Printed Organic Electronics

Bringing new features to electronic devices and your everyday life
Printed Organic Electronics is an innovative combination of high-performance organic materials applied by printing or coating processes. This combination revolutionizes the way we look at the applications of electronics in everyday life. We can do more than think about new products and applications – with BASF’s Printed Organic Electronics materials and inks, we can actually bring them to life.

VERSATEILE INKS FOR VARIOUS APPLICATIONS

Organic Thin Film Transistors (OTFT) can be realized by using BASF’s high-performance Printed Organic Electronics inks in well-established printing or coating technologies like spin-coating, slot die, gravure, off-set or inkjet. They can be applied on flexible and super-thin large area substrates. High-temperature processes for annealing and sintering – as required for inorganic materials – are no longer necessary, allowing much greater freedom of choice in the selection of substrates and materials for surrounding layers. Shapes, sizes and form factors can be freely selected.

OUR EXPERIENCE, YOUR BENEFIT

Based on BASF’s development expertise in Printed Organic Electronics material design and ink formulation technology, we offer a variety of ready-to-use inks made from organic semiconductors, dielectrics and auxiliary materials. To meet specific needs, BASF’s technical service experts can customize the inks to meet your process and application requirements.
BASF’s Printed Organic Electronics team is at the cutting edge of development and technology in this exciting sector. With our expertise in chemical synthesis, ink formulation, production methods and quality management, we are ideally positioned to support you in developing the new products that will give you competitive advantage.

BROAD PORTFOLIO FOR SMART SOLUTIONS

BASF’s portfolio of Printed Organic Electronic inks enables you to produce Organic Thin Film Transistors (OTFT) for truly flexible displays as well as paper-thin circuitry for smart packaging, labels and other innovative product ideas.

Focusing on Printed Organic Electronics materials and inks:

- Organic Semiconductor (p- and n-) and matching dielectrics.
- Fitting auxiliary material inks like passivation or contact modifiers (e.g. Self-Assembled-Monolayer – SAM).

Our deep understanding of application processes and equipment is your key to unlocking business opportunities and creating exciting new products.

NEW BUSINESS OPPORTUNITIES

BASF’s product portfolio of Printed Organic Semiconductor and dielectric inks as well as auxiliary material inks (e.g. passivation, planarization, interlayer dielectric, SAM) meets the requirements of display backplanes and circuitry.

We can already cover a broad range of display technologies, from EPD (Electrophoretic Displays) to LCDs, and are successfully developing solutions for OLED displays.

Our inks match or even outperform classic amorphous silicon (a-Si) based backplanes, showing mobilities in the range of 0.5 to ~5 cm²/Vs combined with a large on/off ratio. Our unique product range, including p- and n-semiconductors for CMOS-type applications, can be used in top or bottom gate configuration and on various substrates, such as polymer films (e.g. PET).

The performance values achieved with BASF’s Printed Organic Electronics inks match a wide range of circuitry requirements that benefit from low-temperature processes and (flexible) large area electronics.
PRINTED ORGANIC ELECTRONICS
SHAPING A NEW WORLD WITH PRINTED ORGANIC ELECTRONICS

As communication technologies continue to develop and diversify, the display has become the single most important human interface. In the quest to make modern communication even more convenient and versatile, unbreakable lightweight display devices are already entering the market.

As the substrate of choice for conventional thin-film transistors (TFT), glass permits high annealing temperatures but is limited in terms of flexibility and robustness. However, highly flexible and high temperature-stable substrates based on alternatives like polyimide (PI) are very expensive. Printed Organic Electronics overcomes these limitations. Because the printing process does not require high temperatures, all sorts of flexible, unbreakable, low-cost substrates are now accessible. Based on a cost-efficient process, Printed Organic Electronics enables new displays and circuitry to be created and brings electronics into entirely new application and lifestyle areas.

BASF’s Printed Organic Electronics inks enable you to integrate a wide variety of electronic functions – for example sensing, displaying and sending/receiving information – into everyday products. In this way, you can add tangible value that your customers can see and appreciate. Supported by the appropriate application processes, innovative BASF Printed Organic Electronics materials and inks help you to achieve a new level of competitiveness.
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