

TAKING CARE

In tomorrow's healthcare system, people's well-being and ability to perform will be at the centre of attention, yet at the same time medical treatment must remain financially affordable. The goal of current research in the health sector is to produce innovations which make prevention, diagnosis and therapy more reliable, faster and cheaper. Fraunhofer Institutes have taken up the challenge and are conducting important development work in the field of medical technology. The Life Sciences are delivering new measurement principles. Materials research and microelectronics are enabling biological and technical systems to be combined and sophisticated production technology is ensuring that the systems are manufactured reliably and cost efficiently.

Find out how Fraunhofer developments are revolutionizing modern medicine. From patient friendly mini-sensors and standardized networks to user-adapted platforms – the developments of the Fraunhofer Institutes focus on people and their individual needs.

Fraunhofer Institute for Biomedical Engineering IBMT

www.ibmt.fraunhofer.de

Fraunhofer Institute for Machine Tools and Forming Technology IWU

www.iwu.fraunhofer.de

Fraunhofer Institute for Manufacturing Technology and Advanced Materials IFAM

www.ifam.fraunhofer.de

Fraunhofer Institute for Manufacturing Engineering and Automation IPA

www.ipa.fraunhofer.de

Fraunhofer Institute for Production Technology IPT

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At present, the Fraunhofer-Gesellschaft maintains more than 80 research units in Germany, including 60 Fraunhofer Institutes. The majority of the 18,000 staff are qualified scientists and engineers, who work with an annual research budget of €1.65 billion. Of this sum, more than €1.40 billion is generated through contract research. Two thirds of the Fraunhofer-Gesellschaft's contract research revenue is derived from contracts with industry and from publicly financed research projects. Only one third is contributed by the German government in the form of base funding, enabling the institutes to work ahead on solutions to problems that will not become acutely relevant to industry and society until five or ten years from now.

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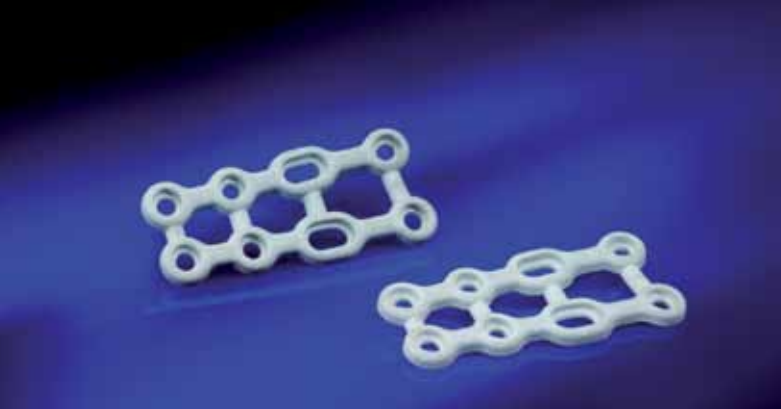
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OUR TECHNOLOGIES AND SERVICE PROFILE

Functional Materials & Surfaces

- Antimicrobial polymers, adhesives and coatings
- Bio-active / bio-functional, biomimetic, biocompatible surfaces
- Microstructured surfaces and foils
- MRI-safe high strength fiber-reinforced plastics
- Micro patterned large area foils for influencing the behavior of biological cells
- Shape memory and super-elastic materials
- Metal foams and cellular materials
- Volume and surface structuring of implants

Biomedical Technology

- Motion detection and motion control
- Prosthetics and orthotics
- Active medical implant for treatment of hydrocephalus
- Wireless powering of medical implants
- Micro patterned polymer foils for cell culture applications
- Biofunctional Testing
- FE – Simulation
- Engineering of Medical devices
- Smart cryovials

Production Technology

- Production routes for medical parts
- Rapid Prototyping and additive manufacturing with medical materials
- Simulation and optimisation of production processes
- Modular Process Automation Laboratory
- Rapid conception and evaluation of automated manufacturing and laboratory processes
- Comprehensive module and technology library for liquid handling, micro-dispensing, quality control, handling and micro-assembling
- Parallel comparison and qualification of rival technologies for process development
- Neutral product and process interface techniques
- Development of automated processes for fiber-reinforced plastics
- Micro-Pultrusion and Micro-Pullwinding of medical devices
- Powder injection molding of biocompatible metals
- Extrusion and injection molding of biopolymers
- Development of compounds for resorbable composites
- Roll-to-Roll hot embossing of sub- μm micro structures
- Precision and micro manufacturing
- Bulk metal forming
- Processing technology for degradable implants
- Polycarbonate urethane production technology

Clean Quality Manufacturing

- Cleanliness and cleaning validation
- Certification of equipment and devices
- Development of cleaning technologies

Miniaturisation

- Microsystems technologies
- Microimplants & Microsensors
- Biosensor and biochip packaging
- Minimally invasive medical devices
- Miniaturized fiber-reinforced plastic profiles
- Miniaturized valve system for medical implants
- Foils comprising micro patterns in the sub μm range
- 3-D Dosing Technology

Integrated product development for

- Orthopedics
- Minimally invasive procedures
- Additive manufacturing of prothesis
- Active medical implants
- Patient-specific implant design
- Point of care diagnostics
- Integration of novel functions and features in implants

“Labor der Zukunft” – Tomorrow’s laboratory

- Innovative laboratory technologies
- Laboratory management systems
- Laboratory networks
- Mobile laboratory BSL3

