



Final Remarks MAM 2013

Volker Saile

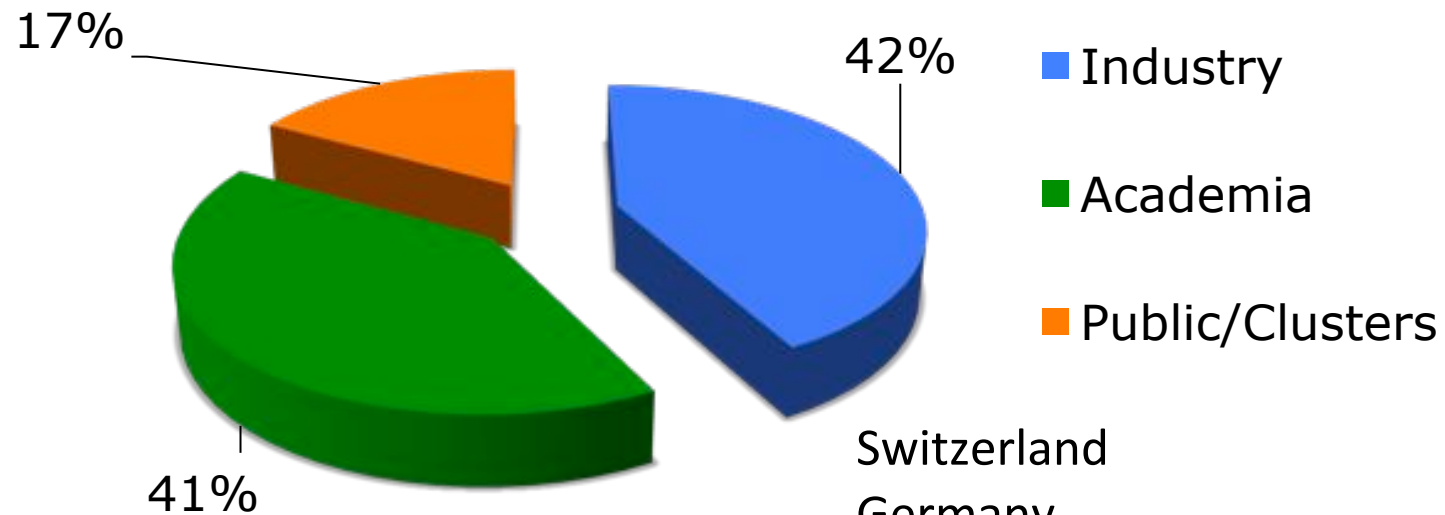
Villars , January 15, 2013



2012: Scenic view in the Swiss Alps



mAm 2013 : Participant Distribution



n=70

Switzerland	46
Germany	11
Japan	5
France	3
Austria	1
Finland	1
Italy	1
Netherlands	1
United Kingdom	1
<hr/>	
Total	70

mAm 2013

Microsystems have now entered the age of high volume production for consumer applications, especially mobile phones, ICT and medical disposable devices. The **issues associated with the production** of these are of continued interest to manufacturers. These include **tooling in high volume fabrication of precision parts, making highly efficient and reliable automated assembly lines and test systems for microproducts.**

Sunday 13 January 2013

Pre-conference Workshop - Special Session on Micro Factories

ManuFuture-CH & DTF (Japan)

Chair: Philippe Fischer, FSRM

Keynote I: Reijo Tuokko: International overview of MicroFactories activities

Keynote II: Philipp Glocker, CSEM (CH)

Micro Assembly Presentations from

- Yuji Oguchi, CEO of Daiya Seiki (JP)
- Mélanie Dafflon, R&D Manager of Asyril (CH)
- Kazunori Hanaoka, R&D dept. at Takashima Sangyo (JP)
- Alain Schorderet, professor at HEIG-VD (CH)

Presentation of DTF consortium

Yuichi Okazaki, Advanced Manufacturing Research Institute (JP)

Great success

25(?) participants

**Much longer than
originally expected**

Monday 14 January 2013

Welcome Session

Edward Byrne (Micronarc)

Prof. Dr. Volker Saile (KIT, MANCEF)

Yvan Dénéreaz (Canton Vaud) - **very important supporter and sponsor**

Invited Keynote on Micro-manufacturing: Prof. Dr. Yves Perriard (EPFL-IMT-LAI)

Advanced mechatronics: A multi-disciplinary approach and a strong link with industry

Definition of mechatronics – advanced concept – challenges- research examples

Innovation = intelligent combination of existing technologies

Micro-MEMS motor for watch (Swatch)

Micro piezo-actuator for autofocus (Siemens)

Haptic devices (Logitech)

New winding technology for motors

Sensorless drive electronics for electromotors

Micro-manufacturing Applications I – Watchmaking

Invited Keynote: Alejandro Gonzalez (Cartier)

Cartier's vision of the future of watchmaking: The quest for performance and reliability

First concept watch: adjustment-free watches

New technologies: semiconductor technologies – new materials: Zerodur, DLC, fibre-glass

Second concept watch: Increase energy efficiency: consumption, storage, losses

Dr. Grégoire Genolet (Mimotec)

CLR-LiGA, a new solution for authentication

UV-LIGA results, specifications and examples – watch components

Authentication: LIGA parts with diffractive surfaces to fight counterfeiting

Dr. Dominique Solignac (Icoflex)

Glass microfabrication for MEMS and watch applications

Powderblasting

Fast and dry technology: culling, drilling, surface machining

Applications: Colored glass dials for watch industry

IcoPack concept for MEMS industry: through glass via platform, encapsulation

Elevator Pitch – LYNCEE TEC: 3D optical topography in real time

Micro-manufacturing Applications II – Medtech

Invited Keynote : Prof. Dr. Holger Reinecke (HSG-IMIT and IMTEK)

Future Perspectives, Concept and Characterization of A Flexible Autoclavable Endoscope

Robotic sytems + endoscopy + real time imaging

Markets for endoscopes

Concept: variable stiffness, autoclavable,

Bellows with special cross sections by electroforming, disposable endpieces

Dr. Peter Ruppertsberg (Valtronic)

Latest Technologies of Active Implants for the Stimulation of Excitable Tissue

Technologies: power supply, housing, miniaturization, electrodes

Batteries (Li-polymer), RF transmission, energy harvesting, bio-fuel concepts

Dr. Alfred Stett (NMI)

Intelligent implants for diagnosis and therapy

Intelligent implants

Drivers: demography, health, health care systems

Cardiac pacemakers, deep brain stimulation, cochlear implants, retina implants

Pre-surgical evaluation of epilepsy: develop wireless read-out

Elevator Pitch – Formatec Ceramics: CIM-production, new materials

MEMS

Invited Keynote : Luigi Occhipinti (ST Microelectronics)

Status and trends of integrated smart sensors and systems

Smart sensors and systems: highly compact and ultra-low power

Heterogenous integration, THELMA process, More-Than-Moore

Acceleration, gyro, compass

Pressure, temperature, humidity

Microphone, voice processing, ultrasonic gesture recognition

Flexible electronics, disposable electronics, flexible silicon IC, organic electronics

POSTER SESSION - Next generation Microfabrication and MEMS

Hoe Guerin: CNT-arrays for gas-sensing devices (in-situ growth on wafer scale)

Rahel Strässle: Chip-scale atomic clock (alkaline vapor cell, In-bonding technique)

Andres Vasquez: Flex Smell – Food control by smart packaging (minimize waste of food)

Philip Wägli: Microfluidic systems (Scotch tape, UV glue, glass slide, droplet generation)

Great presentations!

Venue and Conference Dinner



The same high standards as last year

Great

Conference Dinner



Tuesday 15 January 2013

Assembly and Automation

Invited Keynote: Prof. Dr.-Ing. Dominik Rabus (Festo)

Pneumatic Control Systems

Bridge gap between institutes/research and product → innovation
Bionic learning network → innovation: elephant trunk, smart bird, muscles
Sensors, machine vision, optofluidics, fluidics

Norbert Fischer (noficontrol)

UDCS – the revolutionary ceramics – rigidity and dampening in one

RakuRobo Robot for small parts
UCDS materials: ceramics – high elastic and high damping properties
Precise positioning: wafer-scanning stage; machining: milling; visualization, metrology,...

Philipp Glocker, Section Head Microassembly & Robotics (CSEM)

Automated active Alignment

Sensor: 6 DOF with grating, 10 nm resolution

Stamping: absolute positioning for long range replication printing; robot system

**100W laser in credit card size! Combine 6 lasers and focus on fiber core: automated
alignement; software!**

Laser + collimator + beamsplitter; high volume – production machine

Elevator Pitch SMART LAM: Rapid prototyping systems – combine existing solutions

Micro Factories

Invited Keynote: Prof. Reijo Tuokko (Tampere)

International overview of MicroFactories activities

**Worldwide overview – micro and desktop factories – many developed and built (A&I)
Energy saving, space saving, material saving (Sankyo, Takashima Sangyo)
Concepts and machines, country by country
Visions: de-centralized production or even in retail sector, robots and humans together,
customized implants, point-of-need production
Economical and ecological opportunities,**

Dr. Yuichi Okazaki, National Institute of Industrial Science and Technology (AIST)

Impact of Microfactories on Manufacturing Scenes

**From „bigger is better“ to „small is cool“
Japanese and international activities. Micro-lathe
Terminology: on-demand, cloud, agile manufacturing
Re-arrangement of production line
Heavy vs. light standards
Semiconductor productions – non-clean room environment, transport containers
Personal vs. industrial manufacturing**

Dr. Mélanie Dafflon (Asyrl SA)

Smart and intuitive solutions for complex parameterization of micro-assembly processes

Feeding: vibrating platform Asycube for small components, flexibility, reliability

Asycube Smart Sight: optimized vision system

Applications: pegs, stones, pelletizing

New company VIDI: learning based image processing, difference to good parts

**5 minute Exhibitor Elevator Pitch - MICROTEC SÜDWEST: 350 stakeholders, beacons,
platforms**

Invited Keynote on the Future of Micro-manufacturing

o. Prof. Dr.-Ing. Dr. h. c. Albert Albers (IPEK/KIT)

Human factors and design barriers in micro system engineering

Small companies in MST

Human success factors

Development and validation engineers: synthesis and analysis

Special for MST: production engineers are coupled to development engineers

Innovation and invention, risks

Barrier of intuition: senses, psychology – barrier of discipline - barriers of technology

Meta model of product engineering – Brezel model: validation and creation

Exhibitor Elevator Pitch – PONTAGO & FINETECH: Bonding and placing equipment

Printing Technologies

Invited Keynote: Prof. Dr. Reinhard R. Baumann (Chemnitz)

Digital Fabrication based on Printing

**Manufacturing technology printing:
additive, continuous manuf., ambient conditions, highly productive
Screen gravure, ink jet
Printing process chain: digital!
Beyond color – functionalities
Digital printing + laser techniques
Functional printing machinery – roll-to-product and not roll-to roll
Printing competence in Chemnitz: post-process units – modular systems
Partners > microFLEX machine – highly flexible for R&D and production
Digital manufacturing
Printed smart objects; RFID; 3D RFID, Schottky diodes on PET; flexible batteries; catalytic
layer for fuel cells; polymeric microsieves; nanopores**

Dr. Danick Briand (EPFL)

Printing Technologies for Low-Cost Smart Objects

Smart sensing systems on foil

Large area and low cost: sensor, antennas, power supply , Si-chips, displays

Humidity and temperature sensor on PET – ink jet, encapsulation, dry foil, add Si-comp.

Dr. Patrick J. Smith (Sheffield)

Inkjet printing as a micro-manufacturing technique

Stamping-contact printing, masking-stencilling, direct writing

Inkjet line width – reduce viscosity: T

Si-lines 25 μm

THZ split ring resonators

Nano-particle inks, MOD inks, MOD + UV light, reactive inkjet printing

Final Remarks: Prof. Dr. Volker Saile

Sponsors



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Thank you!

Exhibitors

csem



IcoFlex
Micromachining & Deburring Services

FORMATEC  CERAMICS
Shaping technology and design



Takashima



Thank
you!

Great venue



Thanks

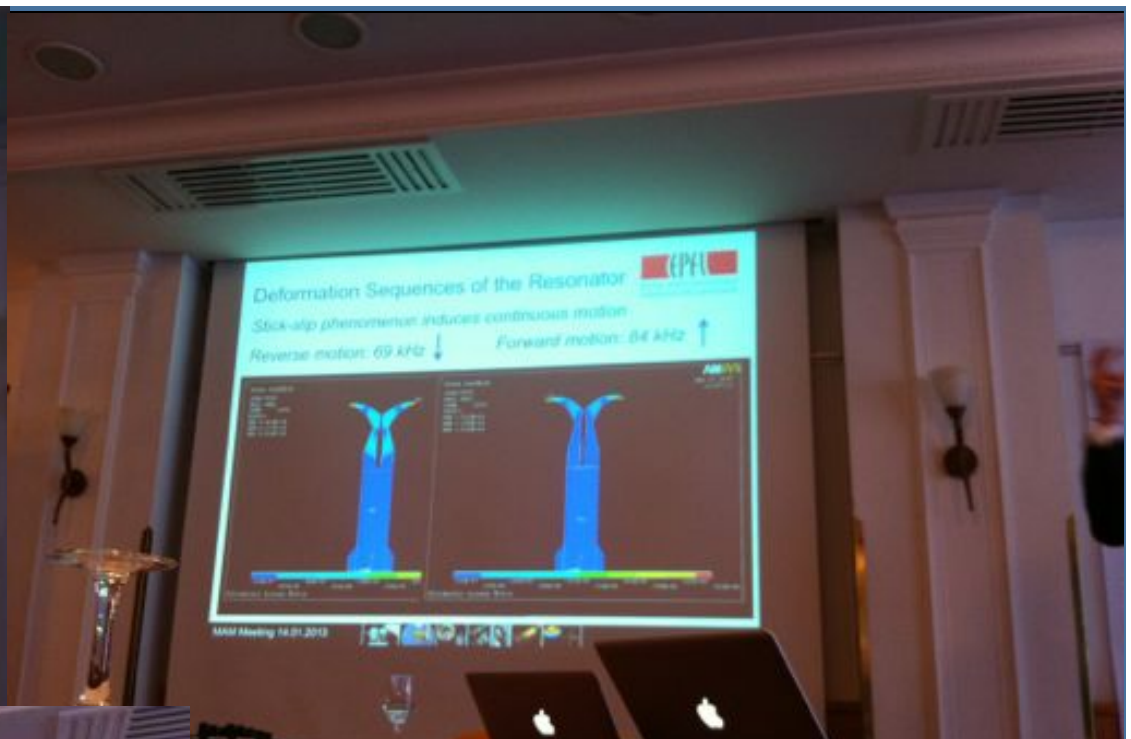
Edward Byrne
Philippe Fischer
Cira Miley
Suzanne Schwendener

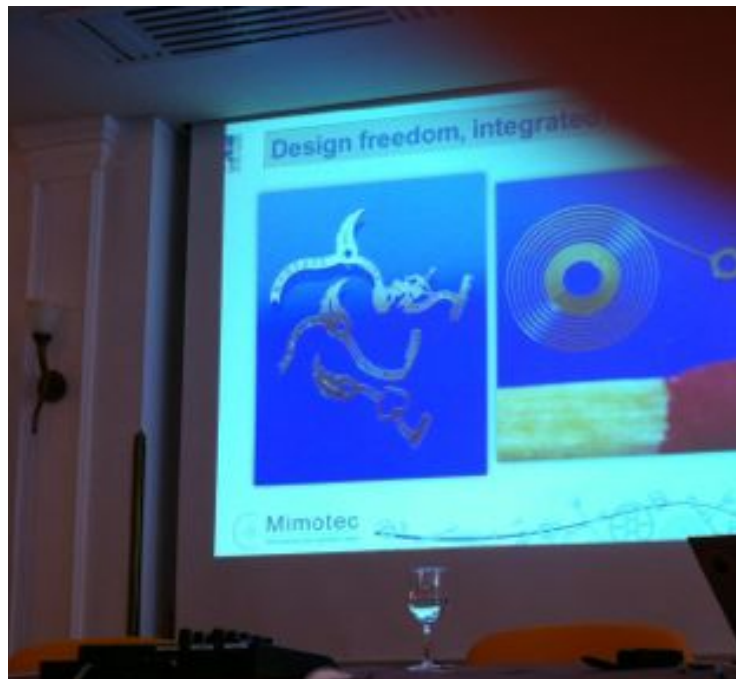


Sikha Ray
VS



mAm 2013 Chronology





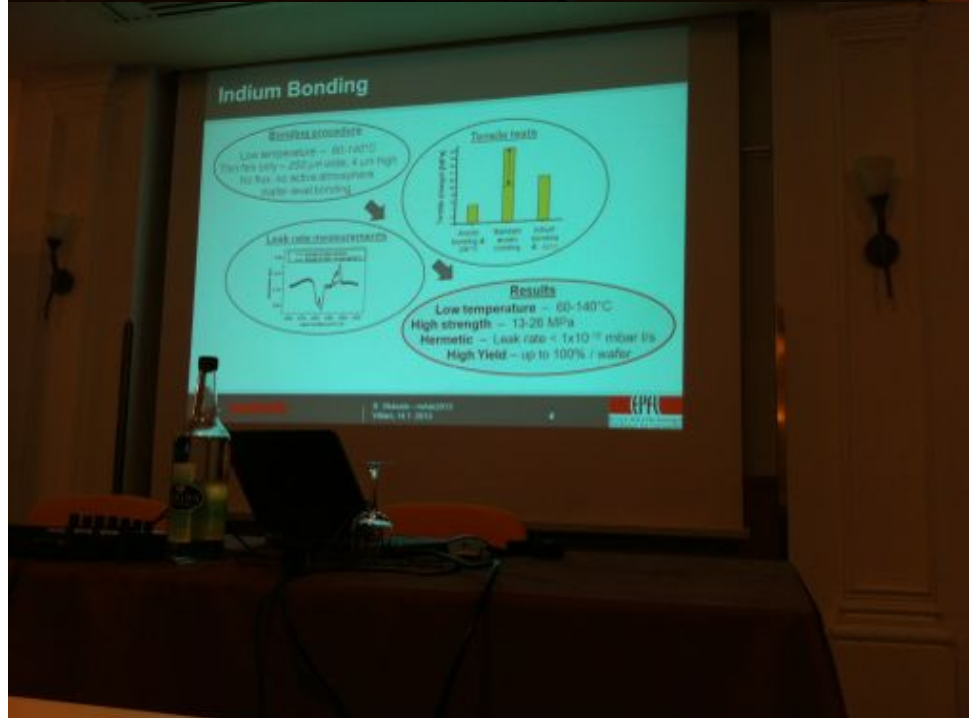
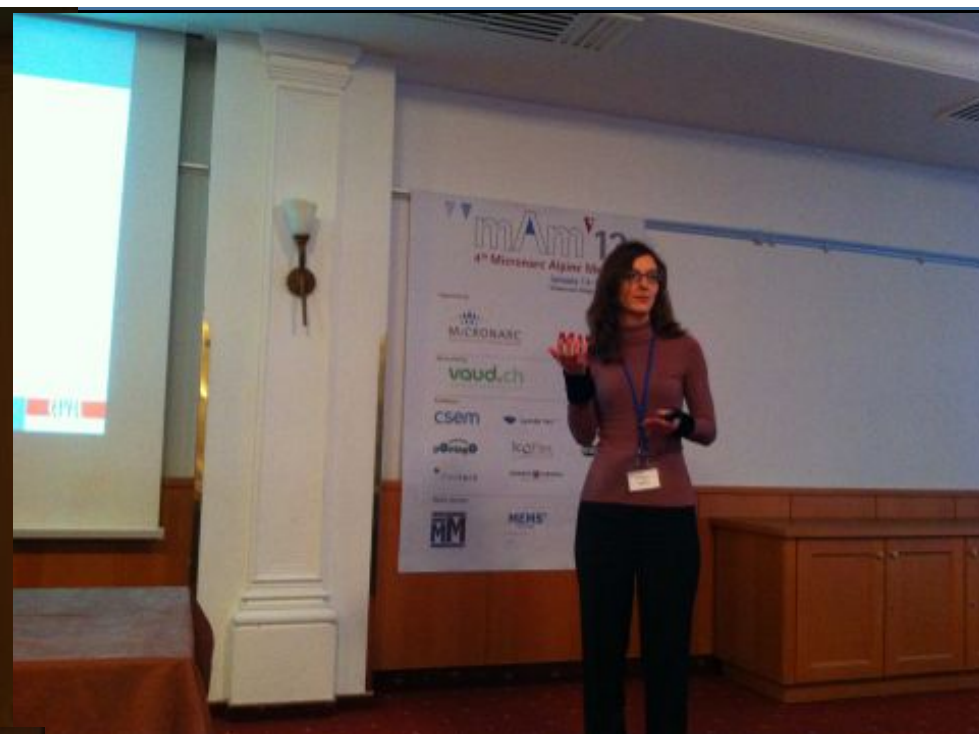










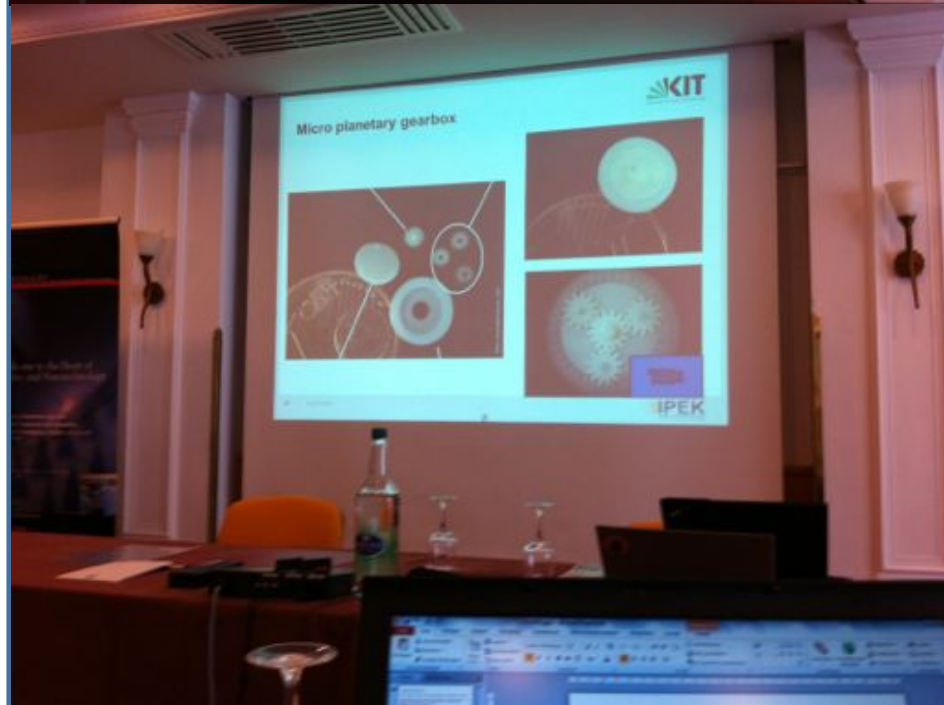
















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25-28
AUGUST 2013
ENSCHDE
THE NETHERLANDS

**CONNECTING
DIFFERENT
WORLDS,
REALIZING
CREATIVE
SYSTEMS**

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SEE YOU AT MAM 2014