

# PRESS RELEASE

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## Steam sterilizable packaging films with excellent barrier properties

**The Fraunhofer Institute for Organic Electronics, Electron Beam and Plasma Technology FEP, one of the leading research and development partners for the development of surface technologies, together with Applied Materials, Inc. is exhibiting innovative technologies for the production of transparent and hot steam sterilizable packaging films at AIMCAL 2016 from May 30 – June 2, 2016 in Dresden, Germany.**

Packaging films are ubiquitous, yet their importance and sophistication are often overlooked by consumers. In order to ensure the quality of the purchased product inside, packaging films are optimized for the respective packaged goods, and often include coatings to preserve freshness and purity and to extend shelf-life. With packaging industry trends and consumer preferences constantly evolving, the opportunities for innovation in packaging films are tremendous.

For example, scientists at Fraunhofer FEP working with Applied Materials developed a process for depositing an ultra-thin aluminum oxide layer with a thickness of < 100 nanometers (typically 10–15 nm).

"In contrast to conventional production methods, we have extended the process by a further component: the alumina is vacuum deposited with the support of an intense plasma, so that a much more robust, significantly more dense, and way more solid layer is formed compared with using a low intensity plasma," explains Steffen Straach, group leader in the department "Flat and Flexible Products" at Fraunhofer FEP. "This is of particular relevance for further processing of the packaging materials."

The ultra-thin aluminum oxide layers deliver reliable protection, for example in pharmaceuticals, cosmetics or delicate foods against humidity, gases and other environmental influences. Furthermore, they provide maximum transparency. They have a very high barrier effect against oxygen and water vapor, so packaged goods survive even longer storage and transport times, and can withstand superheated steam sterilization.

The high deposition rate of the new process developed by Fraunhofer FEP for roll-to-roll coating systems enables the efficient production of competitive packaging films.

"Working with Fraunhofer FEP to commercialize innovative processes for the packaging industry is a great example of what joint research efforts can achieve," said Daniel P. Forster, vice president and general manager, Applied Materials Roll-to-Roll Coating

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Products Division. "There is a growing market for improved quality packaging and Applied is the well-established leader in roll-to-roll systems to enable high-volume production of advanced transparent barrier films."

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Fraunhofer FEP and Applied Materials jointly succeeded in integrating this process into a metallization system for industrial mass production. Several Applied TopMet® CLEAR systems with coating widths up to 2.85 m have been delivered. The Applied TopMet® CLEAR system provides the latest production solutions for the packaging industry. Its robust patented evaporator boat design, winding system and in-line control system for layer thickness monitoring generate uniform AlO<sub>x</sub> layers with higher barrier performance and higher transparency.

## Fraunhofer FEP at AIMCAL 2016

### Labtour

We will provide information on "Thin film technology for battery applications" and "Transparent layers for autoclavable packaging" at the Applied Materials booth during a Labtour at Fraunhofer FEP. The tour will include the following coating lines: MAXI (inline vacuum coating for metal plates and strip), *coFlex*® 600 (roll-to-roll pilot coating plant), *novoFlex*® 600 (roll-to-roll pilot coating plant) and a roll-to-roll OLED deposition line.

### Talks

#### Monday, May 30

Session: Coating and Laminating Short Course

13:30 – 17:00, Location: Bellevue I

*Permeation Barriers*

Oliver Miesbauer, Fraunhofer IVV / Dr. rer. nat. John Fahlteich, Fraunhofer FEP

#### Tuesday, May 31

Track: Web Coating and Web Handling,

Session: Web Surface / Barrier

14:30 – 15:00, Location: Bellevue I

*Surface modification of polyethylene terephthalate (PET) and oxide coated PET for adhesion improvement*

Juliane Fichtner, Fraunhofer FEP

Track: Vacuum

Session: Sputtering, Coating Equipment, Inline control

16:00 – 16:30, Location: Bellevue II

*Adapted particle bombardment during layer growth by pulse magnetron sputtering*

Dr. rer. nat. Daniel Glöß, Fraunhofer FEP

#### Wednesday, June 1

Track: Vacuum

Session: Pretreatment, Substrate Film, Simulation

10:30 – 11:00, Location: Bellevue II

*Vacuum plasma treatment and coating of fluoropolymer webs – challenges and applications*

M.Eng. Cindy Steiner, Fraunhofer FEP

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Thursday, June 2

Track: Vacuum

Session: New Applications, Emerging Technologies, Capacitors, Photovoltaic

8:30 – 9:00, Location: Bellevue II

*New vacuum coating technologies for metal strips and foils*

Prof. Dr. rer. nat. Christoph Metzner, Fraunhofer FEP

10:30 – 11:00, Location: Bellevue II

*Present status of Roll-to-Roll Fabrication for OLED lighting*

Michael Stanel, Fraunhofer FEP

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**Example of a transparent barrier film**

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

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**Applied Materials TopMet® CLEAR**

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**HAD Plasma unit integrated in TopMet® CLEAR**

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The **Fraunhofer Institute for Organic Electronics, Electron Beam and Plasma Technology FEP** works on innovative solutions in the fields of vacuum coating, surface treatment as well as organic semiconductors. The core competences electron beam technology, sputtering and plasma-activated deposition, high-rate PECVD as well as technologies for the organic electronics and IC/system design provide a basis for these activities. Thus, Fraunhofer FEP offers a wide range of possibilities for research, development and pilot production, especially for the processing, sterilization, structuring and refining of surfaces as well as OLED microdisplays, organic and inorganic sensors, optical filters and flexible OLED lighting. Our aim is to seize the innovation potential of the electron beam, plasma technology and organic electronics for new production processes and devices and to make it available for our customers. COMEDD (Center for Organics, Materials and Electronic Devices Dresden) with all known activities in organic electronics is now acting as a new business unit at Fraunhofer FEP, Dresden, Germany.