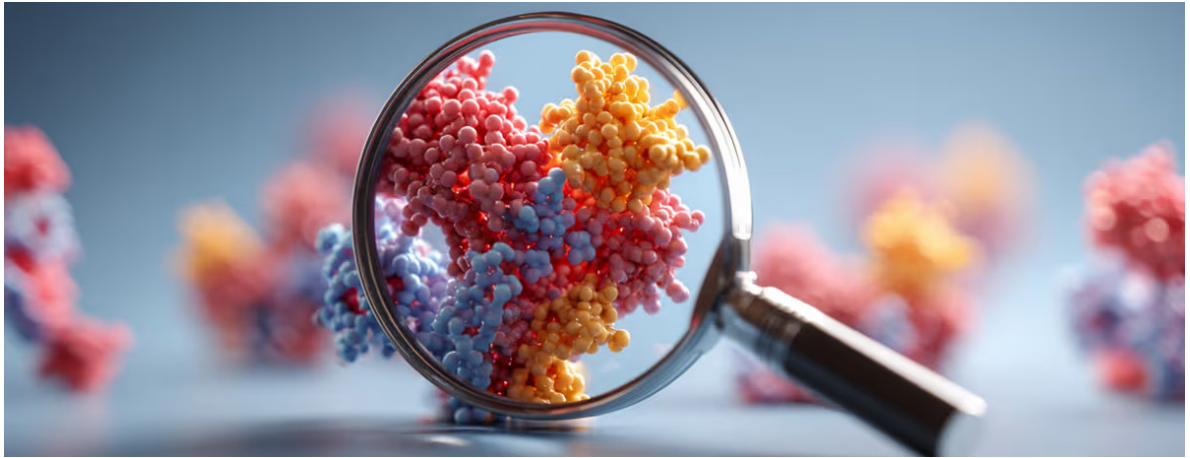


Biofunctional Materials for Medical and Environmental Applications

Protein Analysis



Protein Analysis at Fraunhofer IMWS

We combine modern protein analytics with expertise in materials diagnostics, matrix biology, biochemistry, cell culture, and analytical chemistry.

Using high-resolution LC-MS/MS, we open new possibilities for the identification, characterization, and quantification of proteins and peptides in challenging matrices.

Our clients benefit particularly when dealing with complex samples and questions where standard methods reach their limits.

We work in a confidential, industry-oriented project environment with clear points of contact, discreet handling, and a high level of awareness regarding the protection of sensitive data, samples, and development content.

The Fraunhofer IMWS is home to the first **Orbitrap™ Astral™** within the Fraunhofer Gesellschaft: a powerful foundation for sensitive, reproducible, and efficient LC-MS/MS analysis.

Thermo Scientific™ Orbitrap™ Astral™ mass spectrometer

- High-resolution LC-MS/MS analysis for complex challenges in biotech, pharmaceuticals, biomaterials, and medical research
- Characterizing complex samples – from feasibility assessments through method development and measurement to robust data interpretation
- From sample to decision – with an integrated in-house value chain

Our Focus Areas

1. Biopharmaceutical and protein-based product characterization

We provide support for the characterization of biopharmaceutical, biotechnological, and protein-based samples - for example, regarding questions about composition, heterogeneity, impurities, stability, or batch-dependent differences.

Typical applications:

- Comparison of batches, process steps, and manufacturing methods
- Detection of relevant proteins, peptides, and impurities (e.g., host cell proteins)
- Investigation of integrity, stability, and degradation behaviour

2. Discovery Proteomics for Complex Biological Samples

We analyze protein profiles in cells, tissues, biofluids, culture supernatants, and complex material-associated samples.

Typical applications:

- Comparison of sample states, treatments, or model systems
- Protein profiling in complex biological matrices
- Identification of relevant changes in challenging samples, including biomarker discovery

3. ECM and biomaterial-focused protein analytics

A particular focus at Fraunhofer IMWS is on complex biomaterials, extracellular matrix (ECM) proteins, and material-related biological samples. Here, we combine proteomics with our expertise in materials research and matrix biology.

Typical applications:

- Characterization of collagen-, elastin-, or ECM-based biomaterials
- Analysis of composition, purity, and batch-dependent variations, detection of impurities, foreign proteins, or degradation products
- Investigation on the interaction of biomaterials in biological systems

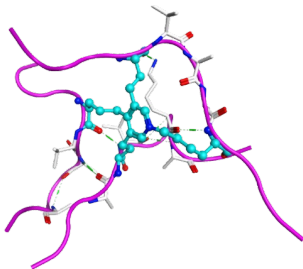
4. Protein Analysis in the Food and Nutrition Sector

Based on our expertise in extracellular matrix proteins such as collagen and elastin, which constitute a large portion of animal-based foods, we offer comprehensive analytical services in the field of functional foods and cosmetics.

Typical applications:

- Peptide and amino acid profiling
- Investigation of process- and storage-related changes
- Detection of cross-species contamination in animal-based products

3D model of three elastin-derived peptides crosslinked by the tetra-functional amino acid desmosine.



De novo sequencing from Designer Proteins, recombinant constructs, and antibody-based molecules. We derive amino acid sequences from proteomics data, identify sequence variants, and analytically verify experimental constructs regardless of incomplete or unavailable reference information.

Why Fraunhofer IMWS?

A new dimension in protein analytics for industrial applications

Our fully integrated in-house value chain covers everything from specialized sample preparation to method development, validation, and data-driven reporting.

We provide not just raw data, but reliable conclusions tailored to your specific questions.

We combine high sensitivity, mass accuracy, and throughput with clear documentation and close collaboration with your R&D teams, turning complex data into reliable decision-making insights.

What you can expect:

- Sample preparation tailored to matrix and target analysis
- Custom UHPLC-MS/MS methods
- Targeted and untargeted analytics
- Transparent data analysis and standardized reports
- Confidential, quality-assured, industry-focused project execution



Call to Action

Do you have a challenging sample or a complex protein analysis question?

Contact us for a no-obligation initial assessment or a feasibility analysis.

Fraunhofer IMWS Protein analysis for complex samples, clear results, and industry-oriented collaboration.

Contact

—
Dr. Adrian Hautmann
Fraunhofer Institute for
Microstructure of Materials and Systems IMWS
Walter Huelse Str. 1 | 06120 Halle (Saale)
Telephone +49 345 5589-287
proteomics@imws.fraunhofer.de
www.imws.fraunhofer.de/en

