

Thursday, 16 Jan 2014

IMAGE concludes and successfully demonstrates printed transparent electrodes for flexible OLED and OPV devices

The printed electrodes developed are expected to be a viable replacement of conventional transparent metal oxides, such as indium tin oxide (ITO)

The **IMAGE** project consortium has announced the successful completion of the project. The three-year project was jointly funded by the Federal Ministry of Education and Research and the French Agence Nationale de la Recherche.

IMAGE stands for - innovation printable electrode materials for high performance lighting devices and organic solar cells

The objective of the project **IMAGE** was the development of innovative printable, transparent electrode materials for high-efficiency organic light-emitting diodes and solar cells.

The electrodes developed in **IMAGE** should replace conventional transparent metal oxides, such as indium tin oxide (ITO), which are less flexible and less cost effective.

This should be cost-effective, conductive, transparent, flexible, compatible and capable of being integrated in OLED or organic solar cells.

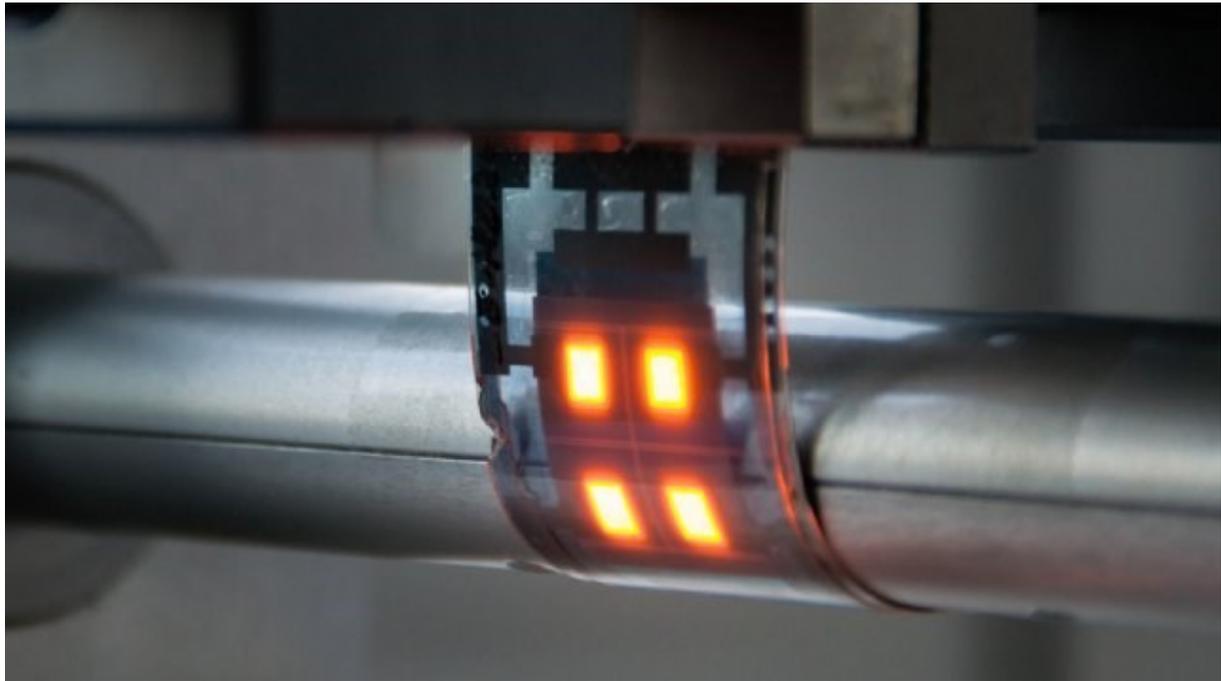


Figure: Fraunhofer COMEDD - Flexible organic light-emitting diodes (OLED) with transparent electrodes

As a result, the project partners Carnot MIB from Bordeaux (project led by LCPO) and Fraunhofer COMEDD from Dresden demonstrated novel transparent electrodes, which are arranged on a backing film and enable flexible electronic components.

The performance of these electrodes were demonstrated by using flexible OLED and organic solar cells.

IMAGE technical results

- PEDOT-based electrodes, PSS free
- Transparency @ 550 nm up to 85 %
- Layer Resistance: 90 ohms/sq
- Conductivity: 200 Scm⁻¹
- Integration on PET foils and PET foils with barrier films
- Laser-structurable
- OLED/OPV compatible
- Improved rolling capacity compared to ITO-based electrodes

Dr. Olaf R. Hild, business unit manager at Fraunhofer COMEDD, said, "We were able to construct the electrodes very thin, transparent and flexible and to integrate them in our processes. Thus Fraunhofer COMEDD is now in a position to manufacture flexible organic devices such as OLED lighting films, organic solar cells or sensors on film according to customer requirements.

www.comedd.fraunhofer.de

About Fraunhofer COMEDD

Fraunhofer COMEDD was founded as a research institution of the Fraunhofer-Gesellschaft in order to transfer the results of research and development in the field of organic materials and systems to production. The institution combines research and development works for the production, integration and technology of organic electronic devices.

The focus of Fraunhofer COMEDD lies in customer- and application orientated research, development and pilot fabrication of novel module concepts and fabrication methods for these organic electronic devices. Fraunhofer COMEDD is an European-wide leading production-related research and development center for organic semiconductors focusing on organic light-emitting diodes and vacuum technology.

The Fraunhofer COMEDD clean room consists of the following equipment:

- a pilot line for the fabrication of OLEDs on 370 x 470 mm² substrates
- two pilot lines for 200 mm wafer for the OLED integration on silicon substrates
- a research line for the roll-to-roll fabrication on flexible substrates

Fraunhofer COMEDD offers a wide range of research, development and pilot production possibilities, especially for OLED lighting, organic solar cells and OLED microdisplays.

After the Fraunhofer-Gesellschaft has decided to consolidate its key competences in Dresden Fraunhofer Institute for Electron Beam and Plasma Technology FEP and Fraunhofer COMEDD

Source: Fraunhofer COMEDD

The IMAGE consortium

The partners from MIB were responsible for the development of suitable chemical compositions and solutions for the production of transparent organic electrodes. Fraunhofer COMEDD developed the structuring procedures and integrated OLED and organic solar cells in the novel electrodes and developed encapsulation technologies.

Arkema and Tridonic provided advisory support to the project consortium during the project duration.

- Carnot MIB institute (University of Bordeaux, FRANCE)
- Laboratoire de Chimie des Polymères Organiques (LCPO) - Consortium Leader
- Prof. Georges Hadziioannou - Principal coordinator
- Laboratoire de l'Intégration du Matériau au Système (IMS)
- Centre de Recherche Paul Pascal (CRPP)

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Source: The IMAGE Consortium / <http://www.osadirect.com/news/article/1137/>