

PRESS RELEASE

08 | 13

PRESS RELEASE

June 06, 2013 | Page 1 / 2

Fraunhofer FEP presents functional films for printed electronics at trade fair in Munich

The Fraunhofer FEP will be presenting vacuum technologies for the production of functional films for organic and printed electronics at the international trade fair and conference LOPE-C in Munich between 11 and 13 June 2013.

Printed electronics, for example in solar cells, sensors or displays, are becoming increasingly popular on the mass market. Apart from the possibility of new functions and designs, productive deposition methods and the flexible materials used promise significant reductions in production costs. The short lifetime of the products has often been an obstacle to their widespread commercialization up to now. The main reason for this is the high sensitivity of the electronic functional materials inside the devices, which can be damaged by water vapor and oxygen.

The Fraunhofer Institute for Electron Beam and Plasma Technology FEP in Dresden develops vacuum processes to productively seal polymer films roll-to-roll with so-called high-barrier and functional layers. A standard polymer film would allow large amounts of water vapor and oxygen to pass through. Permeation barrier layers prevent gas diffusion and thus protect the active, organic materials. In addition to the barrier function, the film can also be enhanced through further, application-related functional layers. For example, the optical properties of the film can be adapted or transparent electrodes can be added on top of a barrier stack.

Dr. John Fahlteich, an expert for high-barrier films at the Fraunhofer FEP, will present productive roll-to-roll coating processes for films with extremely good barrier functions on 12 June at the LOPE-C in Munich. With the help of a multi-layer system made from sputtered zinc-tin-oxide (ZTO) layers and ORMOCER® hybrid-polymer, water-vapor permeabilities of less than $8 \cdot 10^{-5} \text{ g}/(\text{m}^2\text{d})$ can be achieved at room temperature. This corresponds to roughly one drop of water seeping through an area of the size of a football pitch in one month. The layer system, which was developed within the Fraunhofer Polymer Surfaces Alliance (POLO) in cooperation with the Fraunhofer ISC (ORMOCER® development) and Fraunhofer IVV (ORMOCER® application), is currently one of the systems produced in a roll-to-roll process with the lowest water-vapor permeability properties in the world.

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08 | 13

Dr. Fahlteich will be available for discussion during the LOPE-C between 12 and 13 June 2013 on the joint booth of Organic Electronics Saxony (OES)(booth 112/hall B). Examples of the far-reaching competence of Saxony as a location for organic electronics will also be on display on the booth. Dr. Fahlteich also refers to the newly founded cluster »FLEET Dresden: Flexible Electronics Encapsulation Technologies«: »This cluster represents the Saxon competence in high-barrier systems and provides joint services dealing with the encapsulation of organic electronics. There is a lot of organic electronics know-how in the region of Dresden. Our cluster gives us the opportunity to manufacture and test flexible electronic components together with partners from industry and research, from feasibility studies right through to pilot production.«

PRESS RELEASE

June 06, 2013 | Page 2 / 2

More information about the presentation by Dr. Fahlteich can be found at:

<http://www.fep.fraunhofer.de/en/events/lope-c-2013.html>

Information about the FLEET cluster can be found at:

www.encapsulation.fraunhofer.de



Flexible OLED of Fraunhofer COMEDD, built upon and encapsulated with functional films of Fraunhofer POLO

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