

## Printed electronics to control flexible displays

1888PressRelease

(1888PressRelease) [December 23, 2009](#) [1] - The Technische Universität Darmstadt, tesa scribos GmbH, the Universität Stuttgart and BASF SE want to research into these printed electronics in the project "Complementary Circuit Technology for printed Displays" (German name Kosadis ). This project is an element of the "Forum Organic Electronics" cluster, one of the winners of the Excellence Cluster Competition held by the German Federal Ministry for Education and Research (BMBF).

The joint project is initially intended to resolve fundamental technological issues. These activities have a total volume of just under €3.5 million, to which the BMBF is contributing sponsorship funding of almost €1.9 million. Within this initiative, BASF SE is researching into optimized organic semiconductors for organic CMOS circuits. Complementary Metal Oxide Semiconductors are a complementary circuit technology with low energy consumption and high switching speeds.

In the next step, the printing specialists of the Technische Universität Darmstadt will optimize existing printing processes so that ultrathin transistor structures can be printed reproducibly. The Technische Universität Darmstadt will be supported in these efforts by tesa scribos GmbH, whose experts create structures measuring a few micrometers ( $\mu\text{m}$ ) on the printed layers by laser direct imaging.

The necessary electronics and display know-how is being contributed by the Universität Stuttgart. The research scientists of the Chair of Display Technology are specialized in developing different display elements and thin layer circuits for their control. As part of the Kosadis project, they intend to adapt the design of the structural elements to the special requirements of organic electronics and to design and construct a display based for the first time completely on organic electronics.

The printed electronics for flexible displays being researched in Kosadis are an important interface to many areas of organic electronics. Based on conductive polymers or smaller molecules from organic chemistry, they are regarded as an important technology of the future. Compared to silicon-based components, organic transistor circuits can be printed easily, in mass production and more cost effectively. Thereby they open the way to new applications such as flexible, rollable and mobile displays, electronic price labels or intelligent labels that inform consumers at all times about the condition of their goods.

The "Forum Organic Electronics" excellence cluster is a cooperative network of three DAX companies, eight international corporations, six medium-sized companies and eleven research institutes and colleges including two elite universities. The objectives of the excellence cluster in the Rhine-Neckar metropolitan region are to create the world's leading research, development and production center for organic electronics, one of the most attractive workplaces for top-flight researchers and young academics as well as the world's leading innovation center for knowledge

transfer and company start-ups. The 28 companies, universities and research institutes are cooperating in the research projects for the technology of the future, organic electronics, which is being sponsored by the BMBF to an amount of more than €40 million.

### About the Technische Universität Darmstadt

Darmstadt Technical University is one of Germany's leading universities and is known for its applications oriented research with a focus on paper and printing. The Institute for Printing Presses and Printing Methods (IDD) is part of the Department of Mechanical Engineering and has pursued research for more than 50 years in the fields of machine construction, process technology and economic sciences accompanying printing press construction and the print media. The main focus on functional printing at the IDD aims to establish the principles for printing the thinnest possible homogeneous layers of functional materials with high structural resolution. Laboratories superbly equipped with many printing technologies and characterization methods are available for these activities. The goal is to establish in the long term a scientific model for the printing process by performing experimental studies, characterization of the materials involved and modeling. For further information please visit [www.idd.tu-darmstadt.de](http://www.idd.tu-darmstadt.de)

### About tesa scribos

The tesa scribos GmbH is a subsidiary company of the tesa SE and represents competence in the field security and identification. The emphases are on counterfeit protection, product tracing, manipulation protection and document security. Tesa scribos acts worldwide as system supplier. The Holospot technology is the core technology of the tesa scribos counterfeit protection. It is a computer-generated hologram that allows to store individual information and data in every single Holospot. Tesa scribos developed in years of research and development in the field of optical diffraction-limited lithography micro-engraving techniques that allow high resolution and high speed structuring. It is even possible to structure encapsulated layers with the especially developed lithography systems. The company has about 30 employees located in Heidelberg and another 25 employees located in the headquarter of the holding company in Hamburg. Further information can be found in the internet under [www.tesa-scribos.de](http://www.tesa-scribos.de) and [www.tesa.com](http://www.tesa.com) .

### About the Universität Stuttgart

The Chair of Display Technology of the Institute for System Theory and Display Technology at the University of Stuttgart is one of the leading research laboratories for application oriented development of various kinds of flat panel displays and display systems. Special attention is paid to manufacturing and analysis of complete display systems. This covers electro-optical media for the display effect, passive or active matrixes for addressing the single pixels and driving electronics, either integrated in thin film technology or external. A 500m<sup>2</sup> footprint cleanroom with equipment for substrate sizes up to 400mm x 400mm for manufacturing and characterisation of active matrix displays on glass and plastic substrates and a glovebox system for operations in inert gas atmosphere are available. For further information please visit: [www.lfb.uni-stuttgart.de](http://www.lfb.uni-stuttgart.de)

### About BASF

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Further information on BASF is available on the Internet at [www.basf.com](http://www.basf.com) .

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