of Porous Micro-scale Structure Arrays on Large Surface Areas

Ö.N. Cora, Karadeniz Technical University, Trabzon, Turkey

M. Koç, İstanbul Şehir University, İstanbul, Turkey

**Time 12:30h - 14:00h**

### Lunch and sponsors

**Time 14:00h - 15:15h**

<p><b>Session 9</b> (Madrid Room)</p> <p><b>Novel Materials: Characterisation &amp; Processing</b></p> <p><b>Chair:</b></p> <p><b>268. Study of Cobalt-Platinum Thin Films grown by Pulsed Laser Deposition</b> I.Giouroudi, J. Kosel, C. Scheffer, U. Buttner, Stellenbosch University, South Africa K. Eftimiadis, Aristotle University of Thessaloniki, Greece</p> <p><b>272. Development of a partially water soluble binder system for ceramic powder injection moulding</b> T. Hanemann, O. Weber, University of Freiburg, Germany, and KIT, Germany</p> <p><b>303. Novel crosslinker for the photopolymerization of proton conducting fuel cell membranes</b> M. Kellner, P. Radovanovic, R. Liska, J. Matovic, Vienna University of Technology, Austria</p> <p><b>274. Experimental and Numerical Investigation on a Full Forward Extrusion Process from Metal Strip</b> T. Stellin, U. Engel, M. Merklein, Chair of Manufacturing Technology, University of Erlangen-Nuremberg, Germany</p>	<p><b>Session 10</b> (Moskau Room)</p> <p><b>COTECH Session 1</b></p> <p><b>Chair:</b> H. Loibl, FOTEC, Austria</p> <p><b>286. The COTECH knowledge database: assessment of critical factors in micro moulding</b> G. Tosello, H.N. Hansen, DTU, Denmark C.A. Griffiths, Cardiff University, UK S.S. Dimov, University of Birmingham, UK</p> <p><b>295. Study on a new micro injection moulding process by converging micro injection with hot embossing pvT-characteristics</b> A. Schoth, L. Nägele, H. Reinecke, University of Freiburg, Germany H. Loibl, T. Schlauf, FOTEC Research and Technology Transfer GmbH, Austria M. Ganz, Wittmann Battenfeld GmbH, Austria</p> <p><b>325. 8 Pin RIC Socket for Hearing Aids</b> A. Islam, , S. Davids, L. Kristensen, Sonion A/S, Denmark H.N. Hansen, DTU, Denmark</p> <p><b>326. Micro 2C-injection moulding – investigations on interface performance</b> E. Honza, A. Klein, K. Plewa, V. Piotter, KIT, Germany C. Tuinea-Bobe, B. Whiteside, University of Bradford, UK</p>
Time 15:15h - 16:00h	
Coffee Break	
Time 16:00h - 17:15h	
<p><b>Session 11</b> (Madrid Room)</p> <p><b>Novel Products</b></p> <p><b>Chair:.</b></p> <p><b>323. Printing of Functional Silver Structures on Polymer based 3D-Packages</b> V. Matic, J. Keck, A. Ilchmann, B. Polzinger, W. Eberhardt, H. Kück, HSG-IMAT, Germany</p> <p><b>310. Development of a Planar Porous Aerostatic Bearing with Dual Restrictive Layer</b> Kuo-Yu Chien, Chung-Li Tsai, Fu-Chuan Hsu, Hsin-Chung Li, Kun-Min Huang, MIRDC, Taiwan</p> <p><b>317. A hybrid microfluidic-EWOD system for complex PoC-Devices</b> K. Metwally, L. Georgi, V. Petrini, L. Robert, C. Khan-Malek, FEMTO-ST Institute CNRS, France E. Jung, Fraunhofer IZM, Germany</p>	<p><b>Session 12</b> (Moskau Room)</p> <p><b>COTECH Session 2</b></p> <p><b>Chair:</b>H. Loibl, FOTEC, Wiener Neustadt, Austria</p> <p><b>327. Transparent High Aspect Ratio Replication using Two-Component Hot Embossing</b> A. Kolew, M. Heilig, M. Schneider, D. Münch, M. Worgull, KIT, Germany S. Scholz, P. Petkov, Cardiff University, UK</p> <p><b>329. Polycarbonate based materials for a micro-cooling device</b> T. Pietri, E. Pauty, M. Carriquiry, CEA, France T. Albertin, ATHERM, France</p> <p><b>330. Characterising the injection kinetics of a microinjection moulding machine</b> B. Whiteside, C. Tuinea-Bobe, University of Bradford, UK</p>

**277. Development of a micro geared motor with  
0.9mm outer diameter**

Y. Saotome, A. Inoue, Tohoku University, Japan

N.Toghashi, Y. Shimizu, Namiki Precision Jewel Co. Ltd,  
Japan

**Free evening for working meetings**



# DAY 3

## Thursday 11<sup>th</sup> October 2012

Time 09:00h - 10:15h

### Invited Talks

Chair: Stefan Dimov, University of Birmingham, UK

#### "Miniaturized sensors for physical fluid properties"

Bernhard Jakoby, Institute for Microelectronics and Microsensors, Johannes Kepler University Linz, Austria

#### " High-speed, High Precision Micromachining: Fundamentals to applications"

J. Rhett Mayor, Georgia Institute of Technology, USA

10:15h – 11:00h

### Coffee Break

Time 11:00h to 12:30h

#### Session 13 (Madrid Room)

##### IMPRESS session

Chair: Mael Moguedet, PEP, France



#### 288. Quality control in injection molding of micro structures with a new contact free sensor

E. Pletscher, Kistler Instrumente AG, Switzerland

#### 305. Low cost manufacturing of functional plastic components combining nanosphere self-assembly and replication techniques

N. Blondiaux, G. Franc, R. Pugin, CSEM, Switzerland

#### 312. Nanometrology of periodic nanopillar arrays by means of light scattering

F. Widulle, V. D. Calzadilla, E. Gridneva, H. Wegendt, B.H. Kleemann, A. Heinrich, Carl Zeiss AG, Germany

#### 321. Optimising the replication quality of polymer injection-moulded microneedles on the IMPRESS platform

D. Steglich, H. Eigenbrod, Fraunhofer IPA, Germany

F. Lacan, Cardiff University, UK

S. Dessors, M. Moguedet, PEP, France

E. Bambury, Crospon Limited, Ireland

#### 294. Structuring of mold insert by colloidal lithography for antireflective properties

O. Dellea, J. Lostys, S. Desage, E. Szabolcs, C. Diss, P.

Fugier, J-M. Becker, CEA-LITEN, France

#### session 14 (Moskau Room)

##### EUMINAFab session

Chair: Susan ANSON, KIT,



#### 292. How to Implement the Grid Method Analyses for Capability Studies of MNTs

R. Minev, London South Bank University, UK

E. Minev, Rousse University, Bulgaria

S. Bigot, Cardiff University, UK

#### 293. Capability Study of MNT Processes Using Grid Method

R. Minev, London South Bank University, UK

E. Minev, Rousse University, Bulgaria

S. Bigot, Cardiff University, UK

#### 300. Bulk Metallic Glass Based Tool-making Process Chain for Micro- and Nano- Replication

P.C. Vella, University of Malta, Malta

S. Dimov, University of Birmingham, UK

A. Kolev, et al, Cardiff University, UK

#### 278. Micro structuring of Zr-based bulk metallic glasses

V. Schulze, P. Hoppen, C. Ruhs, P. Weber, KIT, Germany

Time 12:30h - 13:30h

### Lunch & finish