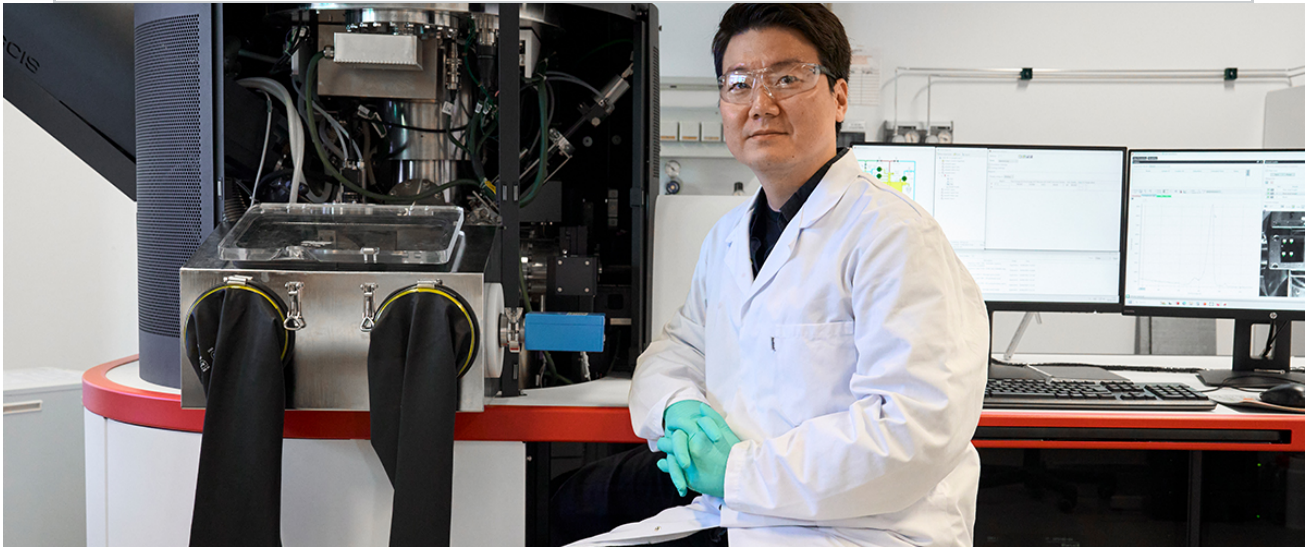


We make materials fit for the future!



© Fraunhofer IAP / Jadwiga Galties

Dear reader,

How do high-performance products emerge from innovative materials? Success depends not only on developing advanced materials, but also on processing them efficiently and reliably. At Fraunhofer IAP, we combine materials development, advanced analytics, and industry-oriented process engineering to bridge the gap between innovation and application.

Our new metallic effect pigments enable uniformly glossy plastic surfaces in injection molding without the need for additional coatings. Shape memory polymer yarns demonstrate how functional plastics can be transformed into textiles with reversible shape-changing capabilities. At the same time, advanced nuclear magnetic resonance (NMR) spectroscopy and X-ray photoelectron spectroscopy (XPS) provide detailed insights into complex materials and their surface chemistry.

Turning innovation into robust industrial processes is equally important for bioeconomy. We scale up bioprocesses for tailor-made yeast strains, while a new flame retardant derived from corn steep liquor opens promising pathways toward sustainable bio-based materials. In addition, a new international partnership is helping to advance materials and technologies for CO₂ utilization, hydrogen, fuel cells, and batteries.

Looking for solutions to your next challenge? Meet our experts at upcoming trade fairs and events and bring your questions along. Prefer to get in touch directly? Send us a message.

We hope you enjoy this issue and find it both informative and inspiring!

Best regards,

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NEWS FROM RESEARCH AND DEVELOPMENT

Industry and Technology

Metallic Effect Pigments for Flawless High-Gloss Plastic Surfaces



Metallic-looking plastic parts without distracting flow lines: A new method for producing metallic effect pigments, currently being optimized at Fraunhofer IAP, combines attractive aesthetics with robust and environmentally friendly processing. The technology is ideally suited for applications where surface quality, cost-effectiveness, and sustainability are equally important.

[MORE INFO](#)

Industry and Technology

NMR Analytics at Fraunhofer IAP Strengthens Materials Research

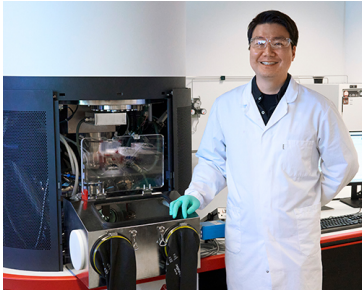


Deep insights into materials, processes, and quality: With new nuclear magnetic resonance (NMR) spectroscopy infrastructure, Fraunhofer IAP supports companies in the development of plastics, fibers, and carbon-fiber-based materials. The analytical capabilities provide precise structural information for both research and industrial applications.

[MORE INFO](#)

Industry and Technology

XPS Reveals the Surface Chemistry of Bio-Based Hybrid Materials

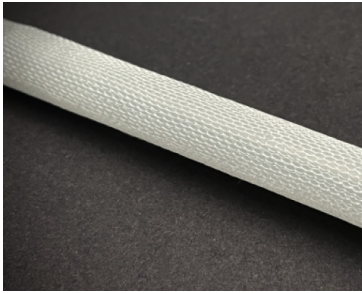


Using X-ray photoelectron spectroscopy (XPS), Fraunhofer IAP uncovers chemical interactions at surfaces and interfaces. These insights help companies and research partners gain a deeper understanding of the complex surface chemistry of bio-based materials and identify the causes of performance differences.

[MORE INFO](#)

Industry and Technology

Energy-Efficient Smart Textiles with Reversible Shape Change



Dynamic textile structures are used across a wide range of fields, including medical technology, automation, architecture, agriculture, and apparel. The German Institutes of Textile and Fiber Research Denkendorf (DITF), together with Fraunhofer IAP, are developing textiles based on shape memory polymers with reversibly controllable geometries.

[MORE INFO](#)

Bioeconomy and Sustainability

Tailored Yeasts and Scalable Bioprocesses



From yeast cells to industrial bioprocess: Fraunhofer IAP and the University of Potsdam combine their expertise to enable the efficient use of bio-based feedstocks. Companies benefit from integrated solutions spanning strain development through process scale-up.

[MORE INFO](#)

Bioeconomy and Sustainability

Sustainable Flame Retardant Derived From Corn Steep Liquor

A sustainable fire protection solution from a by-product of starch production: Fraunhofer researchers are jointly developing a bio-based flame retardant derived from phytic acid extracted from corn steep liquor. Initial tests demonstrate



performance on par with commercial solutions. Our contribution: recovering phytic acid through simple process-engineering steps.

[MORE INFO](#)

Energy Transition and Mobility

New Partnership for CO₂ Technologies, Hydrogen, and Batteries

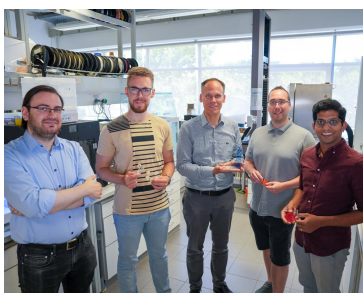


Using CO₂ as a feedstock and storing renewable energy efficiently: Fraunhofer Institutes IAP and UMSICHT, together with the South Korean company SGC Energy, are joining forces to advance CO₂ electrolysis as well as hydrogen, fuel cell, and battery technologies. Their shared goal is a climate-neutral industry.

[MORE INFO](#)

ON OUR OWN ACCOUNT

Award for Research on Shape Memory Polymers and 4D Printing



International recognition for outstanding research: Dr. Thorsten Pretsch, Head of the Functional Polymer Systems Research Division and the Shape Memory Polymers Department, has received the Outstanding Leadership Award from the 4D Printing Society. The award honors his contributions to shape memory polymers and pioneering 4D printing technologies.

[LEARN MORE ABOUT THE DEPARTMENT](#)

EVENTS

Meet the Fraunhofer IAP Team

Friedrichshafen, Germany | October 12-16, 2026

Optimizing, Functionalizing, and Processing Plastics Safely



How can recyclates, bio-based polymers, and novel material systems be reliably integrated into existing manufacturing processes?

At FAKUMA, we will demonstrate how plastics can be specifically optimized, functionalized, and qualified for industrial applications. One example is rPET granulate: Fraunhofer IAP recovers terephthalic acid from polyethylene terephthalate (PET) and uses it to produce new polymers for bottles, fibers, and films. Particular attention is given to the color quality of recycled polymers. Discover our latest developments, ranging from recyclable and bio-based plastics to self-reinforced mono-material solutions, functional polymer systems, and new PBS grades.

Meet our team at the TEC-Part joint exhibition stand in Hall A5, Booth 5104, and bring your specific challenges and project ideas.

[MORE INFO](#)

Berlin, Germany | October 21-22, 2026

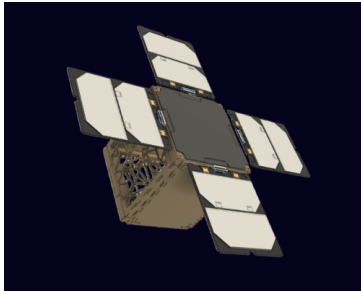
TechBlick



Which materials and technologies will shape the electronics of tomorrow? We will provide insights into our latest research on next-generation electronics: additive, sustainable, flexible, hybrid, wearable, structural, and 3D.

[MORE INFO](#)

Frankfurt am Main, Germany | November 17-20, 2026



At Formnext, Fraunhofer IAP will showcase innovative polymer solutions for space technologies and satellite applications. Learn how customized shape memory polymers and additive manufacturing enable lightweight and highly functional components at the Fraunhofer joint exhibition stand in Hall 11. Visit us at Booth D31 in the Additive Manufacturing competence area.

[MORE INFO](#)

We make materials fit for the future!

Looking for high-performance materials tailored to your product's requirements? Whether you want to enhance plastics with new functionalities, improve performance, or bring innovative material concepts into production, Fraunhofer IAP helps turn your ideas into tangible solutions.

From the first molecular building block to the finished product, we support companies at every stage of innovation. Our expertise spans material development, characterization, process optimization, scale-up, and industrial implementation. Together, we transform promising concepts into commercially viable solutions.

Let's discuss your challenge and explore what's possible.

[GET IN TOUCH WITH US](#)[TO THE HOMEPAGE](#)

Potsdam Science Park

Fraunhofer IAP is part of the largest science location in the state of Brandenburg: the Potsdam Science Park. Just 30 minutes from the center of Berlin, more than 12,500 people research, work and study in the fields of biotechnology, medical technology, optics, geosciences, astrophysics and gravitational physics. On an area of more than 50 hectares, the innovation- and founder-friendly park continues to offer office and laboratory space for startups and ready-to-build plots for small and medium-sized companies. We live science!

[TO THE HOMEPAGE](#)

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Fraunhofer is Europe's largest application-oriented research organization. Our research efforts are geared entirely to people's needs: health, security, communication, energy and the environment. As a result, the work undertaken by our researchers and developers has a significant impact on people's lives. We are creative. We shape technology. We design products. We improve methods and techniques. We open up new vistas. In short, we forge the future.

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