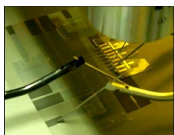


Demonstrator Fact Sheet

Component Integration



The Research Collaboration project “Component Integration” is conducted within the framework of Polynet. It aims at developing process integration strategies for different classes of organic electronic components. In this scope it has previously been demonstrated that anisotropically conductive adhesives can be used to assemble ready processed single components, e.g. touch sensors, organic thin film transistors (OTFT) and electrochemical (EC) displays. Sensor systems able to convert sensor signals to a visually detectable output have successfully been demonstrated as well.

In 2009, a demonstrator has been realised where all components have been integrated by a fabrication on common single substrates. The respective circuit includes two push buttons and a resistor as well as an OTFT and an EC display. Applied processes include, amongst other things, vacuum steps for metal and organic semiconductor evaporations and printing steps for the patterning of conducting lines and electrolytes. The integration is realised by a careful coordination of process steps. First, conducting lines were evaporated at Acreo, where conducting lines and resistors were printed as well. After that, the samples were cut to single modules and sent to JR for an OTFT processing. Finally, the samples were sent back to Acreo for electrolyte printing and encapsulation and lamination of touch sensor top contact layer. The shadow masks used were prepared by Fraunhofer-IZM-M.

The demonstrator is shown in the figure below. After pressing the “on” button, the OTFT will turn on. It updates the display element and makes it change to a dark blue colour. After pushing the “off” button the display element is short-circuited and de-coloured again. The applied DC voltage is 4.5 V.



Demonstrator before (left) and after switching on the display element (right).

The goal for 2010 is to demonstrate a general solution for an integration of components and subsystems. The idea is to realise components and/or integrated subsystems first, which will later on be integrated into (larger) systems. A lamination to a printed circuit foil (PCF) will be used. Different approaches for PCF will be investigated and the plan is to realize three different demonstrators.

Contact: Petronella Norberg, ACREO AB (petronella.norberg@acreo.se)

Integration Project Partners: ACREO AB (ACREO), CEA, Fraunhofer EMFT (formerly FhG-IZM-M), IMEC, Joanneum Research (JR), Linköping University (LIU), TNO, Technische Universität Chemnitz, (TUC), VTT



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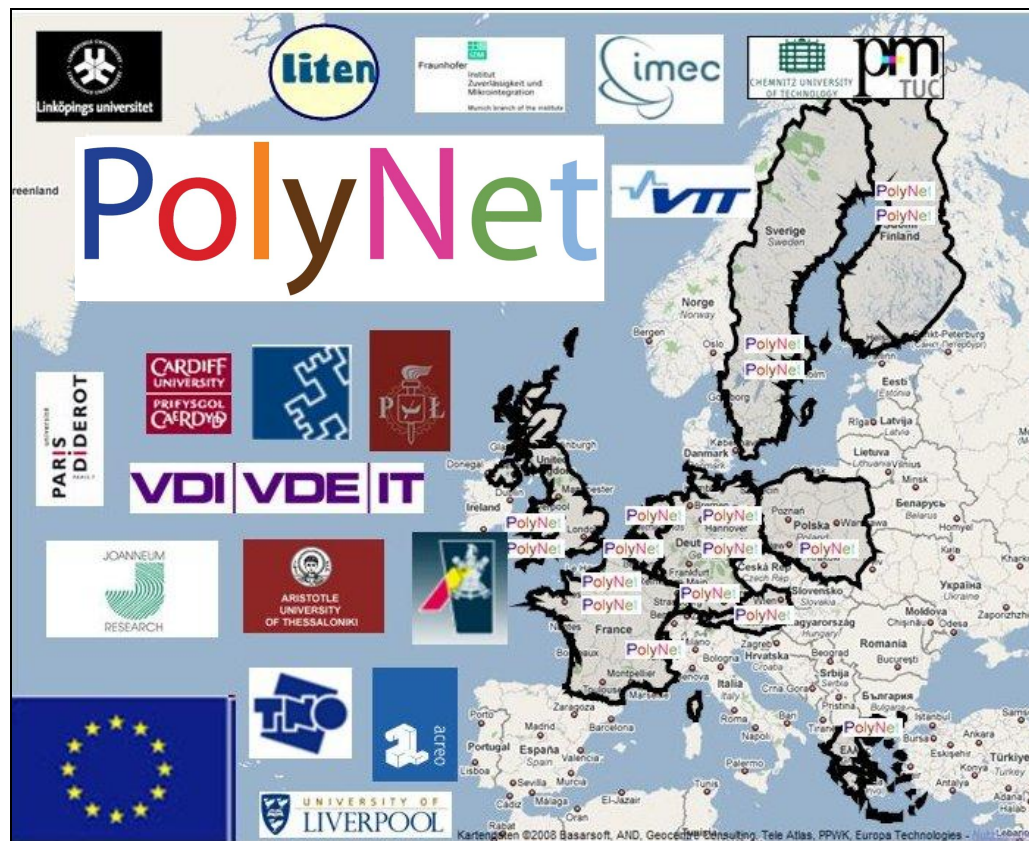


About PolyNet

The NoE PolyNet (Network of Excellence for the Exploitation of Organic and Large Area Electronics / OLAE) aims at establishing Europe in the field of OLAE as the world leader in science, technology development and subsequent commercial exploitation of printing and large area technologies for heterointegration of flexible electronics. It has been designed to

- Overcome the fragmentation of the European research landscape in order to foster transfer from science to industry within the EU
- Develop concepts for the continuation of research cooperation and service offers for a long-term integration of the European research landscape

Impact is expected not only on the research landscape of Organic and Large Area Electronics but also indirectly on European industry by long-term stimulation of innovative technologies and new business development.



Contact:

Constantin von Dewitz
Constantin.vonDewitz@vdivde-it.de
phone (fax) +49 30 310078 -328 (-223)

VDI/VDE Innovation + Technik GmbH
Steinplatz 1
10623 Berlin / Germany



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