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Fraunhofer

Research of practical utility lies at the heart of all activities pursued by the Fraunhofer-Gesellschaft. Founded in 1949, the research organization undertakes applied research that drives economic development and serves the wider benefit of society. Its services are solicited by customers and contractual partners in industry, the service sector and public administration.

At present, the Fraunhofer-Gesellschaft maintains 66 institutes and research units. The majority of the nearly 24,000 staff are qualified scientists and engineers, who work with an annual research budget of more than 2 billion euros. With its clearly defined mission of application-oriented research and its focus on key technologies of relevance to the future, the Fraunhofer-Gesellschaft plays a prominent role in the German and European innovation process.

At the Medtec 2015 several Fraunhofer Institutes are presenting their current research in different medical sectors. This year the focus is on clinical diagnostics, with exhibits like a miniaturized cytometry for a combination of cell counting and cell sorting of rare tumor cells, as well as on the further development of implants and medical instruments. On display are for example a titanium cranio-implant for a specific patient or a surgical spreader with a particular sensor integration.

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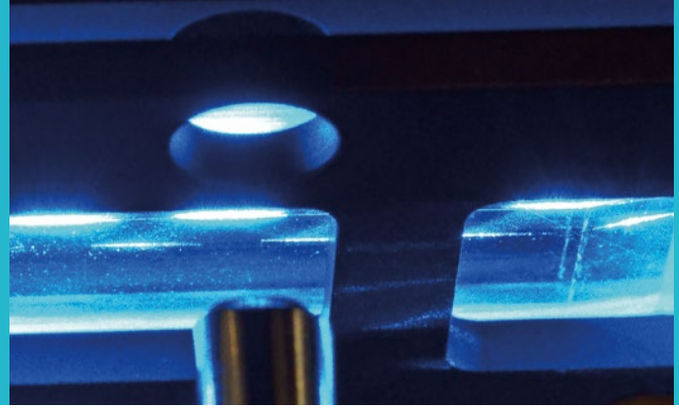
MEDTEC 2015



Fraunhofer Institute for
Applied Polymer Research IAP

- Development and production of implants, in particular for the area of ophthalmology
- ArtCornea® and ACTO teckpro - selective surface modification for clear vision and good tissue tolerance (no medical devices)
- ArtCornea® has already helped multiple people regain their sight

Fraunhofer Institute for
Chemical Technology ICT, Branch ICT-IMM

- Platform to enable advanced cancer research, automated isolation of single circulating tumor cells
- Blood biochemistry cartridge and instrument for fully automated blood analysis directly at the patient's home
- Automated PCR module based on the moving plug concept enables an ultra-fast PCR capable of running 30 cycles in 6 minutes

Fraunhofer Institute for
Interfacial Engineering and Biotechnology IGB

In vitro test systems as alternative for animal testing

- Accredited testing of cytotoxicity of medicinal, industrial and research products according to DIN ISO 10993-5
- Accredited testing of phototoxicity of substances, solvents and oils (according to OECD Guideline 432)
- Human 3D tissue models for testing of pharmaceuticals and cosmetics

Regenerative medicine

- Non-invasive analysis of implants with Raman spectroscopy
- Electrospun scaffolds as off-the-shelf implants
- Cell and protein therapy development

Fraunhofer Institute for
Manufacturing Engineering and Automation IPA

- Sirex is a new nature inspired surgical instrument for drilling asymmetric holes. A balanced drilling process without any transfer of torque to the work piece is enabled.
- Biomechatronic Engineering – in order to improve human mobility in rehabilitation and in surgical intervention, more physics-based medical devices change the technology

Fraunhofer Institute for
Machine Tools and Forming Technology IWU

Implants and medical device components

- Adaptive hip stem and pedicle screw with shape memory components for an improved anchorage in the osseous structure
- Surgical aspirator made by shape memory alloy for a gentle removal of brain tumors
- Nano structuring of DLC coating layer on micro structured mould inserts for direct functionalization
- Hip stem implant with channels and cavities manufactured as a prototype with laser beam melting technology
- Orbita implant (orbital lamina) for cranio-maxillofacial surgery
- Stapes implant prototype micromachined in titanium
- Desinging a therapeutic device for the treatment of adolescent scoliosis

Kunstgelenk - Endoprosthetics network

- Measurement system for hip implant surgery to determine objective the hip joint centered leg length and the hip rotation center
- Modular hip implant for a fine adjustment of the implant during the surgery