

Fraunhofer IMWS

Project-based industry-oriented contract research

The Fraunhofer IMWS is the point of contact for industry and public contracting bodies on the topic of material functionality and reliability. Its core competencies are microstructure diagnostics and design. We understand materials down to the molecular level and link their microstructure to their functionality, efficacy and durability.

Fraunhofer-Gesellschaft

Fraunhofer IMWS is a member of the Fraunhofer-Gesellschaft, Europe's largest application-oriented research organization. Its research activities are conducted by 69 institutes and research units at locations throughout Germany. More than 70 percent of the Fraunhofer-Gesellschaft's contract research revenue is derived from contracts with industry and from publicly financed research projects. Fraunhofer research efforts are

geared entirely to people's need: health, security, communication, energy and the environment. We are creative. We shape technology. We design products. We improve methods and techniques.

Reasons for a cooperation with Fraunhofer IMWS

Fraunhofer IMWS uses the latest material science and technology developments. It has a broad-based range of expertise – more than 200 motivated and competent employees can form teams that meet any project's individual needs. Many hundreds of successful research and development projects carried out every year and a certified quality management system are proof of the institute's reliability in carrying out projects that meet the needs and conditions of industry. The high level of customer satisfaction proved by customer surveys confirm our reputation.

Fraunhofer Institute for Microstructure of Materials and Systems IMWS



Group
Characterization of medical and cosmetic care products

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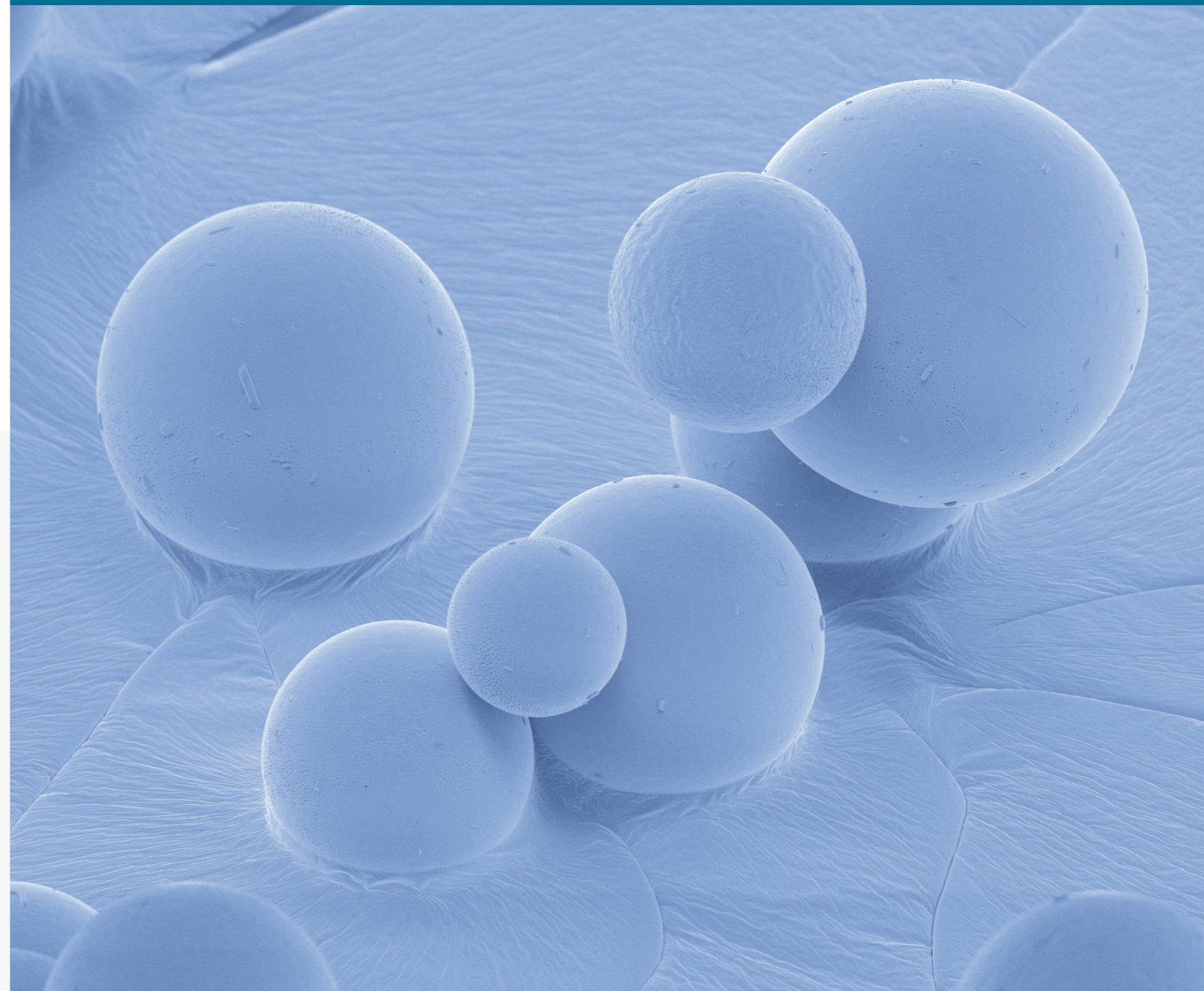
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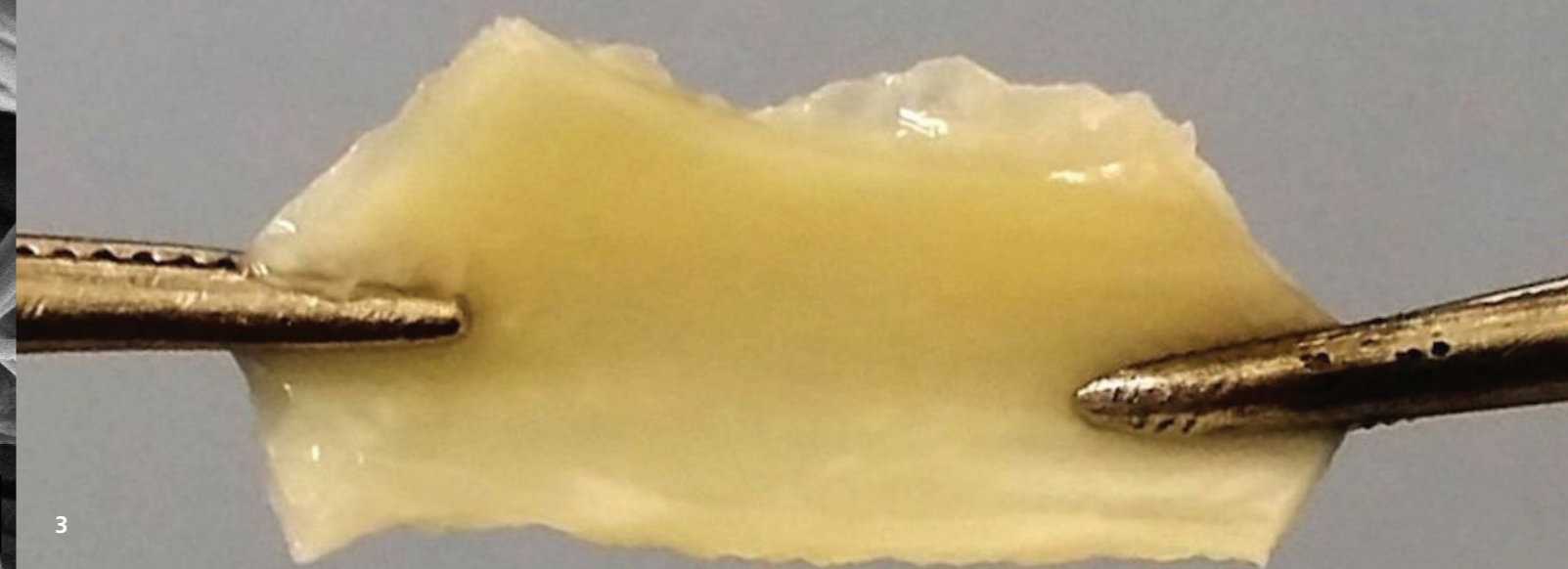
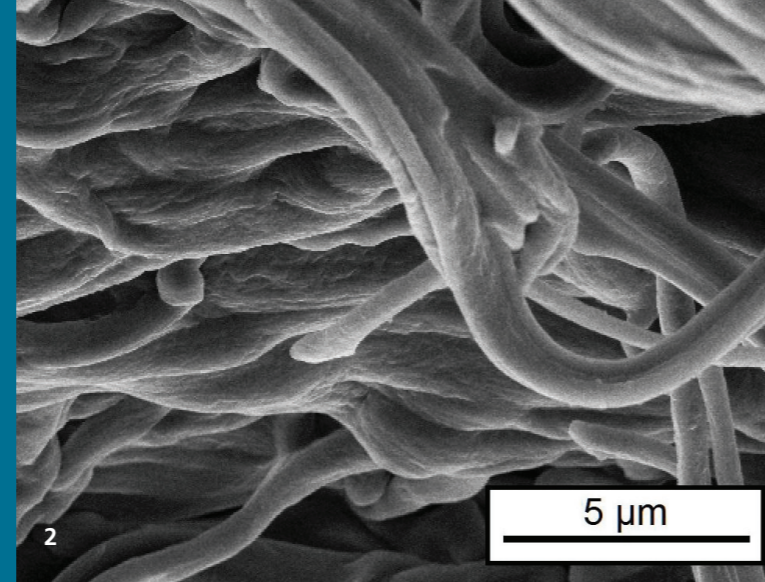
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Quality management at Fraunhofer IMWS is ISO 9001 certified.



ELASTIN- AND COLLAGEN-BASED SKIN PRODUCTS





Services

We are a dedicated team of specialists at the Fraunhofer Institute for Microstructure of Materials and Systems IMWS in Halle (Saale), Germany. We are passionate about innovative materials and devices for biomedical applications.

We focus on the needs of the skin care and medical device industry - from large multinational corporations to small and medium-sized enterprises.

As a partner to R&D and to marketing, we perform research projects, support product development, provide claim substantiation and supply visualization for marketing and training material.

Our unique strength is the transfer of expertise from basic and applied research in the life sciences to develop customized innovative solutions to answer your specific questions. We use this expertise together with our state-of-the-art equipment to provide visual representations of stunning quality to set your products apart.

Benefit

A tailor-made approach to your specific question.

We offer our in-depth knowledge of the field combined with high flexibility. Together with your specialists we develop a reliable project outline and research protocols that are made to meet your specific needs. We provide you superior research solutions and value-added insight that help you reach better results in your particular market.

Access to the broad-based range of expertise available at the Fraunhofer IMWS Halle with its modern equipment - the latest developments on the market. We transfer and further develop methods and techniques for a new and innovative approach in R&D and for stunning visualization results.

Material design and characterization

Our team designs and conducts characterizations of protein-based compounds for medical application, tissue engineering and tissue regeneration. We offer a broad range of services including mechanical, morphological, biological and chemical test methods for directed development and evaluation of future materials.

A successful collaboration based on the established and proven Fraunhofer processes.

In all we do, we adhere to the Fraunhofer principles of efficiency, professionalism and confidentiality.

Caption

- Title*
Scanning electron micrograph (SEM) of opaque microspheres
- 1 *Wound dressing based on a highly porous sponge*
 - 2 *SEM showing healthy mature elastic fibers in human skin*
 - 3 *Stretched aortic elastin*
 - 4 *SEM showing aged elastic fibers*
 - 5 *SEM showing electrospun collagen nanofibers*
 - 6 *Protein-based hydrogel and derived sponges*

Fields of Expertise

Protein extraction and characterization

- Isolation of structural proteins
- Proteome analysis
- Enzymatic and chemical crosslinking

Production of non-woven materials

- Method development
- Electrospinning of peptides, proteins and biocompatible polymers

Scaffold fabrication

- Protein-based hydrogel production
- Production of sponge-like structures by freeze-drying
- Enzymatic and non-enzymatic crosslinking

Biocoatings

- Implant coating
- Biodegradable coatings
- Coatings for wound dressings

Methods and Technologies

Mechanical characterization

- Tensile testing
- Nanoindentation via atomic force microscopy

Biological characterization

- Cell culture/ tissue development
- Microbiology

Morphology

- Electron dispersion X-ray analysis
- Scanning microscopy
- Transmission electron microscopy
- Electron microscopy
- Focused ion beam (FIB)
- Histological preparations (Microtomy, cutting-grinding technique)
- Light and fluorescence microscopy
- Micro- and nanoscale X-ray tomography

Molecular characterization

- Inductively coupled plasma mass spectrometry (ICP-MS)
- Organic mass spectrometry

Chemical and biochemical characterization

- Contact angle measurement
- Enzymatic assays

