

Press release

Polytos project launched by the „Forum Organic Electronics“ excellence cluster

Ellwangen, 29. June 2009

- **BMBF-sponsored excellence cluster project “Printed organic circuits and chips” (Polytos) started**
- **Novel research approach: Development of an overall “Organic Electronics” process to permit the industrial use of smart labels**
- **Involvement of partners from the entire value chain, from materials producers to the application**

VARTA Microbattery GmbH announced today that it has launched the “Printed Organic Switches and Chips“ project (Polytos) together with its partners in the excellence cluster known as the “Forum Organic Electronics“. The aim of this project, which is being sponsored by the German Federal Ministry of Education and Research (BMBF) and conducted by a consortium headed by Merck, is to develop new materials, concepts, components, manufacturing processes and software for printed organic circuits with integrated sensors for applications in the packaging industry. These systems could some day be used as printed smart labels, namely intelligent and flexible transponders that are applied to a film together with their antenna and can transmit information. They are primarily used in the logistics and packaging sectors.

Aside from Merck, the consortium partners involved in the project are BASF SE (Ludwigshafen), Pepperl+Fuchs GmbH (Mannheim), PolyIC GmbH & Co. KG (Fürth), Robert Bosch GmbH (Stuttgart), SAP AG (Walldorf) as well as the University of Heidelberg, the Technical University of Darmstadt and the University of Mannheim. Copaco GmbH & Co. KG (Mainz), Innovation Lab GmbH (Heidelberg) and VARTA Microbattery GmbH (Ellwangen) are associate partners.

The consortium partners are aiming to complete the first basic demonstrators in a three-year period. The total costs of Polytos will amount to around € 13.8 million. The German Federal Ministry of Education and Research will provide funding of around €7.2 million; the industry partners will contribute around €6.6 million themselves.

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The object of Polyptos is to develop printed organic circuits with integrated sensors capable of recording data such as temperature, humidity or light exposure. Interfaces are used to read this information. These types of printed organic circuits could be used as printed smart labels in the future. Smart labels are already used today in the packaging of pharmaceutical products, other high-quality products, e.g. luxury goods, or critical care products such as blood transfusions. Smart label technologies available today have numerous economic and technical problems that severely limit their usability. In particular, high implementation and operating costs prevent their wide-scale application. For example, radio frequency identification (RFID) tags are typically used only for larger packaging volumes (e.g. palettes) in logistic processes. They are only equipped with sensors in a very few number of selected applications. More complex smart labels are capable of recording environmental parameters, yet their application is extremely expensive.

The smart labels being developed by Polyptos are based on organic electronics, thereby making cost-effective production via printing processes possible. This makes them economical and efficient in production as they can be applied using mass-production techniques.

Polyptos is aiming to develop an overall organic electronics process that will permit the industrial use of smart labels on an industrial scale. This research approach is unique. Thanks to the expertise of the project partners, it is also very promising. Engineers, chemists, materials scientists, physicists and IT specialists give Polyptos interdisciplinary strength. At the same time, the partners cover the complete value chain from components, circuit design, printing processes, packaging design as well as software and application development. This will help to further expand Germany's international leadership role in the development of organic electronics.

The research and transfer platform InnovationLab is supporting cooperation between the partners and also bears responsibility for the management of the "Forum Organic Electronics" excellence cluster. The cluster was one the winners of the top cluster competition held by the German Federal Ministry of Education and Research in 2008. It consists of a consortium comprising 27 companies, universities and research institutes. Funding totaling € 40 million will go toward research projects in the future technology of organic electronics.

The "Forum Organic Electronics" excellence cluster

The "Forum Organic Electronics" excellence cluster is a cooperation network comprising three DAX-listed companies, eight major international corporations, five medium-sized companies as well as 11 research institutes and universities, including two elite universities. The objectives of the excellence cluster are to create the world's leading research, development and production site for organic electronics, one of the most attractive locations for top scientific talent and aspiring young scientists as well as the world's leading innovation center for knowledge transfer and start-up companies. The cluster partners are working together to realize innovative applications and products in the field of organic electronics. The areas of focus are eco-friendly energy generation using organic photovoltaics, economical energy use through organic light-emitting diodes and the resource- and eco-friendly production of electronic components such as circuits, chips and sensors. The special expertise of the cluster lies in printing technology as a cost-effective production method for organic electronic components.

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VARTA Microbattery GmbH

VARTA Microbattery is one of the major battery manufacturers in the world maintaining production facilities globally in order to supply more than 100 countries with quality products. The headquarter of the company is in Germany, Ellwangen. We develop and produce batteries comprising many electrochemical systems and cell geometry's. As global system supplier we provide the best solution possible to satisfy our customer's application requirements.

