PROFILE OF THE INSTITUTE

The Fraunhofer Institute for Surface Engineering and Thin Films IST in Braunschweig is an innovative partner for research and development in surface technology, with expertise in the associated product and production systems.

Around 120 employees work together with customers from industry and research to develop customized and sustainable solutions: from prototypes, through economic production scenarios, to upscaling to industrial magnitudes – and all this whilst maintaining closed material and substance cycles. In addition to application-oriented research and development, scientific principles are also researched within various collaborations with universities and research institutions.

Coating and surface technology is the key to innovative products and systems: Through modification, patterning and coating of the surface, a wide range of functions and functionalities can be realized. One of the institute’s particularly strong points is its ability to create the optimum process chain for the respective task on the basis of a broad spectrum of processes and coating materials. The Fraunhofer IST not only has excellent capabilities in surface analysis using the very latest equipment but has also accumulated extensive experience in the modeling and simulation of both product properties and the associated processes and production systems.
Functional Coatings and Surfaces

Our Business Units

Mechanical Engineering, Tools and Automotive Technology
- Automotive components
- Driving and bearing components
- Light construction
- Additive manufacturing
- Sealing technology
- General mechanical engineering
- Thin film sensor systems
- Tools for cutting, forming and molding

Energy and Electronics
- Photovoltaics
- Batteries
- Fuel cells
- Architectural and automotive glazing
- Sensors and actuators, MEMS
Optics
- Optical components and systems
- Microscopy and spectroscopy
- Displays

Aerospace
- Finishing of lightweight structures
- Optical measurement and communication technology
- Protective coatings for aircraft components
- Space qualified optical coatings

Life Science and Ecology
- Bioanalytics and diagnostics
- Medical technology, e.g. implants, plasma medicine
- Packaging and textile technology
- Treatment of natural products
- Water purification and treatment
FUNCTIONAL & INNOVATIVE

Tailored coatings and surfaces

Layers for reduction of friction and wear protection, e.g. diamond-like carbon, diamond, hard coatings

Erosion protection and anti-corrosion layers

Electrical and optical functional coatings

Sensoric and actuatoric coating systems

High-temperature barriers

Adhesive and anti-adhesive layers, antifouling

Functionalization of surfaces

Photocatalytically active coatings

ECONOMICAL & POWERFUL

Processes and plants

PVD and PACVD processes (physical and plasma activated chemical vapor deposition)

Plasma diffusion treatment

Atmospheric pressure plasma processes, microplasmas, plasma particle technology

Hot-filament CVD and ALD processes

High Power Impulse Magnetron Sputtering (HiPIMS)

Electroplating processes, composite plating

Hollow cathode processes

Microstructuring by photolithography, laser writing and laser processes
RAPID & RELIABLE

Quality control and analysis
- Micro- and surface analysis
- Microscopy and structure analysis
- Optical characterization
- Electrical characterization
- Plasma diagnostics and simulation
- Product monitoring and failure analysis
- Specific test procedures
- Testing upon request, 24-hour-service

SUSTAINABLE & ECOLOGICAL

Product and production systems
- Life cycle management
- Sustainable factory planning
- Environmentally compatible cleaning techniques

COMPETENT & EFFICIENT

Technology transfer
- Development of prototypes and manufacture of hand-held devices
- Concepts for coating devices and plasma sources
- Simulation and optimization of coating setups
- Design of process chains and production systems
- Consulting and training
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FUNCTIONAL COATINGS AND SURFACES

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