

IVAM Product Market “High-tech for Medical Devices” at COMPAMED 2012

November 14 to 16, 2012, hall 8a (booths F19, F29, F34, G19, H19, H23, H29)

The supplier fair COMPAMED will again take place within the world's biggest trade show for medical technology MEDICA in Dusseldorf from November 14 -16, 2012. The COMPAMED has become an international leading trade fair for the supplier market of medical manufacturing.

The trade show will be accompanied by the established specialist forum, which has been renamed COMPAMED HIGH-TECH FORUM. At the same time, IVAM will present the Product Market “High-Tech for Medical Devices”. The focal themes include precision and quality assurance. Product Market and forum are organized by the [IVAM Microtechnology Network](#).

Micro-precise assembly and positioning for medical technology

[SYSMELEC S.A.](#) from Switzerland designs and realizes both standard and custom-designed machines for the high-precision assembly of miniaturized products and micro systems. Sysmelec also offers a wide range of consulting engineering services to help its customers in defining, qualifying and attaining their automatic process goals.

[Micromotion GmbH](#) produces micromechanical parts as well as the world's smallest backlash-free precision gears and actuators for rotary and linear positioning challenges.

[FMD - Feinmess Dresden GmbH](#) as reputed system supplier of high-precision drive solutions offers a broad range of linear and rotational stages to meet the requirements of research, science and industry. In the segment “customized solutions” the company has created ideal conditions for the design, manufacturing and assembly of special components and complex mechatronic systems.

Examining and measuring – quality assurance for highest demands

[Carl Zeiss Industrial Metrology](#) is a leading manufacturer of multidimensional metrology solutions such as coordinate measuring machines and metrology software for the automotive, aircraft, mechanical engineering and plastics industries. The company additionally offers a broad spectrum of customer services. Carl Zeiss Industrial Metrology is headquartered in Oberkochen, Germany. Further sites are located in Germany, the USA and China – with a global workforce of just under 1,800 people.

Surface quality is a decisive factor for the therapeutic effectiveness and, consequently, the commercial success of a product in medical technology. [NanoFocus AG's](#) optical 3D surface measurement systems are ideally suited for application in medical technology in the laboratory or production. The inspection solutions excel in their speed, high precision down to the nanometer, real 3D data as well as flexible use on almost all surfaces. Analyses of tribology of dental replica or implants as well as applications in laser surgery and microfluidics or inspection of stents are flexibly feasible. Measurements conforming to DIN EN ISO standards of tribology, micro geometry, volume, topography or layer thickness can be performed within only a few seconds.

[Philips Digital Photon Counting](#) designs and develops innovative, scalable digital detector solutions for the detection of lowest light levels (single photon counting) at highest temporal and spatial resolution in a broad range of applications such as medical imaging, high energy physics, analytical instrumentation or non-destructive material testing and many others.

Microstructures and -components for medical devices and life sciences

Glass components with microstructures for medical and screening applications: [IMT Masken und Teilungen AG](#), a leading supplier of glass components from Switzerland, is intensifying the focus on life science and medical applications. “As a partner for industry and research, we are involved in projects requiring biochips, wave guides with gratings, microchannels for flow cells often in combination with electrodes and optical functions,” says Dr A. Tzannis, Business Development Manager. IMT is applying its competences in large-scale manufacturing to provide high-end microstructures on and in glass at highly competitive prices. “Our know-how in large-scale

manufacturing of microchannels, electrodes, microoptics and coatings allows the supply of disposable components at costs that will enable technologies that have, hitherto, been hampered by too high costs for the disposables. We look forward to participate in these markets!"

MICROMETAL GmbH specializes in etching of highly accurate metal micro components. With StepLine-Ultra and StepLine-3D, MICROMETAL brings a new dimension in the micro technology. As a leading user of etching, the company is known to etch micro components in very large quantities and in a worldwide unique precision. In 2012, MICROMETAL occurs specifically with two new processes on the growing markets of medical and microsystems technology. 1. StepLine-Ultra: etching technology for most metals and alloys. MICROMETAL utilizes all degrees of freedom to etch your component. The result: high-precision components in an infinite variety of materials. StepLine-3D: The three-dimensional etching technology for shapes and surfaces. The result: 3D-hightech solutions in single-part and series production.

Etchform BV, from the Netherlands, offers "Etching & electroforming" of metal precision parts, whereby, in all aspects, the company is able to offer better "Precision in Performance" for their customers. Thanks to many years of experience in Research & Development, customers benefit from counsel and support during the development phase of the product, ensuring excellent results, efficiently and on time.

CDA GmbH has a high competence in molding and finishing of extensive microstructures and in customized volume production of these structures. At COMPAMED, the company presents the customized production of optical discs, optical elements, plated micro parts, embossing tools and consumer items for bio- and medical technology as well as highly-automated and cost-effective volume production in molding and coating technology, transition to volume production, glass mastering (photoresist technology), electroforming, high flexibility in production and logistics solutions.

EDC GmbH is partner for the production of nano- and micro-structured polymer products with functional surfaces. The core technologies of EDC are high-precision injection-compression molding and galvanic processes under clean room conditions. Additionally, EDC offers expertise and process know-how in photolithography, metallization (sputtering) of different materials and automatic mounting and assembly. To meet the demand of higher integration and complexity, EDC presents the concept and realisation of 3-D LOC devices. The functionality of the 3-D LOC can be improved by means of different surface coatings, printing of strip conductors and electrical resistances. Optional sensors, optical and micro mechanical devices can be mounted automatically.

FISBA OPTIK is a worldwide leading supplier of optical systems, assemblies and customized components. FISBA offers a full-service package, which is perfectly tailored to specific demands and needs of customers, from the moment of the first contact until the delivery of the product. The company offers the advantage of more than 50 years of counselling, development and manufacturing and innovative process- and manufacturing technologies.

Minitubes S.A., from France, has developed an innovative tube manufacturing process, combining cost efficiency with high performance alloys capability. High-speed strip welding and forming close to the final tubing size contribute to cost savings. Associated with Minitubes processing experience of high-performance alloys, such as Co-Cr and inconels, enhanced performance becomes affordable for products such as catheter shafts and MRI compatible instruments. Cap piercing probes have been developed for IVD testing. Alloy selection, very smooth ID and innovative probe design have permitted a dramatic increase in probe life at a customer from 5 to 220K cycles with a penetration force under 500 grams versus 5,400 grams for the original probe.

Cutting, drawing and cambering of complex metal parts for medical, aeronautics, electrical engineering, automotive and further industries: **SERODE**, from France, designs one step and progressive dies in a collaborative way then realize and support them. Concerning the medical industry, Serode is particularly skilled in forming titanium components like pacemakers, defibrillators, access ports and many more.

Surface technology

Since 60 years **POLIGRAT** has specialized in development, production and application of processes for finishing metal surfaces (Stainless Steel, Mild Steel, Titanium, non-ferrous metals).

In order to develop new reliable, efficient and functional micro- and nanoscale biomedical devices, control over the surface properties is essential. Via **Surfix**'s proprietary surface modification technology the surface properties of micro- and nanoscale biomedical devices can easily be controlled, tuned and manipulated in a versatile and reproducible manner. With relative ease the wettability, biocompatibility, bioselectivity, and optical and electronic characteristics of various inorganic and polymeric surfaces can be locally adjusted and controlled. A wide variety of terminal functional groups can be implemented, allowing the immobilization of complex (bio)organic molecules, such as antibodies, DNA, proteins, cells, and catalytic or redox active moieties.

Specialty Coating Systems (SCS) will be exhibiting their Parylene conformal coating services and technologies at COMPAMED 2012. SCS Parylene coatings are biocompatible, biostable and offer excellent moisture, chemical and dielectric barrier properties for many medical devices, including stents, catheters, pacemakers, needles and mandrels, and for pharmaceutical containers and applications as well. Ultra-thin and perfectly conformal, Parylene coatings are ideal for advancing medical technologies. According to SCS Sr. Medical Market Specialist Lonny Wolgemuth, "SCS has exciting news to share with the visitors at COMPAMED, including new applications for Parylene and new technology developments."

Microsensors for improved patient care

ACEOS GmbH presents its established and reliable sensor technology for measurements of O₂ and CO₂ concentrations and volume flow rates in human breathing. Besides prestigious global manufacturers, its own end device brand, named aerolution, shows best sensor performance and applicability. In that context, ACE-DXV is a combined module with integrated pump, temperature, humidity and pressure sensors which allows for a one point calibration only with ambient air. "The further development of ACEOS technology will lead to so called "cold sensors" for measurements up to 100% O₂. New medical applications, e.g. ventilation, will be addressed soon," says Martin Kusch, director of int. sales, sensor modules.

HSG-IMIT presents novel microsystems and sensors for use in medical technology. This includes the drug delivery system "BuccalDose" for liquid or water-soluble drugs. BuccalDose is designed as a disposable, having no active electric components, and is attached into a removable partial denture. Consequently, the dosage system can deliver drugs, e.g. for Parkinson therapy, directly to the buccal mucosa where they are efficiently absorbed by the body. With respect to thermal sensors, a MEMS flow sensor for medical emergency ventilation is presented. Generally, the high humidity of the exhaled air is considered to be a challenge for this kind of application. Therefore, an integrated chip heating is implemented to actively prevent condensation on the sensor.

Sensirion will be showcasing its leading expertise in the field of flow measurement at COMPAMED. The new SFM3000 mass flow meter for anaesthesia and respiration applications features very low pressure drop and highest accuracy. In the differential pressure sensor area, most impressive are the new versions of the digital SDP600 and analog SDP1000 Series. The sensor company continues to demonstrate its high-technology capabilities in the field of liquid flow sensors. In addition to the proven microsensors LG16 and LG01, Sensirion will be presenting a new universal flow meter for high-precision handling of even the smallest fluid quantities. Furthermore, Sensirion is launching a real innovation. With dimensions of just 2x2mm, the new SHTC1 is the world's smallest humidity & temperature sensor.

The CiS Forschungsinstitut für Mikrosensorik und Photovoltaik GmbH offers application-oriented contract research and development of optical, optoelectronic, impedimetric and piezoresistive sensors/Microsystems and full R&D service from sensor design to prototyping and test. This year's focus is on vital signs sensors (mobile monitoring of SpO₂, pulse, respiration rate) and glucose sensors. Furthermore, an accommodation system, a pupil aperture sensor, in situ impedance spectroscopy of biomaterial (skin, cell aggregates) and force sensors for catheters are showcased.

Biomaterials and Bio-MEMS

The area of Biomaterials at **Fraunhofer Institute for Manufacturing Technology and Applied Materials Research IFAM** shows its expertise in the field of material and process development for biomaterials at the COMPAMED 2012. IFAM introduces medical implants made of novel degradable composite materials. Furthermore, products with a functionalised titanium surface for improved ingrowths of implants will be presented. In addition, IFAM shows components made of biomimetic modified, hardened biopolymers. All materials can be processed by injection molding, extrusion and additive manufacturing processes in series and with complex geometries. Particular attention is paid to special technologies such as powder injection molding and manufacturing of micro parts and defined structured surfaces.

A wide range of applications is existent in micro and nano technology already. For instance, the area of BioMEMS is becoming the building block for diverse types of lab-on-a-chip devices enabling the manipulation of fluid flows through defined paths, heating and even detection of cells and bio molecules such as DNA. This technology supports to solve chemical and biological problems with special emphasis on molecular biology and energy. **iX-factory GmbH** is specialised in low volume MEMS so that this niche market can be perfectly served. State-of-the-art cleanroom facilities with targeted equipment enable the team to develop and produce customized MEMS devices. As an enormous advantage iX-factory GmbH makes available small amounts of devices with short time-to-market and in highest quality.

Components and system solutions for microfluidic applications

2E mechatronic is partner for mechatronic parts and systems. At COMPAMED 2E presents a micropump for medical technology. The latest development of the two companies DNE GmbH, Schnaitenbach and 2E mechatronic GmbH, Kirchheim/Teck is a micropump for conveying liquids and gases. The advantage of this development is the combination of the peristaltic principle with a cost-effective modular construction of diaphragm pumps. Features of this joint development are, for example, bidirectional conveyance of the materials, integrated flow stop, exchangeable fluidic part and single-digit target price (in Euro). Possible applications of the micro pump in medical technology are laboratory technology, analysis automats, diagnostics and lab-on-chip technology.

Little Things Factory has deep knowledge and strong capabilities in the production of substrates with microstructures in glass, quartz and silicon for flow chemistry and lab-on-chip applications. LTF also offers "all-in-one" solutions with pumps, sensors, software and hardware for lab automation and controlling.

Engineering services for medical technology: **Bartels Mikrotechnik** is the leading provider of engineering solutions in active microfluidics, especially for portable and miniaturized systems. As specialist in the handling of small volumes of liquids or gases Bartels Mikrotechnik is involved in different customer projects concerning the development of future portable medical devices. Realized examples of lab-on-a-chip systems, cartridges for diagnostic platforms, delivery devices, other therapeutic devices and customized microfluidic components as micro valves and micro pumps for medical instrumentation will be presented at the COMPAMED 2012.

Microelectronics and Electronic Manufacturing Services (EMS)

Leesys - Leipzig Electronic Systems presents Electronic Manufacturing Services, plastic processing and expertise in wired and wireless networks. IT and medical technology are coalescing and forming functionally integrated systems for data acquisition and transmission. The access to medical data through WLAN, GPRS, EDGE, UMTS / HSDPA, GPS and LTE is essential. OEM requires a partner, who is at home in this world of communication

Leading Swiss PCB manufacturer **Optiprint AG** is looking forward to presenting their high-end printed circuit board capability at COMPAMED 2012: Featuring best-in-class thin "flex" multilayer that is used in applications such as hearing aids, pacemakers, prosthesis and neuromodulation. Micro structures with 25 µm line-and-space compliment HDI-PCBs with blind-and-buried vias or stacked-via technique (overlapping Copper filled vias). In addition to conventional surface treatments like "chemical Tin,"

Optiprint offer universal (and wire-bondable) high-end surface finishes like ENIG, ENEPIG and ASIG (Silver-Gold).

TURCK duotec produces customized electrical devices and high-tech components such as pressure, temperature, acceleration, and flow measurement sensors for medical equipment and offers electronic services like Electronic Manufacturing Services, circuit and layout design, and testing equipment as well as the following packaging technologies: Chip-on-board, hybrid thick film technology, flip chip, THT, SMD, etc.

THEON SENSORS MEMS business unit specializes in the development of silicon-based modules utilizing microelectronic technologies. Its prime scope of work is to design, develop and produce flexible and customer-specific MEMS modules via standard industrial processes employed for sophisticated applications.

Efficient Network for Business-to-Business success

At COMPAMED 2011, the **IVAM Microtechnology Network** will demonstrate the advantages it offers to high-tech suppliers. With IVAM's help, about 300 companies and institutes from approx. 20 countries open up innovative markets and set new standards. IVAM accelerates the transfer of innovative ideas into profitable products. Apart from technology marketing, IVAM's activities include lobbying, market research, mission-oriented research and accessing international markets.

Further information:

Further information and an exhibitor overview including contact data can be found at <http://www.ivam.de/calendar/compamed12>

Images for editorial use (including reference) can be downloaded at

<http://web.ivam.de/dl/Press%20Images%20COMPAMED>

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Captions and sources of pictures:

2E_mechatronic_1.jpg

Modular design

Source: 2E mechatronic GmbH & Co. KG

2E_mechatronic_2.jpg

Micropump for conveying liquids and gases

Source: 2E mechatronic GmbH & Co. KG

ACEOS.jpg

Source: ACEOS GmbH

aerolution.png

Source: ACEOS GmbH

CDA.jpg

Printed electronics is an elegant feature to add more functionality into microstructured surfaces

Source: CDA Datenträger Albrechts GmbH

Etchform_1.jpg

Source: Etchform BV

Etchform_2.jpg

Source: Etchform BV

Fraunhofer_IFAM_1.jpg

Trauma plate made of highly filled PLA composites, for e.g. internal fixation of hand bones
Source: Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM

Fraunhofer_IFAM_2.jpg

X-ray picture of an implanted trauma plate
Source: Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM

HSG-IMIT_1.jpg

Intraoral drug delivery system "BuccalDose" integrated into a removable partial denture.
Source: HSG-IMIT

HSG-IMIT_2.jpg

MEMS flow sensor for use in medical emergency ventilation.
Source: HSG-IMIT

IMT_1. bmp

Electrically conductive structures for sensing applications
Source: IMT Masken und Teilungen AG

IMT_2. bmp

Glasscomponents with microchannels for microfluidic and biophotonic applications
Source: IMT Masken und Teilungen AG

Little_Things_Factory.jpg

Source: Little Things Factory GmbH

micrometal.jpg

Application example of etching shapes and surfaces.
Here producing surfaces with roughness according to customer's specifications.
Source: micrometal GmbH

Micromotion_1.jpg

Source: Micromotion GmbH

Micromotion_2.jpg

Source: Micromotion GmbH

Micro_Systems.jpg

Source: Micro Systems UK Ltd.

Minitubes.jpg

CAP Piercing
Source: Minitubes S.A.

Optiprint.jpg

Source: Optiprint AG

Poligrat_1.jpg

Source: POLIGRAT GmbH

Poligrat_2.jpg

Source: POLIGRAT GmbH

Specialty_Coating_Systems.jpg

SCS Parylene conformal coatings protect a wide array of medical device applications.
Source: Specialty Coating Systems

Sensirion_1.jpg

Humidity and temperature sensor
Source: Sensirion AG

Sensirion_2.jpg

Differential pressure sensor
Source: Sensirion AG

Sensirion_3.jpg

Mass Flow Meter SFM3000
Source: Sensirion AG

Sensirion_4.jpg

Universal Liquid Flow Meter SLI
Source: Sensirion AG

Surfix_1.jpg

Artist impression of photonic ring-resonator-based biosensor device with molecular surface modification
Source: Surfix BV

Surfix_2.jpg

Artist impression of nanowire-based biosensor device with molecular surface modification
Source: Surfix BV