

**Time 08:00h - 09:00h**

**Registration,** Barceló Costa Vasca Hotel, San Sebastian

**Time 09:00h to 09:45h**

**Opening & Welcome Speeches**

- 4M2013 Chairman, Dr. S. Azcarate, IK4-Tekniker, Spain
- Basque Country Science & Technology Minister
- "Horizon 2020 & 4M2020", Dr. Erastos Filos, DG Research & Innovation, EC

**Time 09:45h to 11:00h**

**Invited Talks**

**Chair:** Dr. S. Azcarate, IK4-Tekniker, Spain

- "Innovative manufacturing processes for plastics parts with micro features", Professor Christian Hopmann, Institut für Kunststoffverarbeitung, GERMANY
- "Metrology challenges for highly parallel micro-manufacture", Professor Richard Leach, National Physical Laboratory, UK

**Time 11:00h to 11:15h**

**Coffee Break**

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

**Session 1 :  $\mu$  Electro Discharge Machining I**

**Chair** Professor Eleonora Ferraris, Belgium

**342. Enhanced surface integrity and dimensional accuracy in micro-EDM drilling using D-shaped electrodes**

**357. Characterization and modeling of electrical discharges in air for micro EDM machining**

**414. Micro-EDM numerical simulation and experimental validation**

**415. Energetic modeling of a micro-EDM machine**

**Session 2:  $\mu$  Injection Moulding (COTECH)**

**Chair:** Dr. Helmut Loibl, FOTEC, Austria

**353. Analysis of demoulding in micro injection moulding of cyclic-olefin-copolymer microfluidic systems**

**375. The Usage of Thermal Imaging for Temperature Measurements During Microinjection Moulding**

**419. In-line coating of channels in polymer microfluidic devices**

**426. Advancements on the simulation of the micro injection molding process**

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

**Lunch**

**Time 14:00h to 15:30h**

**Session 3: Micro Manufacturing**

**Chair:** Dr. Iban Quintana, IK4-Tekniker, Spain

**333. Influence of the Cutting Edge Geometry on the Tool Stress Distribution in Monocrystalline Silicon Punches for Microblanking of Thin Metal Foils**

**337. New Technologies Applications Of Microelectronics Devices Processing By Laser Locally Structural Modifications**

**363. Adaptively Tuned Micromanipulator**

**423. Surface Roughness Prediction in AFM Probe-based Machining**

**Session 4: Process Chains (EUMINAFab)**

**Chair:** Dr. Susan Anson, KIT, Germany

**341. Validation of a New Process Chain for Producing Bulk Metallic Glass Replication Masters with Micro and Nano-scale Features**

**346. Prototyping parts with micro scale features using Additive Layer Manufacturing: Using microneedles as a case study**

**355 - Performance Evaluation of Laser Micro-Machining Installations**

**416. Tooling and microinjection moulding of bottom grooved micromixers**

**Time 15:30h to 16:00h**

**Coffee Break**

**Time 16:00h to 17:45**

**Session 5: Novel Material Processing**

**Chair:** Dr. Luc Federzoni, CEA, France

**336. Nano texturing of micro injection moulding tools with diamond like carbon**

**338. Precise Micro-Texturing onto DLC Coating via High-Density Oxygen Plasma Etching**

**340. Nano-Laminated Diamond-like Carbon Coating for Hydrogen Gas Permeability Control**

**332. Electrochemical behavior of porous nanocomposites based on carbon foam and intermetallic Cu-Sn nanoparticles**

**370. Manufacturing of Solid Oxide Fuel Cells by Aqueous Tape Casting**

**Session 6: Product & Process Design (SMART-FRAME)**

**Chair:** Dr. Steffen Scholz, KIT, Germany

**343. A Combination of Iron Oxide Nanoparticles and Inkjet Inks to Obtain New Functional Inks**

**347. Development of Multiscale, Multicriteria Optimization of SiP Design Methods**

**351. Efficient Scenarios, Methodology and Tools for MEMS/NEMS Product Development**

**407. An additive manufacturing and e-printing based approach for flexible scalable manufacturing of Microsystems**

**421. MEMS based phase change actuator for medical application**

**Time 19:00h to 22:30h**

**Visit by bus to IRETZA SAGARDOTEGIA and the Conference Dinner.**

<http://www.iretza.com/>

**Time 8:00-9:00**, Bus transfers from Barceló Costa Vasca Hotel, San Sebastian to IK4-Tekniker, Eibar.

**Time 09:00h to 09:30h**

**Opening & Welcome Speeches**

Dr Alejandro Bengoa, General Manager of IK4-Tekniker, Spain  
"ONR Global - Programs and Opportunities", Dr. Shawn Thorne, Office of Naval Research Global - London

**Time 09:30h - 11:15h**

**Invited Talks**

**Chair:** Professor Stefan Dimov, 4M2013 Co-Chair, University of Birmingham, UK

- "Fabrication of Nano/Micro devices of metallic glasses", Professor Yasunori SAOTOME, Tohoku University, JAPAN
- "Surface Texturing", Professor Jian Cao, Northwestern University, US
- "Laser Shock Micro-Forming as an Emerging Technique for Microsystems Shaping and Adjustment", Professor Dr. José L Ocaña, Centro Láser UPM

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

**Coffee Break**

**Time 11:30h - 12:45h**

**Session 7:  $\mu$  Electro Discharge Machining II**

**Chair:** Dr. Samuel Bigot, Cardiff University, UK

**356. Major parameters affecting the electric discharge machining of non-conductive SiC**

**411. Combined Pulse Characterization and Discrimination for Micro-EDM Milling Tool Wear Study**

**417. Highly irregular surface roughness replicated onto microfluidic part using micro injection molding for cell biological research purposes**

**344. Fabrication of High-aspect-ratio Cylindrical Sub-micrometre Tool Using ECM**

**Session 8: IMPRESS Manufacturing Platforms**

**Chair:** Dr. Mael MOGUEDET, PEP, France

**424. IMPRESS System Expert Tool: a collaborative engineering software for specification of micro / nano features products and processes**

**367. Manufacturing of nanostructured plastic components combining nanosphere lithography and replication techniques**

**371. Impact of melt viscosity on replication quality of plastic parts with micro and nano sized features demonstrated on the IMPRESS platform**

**368. Structuring of mold insert by colloidal lithography for antireflective properties**

**Time 12:45h - 14:00h**

**Lunch and sponsors**

**Time 14:00h - 15:30h**

**Session 9:  $\mu$  Machining**

**Chair:** Dr. Massimiliano Annoni, ???

**339. Offset diamond turning technique for machining of Fresnel lens arrays**

**354. Performance Evaluation of Micro Milling Installations**

**358. Cutting force prediction performance of a microcutting slip-line field model in brass machining**

**364. Reducing waviness in diamond turning by analysis of surface profile**

**418. Compensating the cutting edge displacement during micro milling – a mechatronic approach**

**Session 10: Process Design & Characterisation**

**Chair:** Dr. ???

**335. Thermoplastic PMMA/PEG binder system for micro ceramic injection moulding**

**359. A novel approach to additive manufacturing, screw extrusion 3D-printing**

**365. Analysis of the process chain for the production of optical functional micro structures by injection moulding**

**412. Investigation of dimensional accuracy in powder injection molding**

**Time 15:30h - 15:45h**

**Coffee Break**

**Time 15:45h - 17:15h**

**Session11: Manufacturing Platforms**

**Chair:** Dr.???,

**350. Rapid Prototyping of Polymeric Micro-Fluidic Systems Using a Roll-to-Roll Micro-Replication Process**

**428. Application of the infrared thermography in the automated spot soldering process**

**422. Development of a high-throughput roll-to-roll production platform for the micro-manufacturing and assembly of lighting devices**

**345. Microsystems wire bonding technology navigation towards economic packaging solutions**

**Session 12: Laser Micro Processing**

**Chair:** Dr. Petko Petkov, Cardiff University, UK

**366. Laser machining of a Zr-based bulk metallic glass with nano-second laser**

**404. Single Pulse Nanosecond Laser Processing of Zirconium-based Bulk Metallic Glass**

**413. New Laser based Patterning Processes for 3D Devices**

**420. Imaging of copper ejection in pico- and nanosecond Laser Induced Forward Transfer**

**349. Laser material removal: Surface integrity**

**Time 17:15h – 18:00**

**Tour of IK4-Tekniker**

**Time 18:00h – 19:30**

**Tapas Cocktail Reception**

**Time 19:30 :** Buses leave for San Sebastian

Time 10:00h - 12:005h



Visit to CIC nanoGUNE Consolider, San Sebastian

Website: <http://www.nanogune.eu/en/>

Please book a place for the visit with Natalie Withenshaw  
([natalie.withenshaw@ctechinnovation.com](mailto:natalie.withenshaw@ctechinnovation.com)) by 1st October 2013

Time 12:00h: End of the 4M2020 Conference