

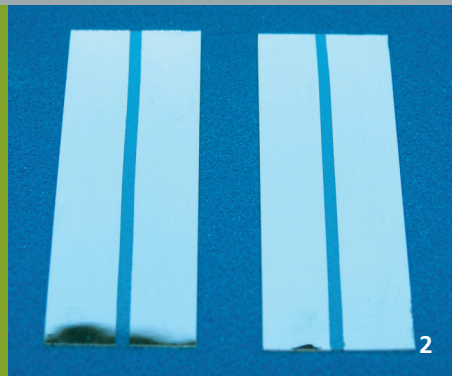


# Fraunhofer

## POLO



1



2



3

- 1 *OLED encapsulation with ultra-barrier film.*
- 2 *Metallized polyolefin films.*
- 3 *Cell culture dishes with antimicrobial films.*
- 4 *Packaging films with transparent barrier coatings.*
- 5 *Plasma coating of a PET bottle for reduced adhesion.*
- 6 *Surface coating by plasma treatment at atmospheric pressure.*

## FRAUNHOFER POLO®

### YOUR PARTNER AT THE SURFACE OF POLYMERS

#### Our Service

The Fraunhofer Polymer Surfaces Alliance POLO® is your one-stop-shop for new technologies and materials for the surface functionalization of polymers and the tailoring of interfaces with polymers. We offer our extensive experience and know-how for developing new concepts, innovative processes, and modern materials based on the surfaces of polymers. Our services include:

- concept development
- feasibility studies
- development of processes and materials
- plant planning and design
- introduction of new processes and materials into production
- process monitoring and quality assurance
- troubleshooting
- analysis and testing

#### Your Benefit

Fraunhofer POLO® can help you to design and to produce new innovative products which will provide you with

- unique selling points
- high quality standards
- cutting-edge materials
- efficient processes
- competitive advantage
- reduced production costs

#### Our Products

The development activities of Fraunhofer POLO® focus on technologies and materials for the functionalization of surfaces, in particular polymer surfaces. By altering, enriching, modifying, and coating materials we create multifunctional surfaces and intelligent systems. The development and the application of energy-saving and sustainable processes enables our customers to assure the quality of products. Some examples are described below.

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### **Cutting edge ultra-high barrier films**

can be produced and made available as roll material on pilot scale. The flexible, transparent, high and ultrahigh barrier films have an extremely low gas permeability (water vapor transmission rate of  $5 \cdot 10^{-5} \text{ g}/(\text{m}^2 \text{ d})$  and below at ambient condition) they are suitable for the encapsulation of flexible and organic electronics (e. g. OLED and thin-film photovoltaics), for vacuum insulating panels and many other high-performance applications.

### **Process control**

New technologies allow the 100 % monitoring of coating and thin layer production processes in the production line. Defects in sub- $\mu\text{m}$  coatings can be detected, the coating homogeneity can be monitored, and the distribution of layer thicknesses in multilayer films can be controlled, to name just a few examples.

### **Bio-based materials and biopolymers**

We adapt processes to coat and modify surfaces of bio-based materials and biopolymers. We also develop new functional coating materials using components from renewable sources.

### **Protection for sensitive surfaces**

Scratch-resistant and abrasion-resistant coatings make displays and sensitive coatings suitable for everyday use. We develop protective coatings for new applications of plastics, glasses, ceramics, metals, and electronic components.

### **Quality assurance via intelligent layers**

Indicators incorporated into packaging films allow, for example, the early detection of oxygen inside the package of products which are sensitive against the oxidative degradation. Other coatings can detect and display the spoilage of food. Our indicator films help improve product safety and to protect companies and customers.

### **Clean and safe – antimicrobial layers**

Making surfaces not only self-cleaning but also resistant against microorganisms and biofilm formation helps to set hygiene standards and avoid precarious “dirty corners” and contaminations on and in buildings, technical plants, etc.

### **Metallization of plastics**

We develop Cr(VI)-free technologies for improving the adhesion of metals to plastics which are compatible with PVD processes or alternatively with galvanic wet processing. Typical materials include ABS, ABS/PC, polyimide, and polyolefins.

### **Troubleshooting and analytical services**

For our research and development work we use a wide range of analytical and testing techniques including surface and thin film analysis, materials analysis and testing, as well as permeation measurements and modelling. We offer most of these techniques as services to our customers and add a profound expertise in polymer materials and surfaces.

### **Expertise for customer's benefit**

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