# IVAM Product Market “High-tech for Medical Devices” at COMPAMED/MEDICA

**November 17 to 19, 2010, hall 8a, booth F19, F29, G19, G29, H19, H29**

COMPAMED, the international leading trade fair for the supplier market of medical manufacturing, opens its doors in the scope of MEDICA from November 17 to 19, 2010 in Düsseldorf, Germany. Experts of the medical technology industry show new developments, ranging from plastic and crystal components to material analysis as well as micro pumps and implants at the IVAM Product Market and the forum “High-tech for Medical Devices”. The focal themes include advanced materials, sensor technologies, systems integration and quality assurance. Another highlight will be the special exhibition on “Electronic Manufacturing Services” (EMS). The Product Market and the forum are organized by the **IVAM Microtechnology Network**.

## Quality management for medical technology products

The measurement of surface texture, finish, roughness, waviness, curvature, and slope of large samples with sub-nanometer accuracy succeeds with the new NPFLEX 3D-metrology system from **Veeco Instruments** that is based on non-contact, non-destructive white-light interferometric technology. Designed to investigate large and bulky objects, the system utilizes an open gantry that provides full access and allows custom fixing and mounting. The “ContourGT” Product Family is Veecos 10$^{th}$ generation of non-contact, 3D-optical surface profilers and delivers up to 10 times more capacity and throughput improvements in comparison with other systems.

InfiniteFocus, from **Alicona Imaging GmbH**, is a high resolution optical 3D-measurement system for quality assurance in the lab and in production. In medical device development, the system is commonly used for the measurement of dental implants. In particular, full roughness measurement is of major importance as the implants´ roughness is a decisive factor for its successful, and permanent, adhesion with the jaw bone. This means that also the root of the thread needs to be measured. In contrast to conventional techniques, InfiniteFocus yields repeatable and traceable measurements even at steep flanks, and, consequently, at the root of threads. With the use of focus-variation and the technical principle of the system, the user achieves real based measurements in a vertical resolution of up to 10 nm.

**NanoFocus AG** presents its flexible and reliable 3D-surface measurement systems for applications in medical technology. The product lines µsurf, µscan and µsprint deliver non-contact measurements in the micro and nanometer ranges as well as analyses according to latest DIN EN ISO parameters. The high precision surface metrology systems are applicable for the measurement of roughness, micro-geometry, topography and layer thickness – from R&D to inline production control. The new µsurf basic confocal microscope will be the center of the exhibitors’ presentation. It is perfectly suited for measurement tasks in support of medical device research, such as wear analyses of dental replica, measuring roughness and surface geometry of dental implant threads, in laser surgery and microfluidics.

**Fries Research & Technology GmbH** (FRT) offers a comprehensive range of metrological surface measuring systems for the non-destructive investigation of topography, thickness, roughness, abrasion, and many other properties.

## Advanced materials for medical applications

The department **Biomaterials Technology of Fraunhofer IFAM** shows its expertise in the field of materials and process development for biomaterials at COMPAMED 2010. For example, products with a functionalized titanium surface for improved ingrowth of implants will be presented. Furthermore, interference screws made from a novel calcium phosphate-PLA composite will be displayed. Also, IFAM shows components made from biomimetic modified, hardened biopolymers. All materials can be processed by injection moulding and extrusion processes and in series with complex geometries. Particular attention is paid to special technologies such as powder injection moulding and manufacturing of micro parts and defined structured surfaces.

**Specialty Coating Systems** (SCS) will be exhibiting their parylene conformal coating services at COMPAMED 2010. SCS parylene coatings are biocompatible and biostable and offer excellent moisture, chemical and dielectric barrier properties to many medical devices including stents, catheters, pacemakers, needles, mandrels, and elastomeric seals, to name a few. Ultra-thin and perfectly conformal, parylene coatings are ideal for advancing medical technologies. SCS' medical market specialist Lonny Wolgemuth comments: "In addition to parylene coatings, we will also be discussing our new adhesion promotion technologies with visitors."

**Jenoptik Polymer Systems** focuses its scope of service in the field of optoelectronics on the ever-increasing demands of the market for devices and testing procedures in rapid diagnostics. Sensitivity and specificity of semiconductor and optical components meet the full range of current and future assays and markers as well as the diversity of detection methods. Jenoptik is able to draw upon great experience in development and production of more than 100 million modules and components, which operate extremely narrowband at wavelengths specifically required in the range between UV 350 nm and NIR 1750 nm. The optimum balance of energy input on the one hand and signal detection on the other hand is achieved by using optical components, such as lenses and filters, especially adapted to the needs of rapid diagnostics.

**IMT Masken und Teilungen** is a leading manufacturer of glass components with microstructures for medical applications from Switzerland. The exhibitor is seeing the market change: "We have been supplying bio-chips, sensor components, wave guides and micro-channels for years" says General Manager Alexios Paul Tzannis, PhD. "The demand is shifting from small quantities for tests and prototypes to large quantities for industrial production." IMT is applying its competences in large scale manufacturing to meet the demand for high-end microstructures on and in glass for medical applications. "Our know-how in optics, micro-channels, electrodes, micro-optics and coatings combined with our capability for large scale manufacturing is the right combination for the industry. Glass has its advantages in many applications - we look forward to participating in these!"

**Chemviron Carbon** manufactures Zorflex Activated Carbon Cloth mainly used in wound dressings amongst other medical devices. Zorflex can be impregnated with silver. Recent testing was carried out in an attempt to compare the amount and type of silver leached from 3 different types of silver containing wound dressings. Test results confirmed that the Zorflex containing dressing leached the lowest level of silver compared with the other two dressings. Up to a 91% reduction in the level of leached silver was measured. There was strong evidence to suggest that leached silver from the Zorflex containing wound dressing was nano-particulate and not ionic as per the other two dressings. Alleged cytotoxic effects of silver are associated with entry to the body via silver released into a wound.

## Micromanufacturing for medical technologies

**The Fraunhofer Institute for Laser Technology** is one of the most important development and contract research institutes of its specific field worldwide. The activities cover a wide range of areas such as the development of new laser beam sources and components, the use of modern laser measurement and testing technology and laser-supported manufacturing. This includes for example laser cutting, caving, drilling, welding and soldering as well as surface treatment, micro-processing and rapid-prototyping. Furthermore, the Fraunhofer Institute for Laser Technology is engaged in laser plant technology and process control as well as in entire system technology.

**ROFIN BAASEL Lasertech** is one of the leading developer and manufacturer of lasers and laser systems in the area of finest cutting, welding, drilling, ablating and marking. ROFIN offers the world's first complete solutions on the basis of the StarFemto femtosecond laser, which is suitable for industrial use. An example of this is the new StarCutTube Femto for athermal laser cutting in medicine-technical manufacturing. "Cold" material processing with femtosecond laser pulses is one of the most promising new technologies for medical technology and photovoltaics, among other things. The StarCutTube Femto cuts sensitive materials such as NiTi shape memory alloys with the highest accuracy, an extraordinarily good cutting quality and virtually rework-free. On top of that, bioabsorbable plastics such as polylactides or polyglycolides can be cut precisely with femtosecond lasers.

**Micromotion GmbH** produces micromechanical parts as well as the world's smallest precision gears free from backlash and actuators for rotary and linear positioning challenges. Compact design and high power density make these products ideally suited to demanding applications in medical equipment. The micromechanical parts built up with LIGA technology are applied for miniaturized adaptation mechanisms in systems like endoscopes. An integration of these parts to fully encapsulated micro gears enables the usage in applications with extreme environmental conditions (UHV and sterilisable applications). Positioning challenges with resolutions of few nm for microscopy can be realized by combining these micro gears to high precision multi axis positioning tools with smallest dimensions.

**Micro Systems (UK) Ltd** will have a micro-molding machine running on its stand demonstrating fully automated production of micro-medical components. The company will also exhibit micro-molded parts with small holes, meshes and micro/nano feature sizes, and micro insert-molded components. Components to be shown include catheter tips, bio-resorbable components for surgical applications, drug delivery clips featuring a 7 mm long, 0.32 mm dia hole at a compound angle, micro-connectors with 0.2 mm dia through-holes, parts for microfluidics, and plastic diffractive optics.

**HARTING AG Mitronics** has comprehensive competence in microsystems and offers a complete value chain for 3D MID packages in development and production of customer specific products. The company enables the realization of innovative multifunctional packages for e.g. MEMS, sensors and RFID transponder in applications like automation, telecommunication, medical and logistics. 3D-MID housings made in LCP or PBT can support the realization of additional functions. The utilization of the third dimension opens up new possibilities for the construction of sensors. COB (Chip on Board) Technology is favored for microsystems in order to minimize space consumption. NCA Flip Chip and wirebonding are applicable and available technologies for MID substrates.

## Special exhibition: Electronic Manufacturing Services (EMS)

**LACROIX ELECTRONIQUE** as a part of the LACROIX-Group generated a turnover of nearly 115 million in 2009 with about 1,400 employees. Founded over thirty years ago LACROIX ELECTRONIQUE has evolved into a dynamic partner in Electronic Manufacturing Services (EMS). As EMS-Provider, with manufacturing bases in Germany, France, the Maghreb countries and Eastern Europe, the exhibitor offers tailored services aimed at giving a suitable response to each customer issue. The services are supported by a living quality and process management. Customers come from the fields of Industrial, Medical, Automotive and Defence as well as Avionics.

**ECR AG** specializes on the production and testing of high-value electronic assembly groups as well as on the final assembly of technically complex appliances, which are used in medical, machine, measurement and sensor technology.

**AEMtec** provides development, qualification, industrialization and production of miniaturized complex assemblies through using high-end chip-level-Technologies e.g. COB or Flip Chip. As a member of a strong holding and due to collaboration with renowned research institutions, AEMtec's customers benefit from the flexibility of a mid-sized company combined with an outstanding design competence to strengthen the innovative capabilities of its custom.

**GS Swiss PCB AG** is a Swiss manufacturer and specialist for miniaturized PCBs as well as highly reliable substrates. The company focuses mainly on the medical market and especially on hearing instruments and implants.

## Microfluidics

**Bartels Mikrotechnik GmbH** will present micro pumps for infusion therapy at COMPAMED 2010. In medical applications, such as infusion therapy, micro pumps can be an attractive alternative to standard pumps due to their size, weight and low energy demand. The micro pump "mp6-psense" with its double actuator configuration offers the possibility of an intrinsic flow control. Therefore it can fulfil higher requirements on safety and accuracy under varying conditions as the standard pump mp6. By the controlled loop function the flow can run constantly under varying conditions as pressure, viscosity

or temperature changes. The “mp6-psense” will be demonstrated at this years’ exhibition in hall 8a, booth H19.2.

**Microfluidic Chipshop** develops and produces micro technical components and systems, especially microfluidic systems. At COMPAMED, the company will present the CD-MEDICS project: Driven by the need for improved diagnosis and monitoring of coeliac disease, the project will enable enhanced molecular diagnostics leading to earlier results, thus contributing to increased quality of life. The panel discussion within the forum will focus on key development and integration areas to deliver an integrated health-tech solution: sensor technologies or molecular diagnostics, microfluidics, ICT-enabled instruments and health-record integration. Speakers at the Forum will come from a full range of CD-MEDICS activities, from the lab to healthcare informatics. Prof Ciara O’Sullivan, CD-MEDICS Coordinator, says: "IVAM have provided the opportunity, with the ideal audience, at the right stage in the project lifetime to showcase the next generation of smart diagnostic systems fully integrated into healthcare systems in Europe".

A new development at business unit MICROrun of **PARItec GmbH** concentrates on micro dosing. The application is a novel method to facilitate early diagnosis of colon cancer. Via an endoscope a few µ litre of a novel optical label are injected in vivo into the tumour. The injection system has to overcome a 200 cm long tube maintaining the precision. The concept, feasibility and the development of this novel micro dosing system are carried out by MICROrun. First tests with functional models were very promising. Besides several versions of micro pump O-run BU MICROrun offers development of customized micro fluidic components and complete systems.

**HNP Mikrosysteme** produces micro annular gear pumps which are miniaturized rotating displacement pumps. mzr-pumps are used when small volumes or volume flows of liquids must be applied precisely and fast. These pumps are characterised by low pulse delivery, minimal shear stress, small dimensions, minimal dead volume, powerful materials and long service life. Due to chemical resistant materials used for mzr-pumps, a chemical sterilisation is possible. Beside several application possibilities at plant engineering and construction, chemical processing and pharmaceutical industry, mzr-pumps are used for demanding metering tasks in the field of life sciences and analytical instrumentation, such as sample preparation to identify pathogens or blood parameters.

In the spirit of “Open Innovation”, **Philips Research** offers access to a wide range of high-tech research and innovation services, technological infrastructure and expertise, to help high-tech organizations in their innovation programs. This includes expertise in such medical technologies as nanomedicine, microfluidics, biomaterials, and medical image processing. High-tech innovators can tap into our capabilities including contract research, innovation consultancy, business venturing, and a range of research & development services. These comprise support for user-centric research, concept development and prototyping, thin film technology and microsystems, test measurement and materials analysis. At COMPAMED, Philips Research will highlight how we support Open Innovation in these fields.

## Innovative sensor technologies

The winner of the IVAM-Marketingprize, **ACEOS GmbH,** shows its OEM O2-CO2-Flow-module with optional on-board breath-analysis for the first time. The ACE-DXV has an integrated pump, temperature- and pressure-sensors and analyzes the gas concentration within milliseconds. Through the FDA certified volume flow sensor it is also possible to determine the amount of gas. The ACE-DXV can also calculate such useful parameters as VO2, VCO2 and RQ. The board of a size of a postcard meets the RoHS standard, can be calibrated with ambient air, has no consumables and can be connected via USB-port. "Among others our customers are companies from the medical, sports and fitness market. They use the ACE-DXV to determine the metabolism of end-customers through analyzing their breath", says Gunnar Jung - product manager at ACEOS.

One of the main activities of the **CiS Research Institute** is the development of medical sensor systems adapted to the need of our customers. We focus on micro-optical and haptic sensor systems to provide solutions for long-time monitoring of vital signs, determining blood glucose, measuring local dermal impedances and for identifying micro-forces in catheter tips. As a highlight, the exhibitor is going to present the award-winning In-ear sensor system for non-invasive, long-time monitoring of the cardio-respiratory state.

**Micro-Hybrid Electronic GmbH** develops and manufactures as all-in-one service provider modern electronic and sensor components. LTCC and Hybrid Technologie belong to the exhibitor's program as well as the production of electronic and sensor components according DIN 58947 (hot air sterilisation) and DIN 12394 (autoclaving). For applications in medicine gas measurement the company produces infrared components for NDIR gas analysis (thermopiles, pyrodetectors, infrared sources).

**Sensirion AG** will again showcase its leading expertise in the field of flow measurement at COMPAMED 2010. Capturing attention in differential pressure sensors are a new version of the successful SDP600 series with its failsafe certification as well as the new SDP2108 with its still faster response time and higher measurement range. These innovative developments bring with them major benefits for medical technology, especially in anaesthesia and ventilation. Sensirion will also demonstrate its high-tech capabilities in the measurement of the liquid flow sensors. This know-how makes the new LG64-2000 an international leader in the validation of infusion pumps. Finally, the company will present the smallest digital humidity sensor in the world. The SHT2x sensor is the embodiment of high performance in a miniature format.

## High-tech network

At COMPAMED 2010, 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. As a communicative bridge, IVAM accelerates the transfer of innovative ideas into profitable products. Apart from technology marketing, IVAM's activities include lobbying, market research, education and training, and accessing international markets.

**www.ivam.eu**

**Further information and an exhibitor overview including contact data can be found at www.ivam.de/compamed10_en. Please contact the exhibitors directly in case of any questions concerning product details or pictures.**

**Pictures for editorial use (including reference) can be downloaded at http://web.ivam.de/dl/COMPAMED%20images**

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## Captions and sources of pictures:

**ACEOS 1.jpg**
**ACEOS 2.jpg**
ACE-DXV – O2, CO2 module. Source: ACEOS GmbH

**Alicona.jpg**
The optical 3D measurement device "InfiniteFocus". Source: Alicona Imaging GmbH

**Bartels Trumpet Curve.jpg**
Source: Bartels Mikrotechnik GmbH

**Bartelsmp6 piezoesensor_.jpg**
Source: Bartels Mikrotechnik GmbH

**CIS 1.jpg**
Individual in-ear sensor. Source: CiS Forschungsinstitut

**CIS 2.jpg**
Micro optical reflection sensor. Source: CiS Forschungsinstitut

**COMPAMED_1.jpg**
**COMPAMED_2.jpg**
**COMPAMED_3.jpg**
Impressions from the Product Market and the forum “High-tech for Medical Devices”. Source: IVAM.

**Fraunhofer_IFAM_1.jpg**
Interference screw made from PLA, hydroxyl apatite and stainless steel. Source: Fraunhofer IFAM.

**Fraunhofer_IFAM_2.jpg**
Microstructured implant surface for enhanced ingrowth. Source: Fraunhofer IFAM.

**HNPM 1.jpg**
Micro annular gear pump mzr-2521 for fast and highly precise metering in the field of analytical instrumentation. Source: HNP Mikrosysteme GmbH

**HNPM 2.jpg**
Micro annular gear pumps are integrated into open pipetting systems. Source: HNP Mikrosysteme GmbH

**Micromotion 1.jpg**
Micro gear systems. Source: Micromotion GmbH

**Micromotion 2.jpg**
3-axis micro manipulator. Source: Micromotion GmbH

**NanoFocus 1.jpg**
Confocal microscope µsurf basic for industrial research. Source: NanoFocus AG

**NanoFocus 2.jpg**
3D measurement of a dental implant thread. Source: NanoFocus AG

**Philips 1.jpg**
Expertise in biosensors and microfluidics. Source: Philips Research

**Philips 2.jpg**
Expertise in nanomedicine & molecular diagnostics. Source: Philips Research

**Sensirion 1.jpg**
Differential pressure sensors. Source: Sensirion

**Sensirion 2.jpg**
World’s smallest digital humidity sensor: SHT21. Source: Sensirion

**Sensirion 3.jpg**
Humidity sensor SHT21 Source: Sensirion

**Veeco 1.jpg**
Source: Veeco Instruments

**Veeco 2.jpg**
Source: Veeco Instruments