

# PRESS RELEASE

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## Innovative bird protection film: Fraunhofer FEP drives research forward in the EU project “Phabulous”

**As part of the EU project “Phabulous” (grant agreement no. 871810), Fraunhofer FEP and JOANNEUM RESEARCH collaborated to develop innovative micro-optical structures that can be applied to large areas of polymer films using roll-to-roll technology. These structures open up a wide range of possible applications for solar cells or decorative aspects. The Fraunhofer researchers have now also succeeded in developing a new type of bird protection film that is particularly effective thanks to its UV contrast and therefore hardly affects the aesthetics of glass façades. The results will be presented at the Micro-Optics Summit 2024, from December 2–3, 2024, in Amsterdam.**

The primary goal of the EU-funded “Phabulous” project was to establish a European pilot line infrastructure equipped with cutting-edge manufacturing technology for the production of freeform micro-optics. This infrastructure aims to accelerate innovation and production cycles from prototyping to large-scale production.

Special attention in the project was paid to the large-scale replication of micro-optical structures in roll-to-roll systems. The collaboration between the project partners Fraunhofer FEP and JOANNEUM RESEARCH Forschungsgesellschaft mbH from Austria played a major role in the explicit research of this technology.

The researchers combined several processes: nanoimprint lithography, coating technologies and plasma etching. This allows structures of different sizes to be produced. The dimensions range from a few nanometers to a few micrometers – therefore, the structures are much thinner than a human hair. During the course of the project, several applications have already been worked on with external industrial partners. These were aimed at a wide range of issues and ranged from improving the efficiency of solar cells to creating decorative effects.

Furthermore, the use of roll-to-roll technology also opens up scaling options on an industrial scale. This will also make it possible to achieve cost reduction effects in the production of a wide range of micro-optics on film substrates in the future.



The project has received funding from the European Union’s Horizon 2020 research and innovation programme  
Funding reference: 871710



Funded by the  
European Union



## **New applications beyond the project boundaries**

At Fraunhofer FEP, the researchers used the knowledge gained in the project as well as their extensive expertise in roll-to-roll technology and the development of specialized coating processes to achieve further advances in the use of such microstructures beyond the project.

Dr. Matthias Fahland is delighted with the implementation of a new application: “We have achieved a great success in the development of a new type of bird protection film. By equipping polymer films with micro-optical structures in a roll-to-roll process, we have achieved an optical appearance that differs significantly from that of unprocessed polymer films. By attaching them to glass facades, birds can recognize the surfaces better and thus avoid collisions. The special feature here is that the contrast visible to humans is only slight, as the polymer films differ primarily in the ultraviolet spectral range, to which the human eye is insensitive; birds, on the other hand, can clearly perceive the difference.”

This ensures a reliable effect as a bird protection film in different light conditions. This new solution also offers advantages thanks to its almost full-surface transparency, which only has a minimal aesthetic impact on the architecture.

## **Future prospects**

The scientists at Fraunhofer FEP are now striving to further develop this technology. It opens up a wide range of new application possibilities, particularly in the design of large glass surfaces in the building and architecture sector. For further improvement, the Fraunhofer researchers are relying on future collaboration with ornithologists and manufacturers of special films and are looking forward to a lively exchange and in-depth discussions.

The jointly achieved results of the “Phabulous” project as well as first examples of the generated microstructures for use as bird protection films will be presented at the Micro-Optics Summit from December 2–3, 2024 in Amsterdam during the exhibition and conference.

In addition, Fraunhofer FEP will present the results at BAU 2025, from January 13–17, 2025 at the Fraunhofer joint booth no. 528 in Hall C2, to discuss and promote the further development of these polymer films with potential partners.

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<sup>1</sup> Source: NABU (Naturschutzbund Deutschland) e. V., retrieved: 25.11.2024, <https://www.nabu.de/tiere-und-pflanzen/voegel/gebraeuerdungen/11932.html>



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### **New protective films should prevent bird strikes in the future**

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Picture in printable resolution: [www.fep.fraunhofer.de/press](http://www.fep.fraunhofer.de/press)

### **About the project Phabulous**

Phabulous – Pilot-line providing highly advanced & robust manufacturing technology for optical free-form micro-structures

Funding authority: European Union

Grant agreement no.: 871710

Project duration: 01.01.2020 – 31.12.2024

Website: [www.phabulous.eu](http://www.phabulous.eu)

This project has received funding from the European Union's Horizon 2020 research and innovation program under the Grant Agreement n° 871710, in Public Private Partnership with Photonics 21 ([www.photonics21.org](http://www.photonics21.org)).

### **Fraunhofer FEP at the Micro Optics Summit 2024**

December 2–3, 2024

Amsterdam, The Netherlands

[www.microopticssummit.com](http://www.microopticssummit.com)

Talk: Precision Roll-to-Roll technology for enhancing consumer products

Dr. Matthias Fahland, Fraunhofer FEP

December 2, 2024, 3:55 pm

### **Fraunhofer FEP at the trade fair BAU 2025**

January 13–17, 2025

Munich Trade Fair Center, Munich, Germany

Fraunhofer Joint Booth, hall C2, booth no. 528

Further information: [www.fep.fraunhofer.de/bau](http://www.fep.fraunhofer.de/bau)

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The **Fraunhofer Institute for Electron Beam and Plasma Technology FEP** works on innovative solutions for vacuum coating and the treatment of surfaces, liquids and gases. On the basis of our core competencies in electron beam technology, magnetron sputtering and plasma-assisted surface processes, we develop resource-efficient process technologies. These technologies are used in the fields of energy and sustainability, life sciences, environmental technologies, smart building and digitalization. The Fraunhofer FEP offers a wide range of research, development and pilot production options, particularly for surface treatment and refinement. Together with partners, customized, industry-compatible solutions are developed that exploit the innovative potential of future-oriented coating technologies and make them available for the production of tomorrow.