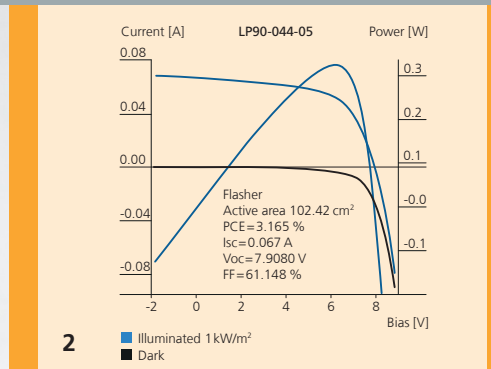


1



2



3

- 1 Flexible OPV on Fraunhofer POLO® ultrabARRIER substrates.
- 2 Performance of 150 mm x 150 mm glass based OPV module.
- 3 OPV and OLED integration in functional textile.

## PHOTOVOLTAICS AND ITS INTEGRATION IN FLEXIBLE SYSTEMS

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Fraunhofer IAP develops customized applications for organic light emitting diodes (OLEDs), organic photovoltaics (OPV), polymer electronics and sensors. The advantages of flexible OPV devices include flexibility, large active areas, light weight and the potential to process these devices with mass production technologies at low cost. OPV devices are well suited, like other organic electronics, for mobile devices and equipment.

When OLEDs, OPV, polymer electronics and sensors are combined, new mobile technologies are possible. Due to the possibility of generating flexible and semitransparent devices, the market entry of applications in architecture, life science and clothing is currently underway. The current goal of the work is to develop intelligent systems in the application areas of life science, textiles and architecture which combine OLEDs, OPV, polymer electronics, sensors and energy storage.

Therefore, prototype ideas and technical product concepts will be further developed. Established as well as newly developed materials will be used and top down planning will be implemented to determine user requirements and economic viability. The demands of flexibility, large area, light weight and mass production will be transferred from a sheet-to-sheet to a roll-to-roll process on foil based substrates. Research and development will focus on utilizing deposition technologies in air or under inert conditions which are solution based.

Besides the development of organic based devices investigations into quantum dot based devices and perovskites are ongoing as well. Solution based processing techniques with the potential of up-scaling are being implemented.