

# PRESS RELEASE

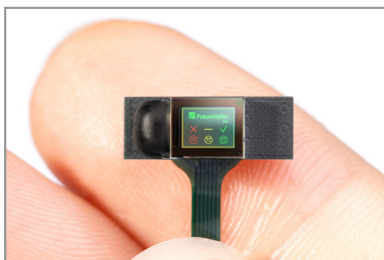
10 | 21

PRESS RELEASE

November 19, 2021 | page 1 / 3

## Multicolor OLED microdisplay with minimum power consumption

Within the project "Backplane", funded by the Saxon State Ministry of Economic Affairs, Labour and Transport (SMWA, grant number: 100392259), scientists from the Fraunhofer Institute for Organic Electronics, Electron Beam and Plasma Technology FEP have succeeded in presenting a multicolor OLED microdisplay that consumes the least power compared to all available microdisplays. The new all-rounder can be seen for the first time in the exhibition at the 4th OptecNet Annual Conference, November 24 – 25, 2021, in Hannover, Germany.



Research on OLED microdisplays has been going on at Fraunhofer FEP for many years. The scientists are working on increasingly sophisticated technologies that can meet the growing demands of the market.

Recently, the "Backplane" project funded by the SMWA (grant number: 100392259) has succeeded in presenting the first multicolor OLED microdisplay with the lowest power consumption compared to

all available microdisplays.

The existing "ultra-low power microdisplay platform" of Fraunhofer FEP offered solely monochrome displays. While this is sufficient for simple information displays in wearables or data glasses, it is not suitable for many other areas of application. Especially the discernibility of the signal colors red and green is important here.

Fraunhofer FEP's OLED microdisplays are based on the proven "OLED-on-silicon" technology. Philipp Wartenberg, Head of Department IC and System Design at Fraunhofer FEP, explains the new approach: "The unique architecture of Fraunhofer FEP's ultra-low power OLED microdisplays enables extremely power-saving displays with very simple, compact and thus ergonomic systems. Now with a multi-color version (with two primary colors) in QVGA resolution (320 × 240 pixels), applications can be addressed beyond pure displays. The color subpixels of the new displays are only half as large as those of the single-color versions, with the same optical properties and higher circuit density, thus also higher data rates."



Gefördert aus Mitteln  
der Europäischen Union



STAATSMINISTERIUM  
FÜR WIRTSCHAFT  
ARBEIT UND VERKEHR



Funded by:

Saxon State Ministry of Economic  
Affairs, Labour and Transport

Funding reference: 100392259

**10 | 21****PRESS RELEASE**

November 19, 2021 | page 2 / 3

Based on the OLED-on-silicon technology, which was brought to market maturity earlier, Fraunhofer FEP scientists are now able to support regional, national and international application partners even better with optimized and customized developments from CMOS backplane wafers and adapted microdisplay modules up to entire optical systems. Always the application and customer specific requirements are the main focus - either for the evaluation of feasibility or the upscaling of single technologies, microdisplay products and systems.

In collaboration with GLOBALFOUNDRIES Dresden, Module One LLC & Co. KG and digades GmbH, Fraunhofer FEP is currently researching a solution for low-power and high-resolution OLED microdisplays and quality cameras. The aim is to develop an ultra-low power microdisplay backplane architecture in a deep-submicron CMOS process in order to significantly reduce the previously predominant area required by memory components for static RAM (SRAM).

**About the project "BACKPLANE":**

Deep-submicron CMOS process technology for driving integrated microdisplays and optical sensor readout circuits

Funding reference 100392259

Duration: 31.12.2019 – 31.12.2021

Project partners:

- GLOBALFOUNDRIES Dresden Module One LLC & Co. KG
- digades GmbH
- Fraunhofer Institute for Organic Electronics, Electron Beam and Plasma Technology FEP

The project partners like to thank the funding sponsor (SMWA) and the project agency Sächsische Aufbaubank (SAB) for their support, which made the successful implementation of a new control concept possible in the first place.

**Fraunhofer FEP at 4th OptecNet Annual Meeting:**

Event location: Expowal, Hannover, Germany

Date: 24. – 25. November 2021

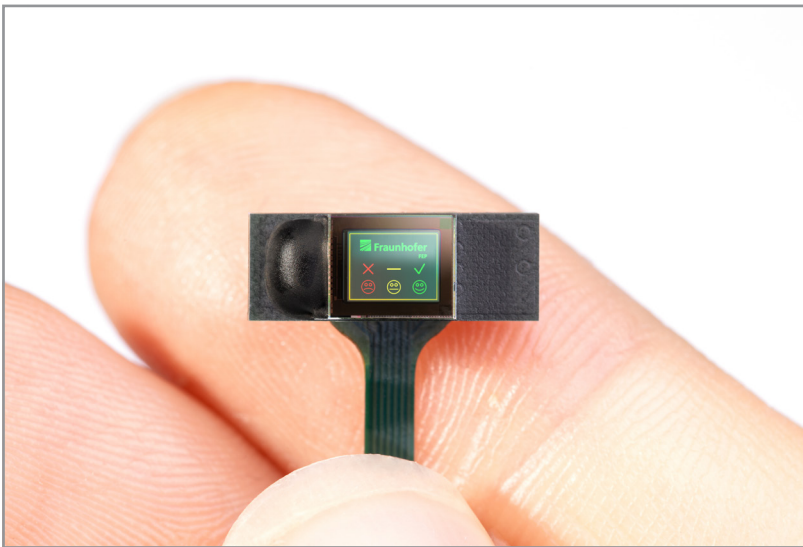
Fraunhofer FEP will be represented in the accompanying exhibition at the 4th OptecNet Annual Conference.

[www.optecnet.de/jahrestagung-2021/ueberblick](http://www.optecnet.de/jahrestagung-2021/ueberblick)

10 | 21

**PRESS RELEASE**

November 19, 2021 | page 3 / 3



**Multicolor OLED microdisplay with extremely power-saving drive concept**

© Fraunhofer FEP, Photographer: Claudia Jacquemin

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

---

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 competencies electron beam technologies, roll-to-roll technology, plasma-activated large-area and precision coating as well as technologies for organic electronics and IC 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, 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.