

pmTUC RESEARCH NEWS

Organic field effect transistors (OFETs)

In 1977, Alan J. Heeger, Alan G. MacDiarmid, and Hideki Shirakawa discovered conductive polymers, for which they received the Nobel Prize in 2000. In addition, organic (conjugated) polymers could be found as resistive and even semi-conductive materials. These developments combine the versatility of polymers with electrical properties, necessary for the construction of transistors as basis of microelectronic circuits. Due to their solubility and flexibility, printing techniques can be used for the fabrication of electronics.

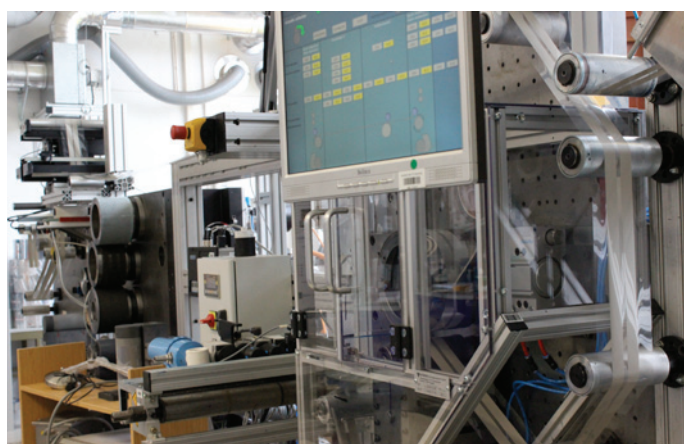
Thus, the aim at the Institute for Print and Media Technology is to produce electronics with similar high reproduction efficiency as of conventional printed media. Electronics would be available at low costs and in large quantities, which would also enable the development of new branches.

Applications of such printed electronics are, e.g., RFID tags, solar cells, displays and keyboards. In general, these applications consist of active (diodes, transistors) and passive (resistors, capacitors) components.

One of the most important active parts is the transistor and the field effect transistor (FET), which normally act as a switch. By applying a gate voltage, a current between source and drain can be controlled.

Additionally, researchers at pmTUC have dealt with adjusting the switching behaviour of OFETs to utilise memory elements and/or digital logics with improved gain.

In a current EU-funded project, called FLEXIBILITY, pmTUC, in collaboration with ten international partners, works on the integration of flexible, thin, light-weight OLAEs (Organic Large Area Electronics) in daily life (smart packaging, smart textiles). One goal is the fabrication of an all printed sound module. The



main tasks concerning printed circuitries are the development and enhancement of fully printed audio amplifiers and signal generators. To drive our printed loudspeakers (pmINDIA Newsletter 12 & 13), transit frequencies higher than 10 kHz are necessary. Regarding this achievements, we have already presented fully printed organic field effect transistors with transit frequencies in the kHz range at this year's Lope-C. *DH*

pmTUC EVENTS

Gautschfest 2012



On 26th June 2012, employees, students and alumni of the pmTUC celebrated the traditional "Gautschfest". The event takes place once a year ever since 1978. Originally, the term "Gautschen" refers to the first step of draining and pressing of the wood fibers in papermaking. With the Gautsch ceremony, the disciples of Gutenberg are honored and admitted to the guild of printers.

The Gautsch ceremony 2012 was inaugurated with a traditional speech of the head of the Gautsch committee, Martin Mellendorf. He was supported by the "Schwammhalter" Sylvia Strauß and the three packers, Tino Zillger, Gert Schlegel and Marko Illing. The traditional flag was carried by Georg Schmidt. With the words "packt an" the head of the committee encourages the packers to catch the so-called cornutes, who are clueless, until their names are shout out loudly. This year, the institute members Dr. Barbara Meier, Daniel Höft, Jessica Mammitzsch and Manuela Heinze were selected by the Gautsch committee to be dunked by the packers into a cold water bath in a huge barrel. This baptism is the highlight of the ceremony! A bucket of water is poured out over the cornutes' heads and a special drink made of beer, spices and selected printing ingredients has to be drunk by them. The final act of the Gautsch ceremony is the dunking of the Schwammhalter into the water barrel by the cornutes which was part of the



2012 celebration as well. Some Indian students who could not await their own Gautsch baptism dunked each other into the bath unofficially directly after the ceremony.

After the ceremony, students, employees and guests celebrated with drinks and barbecue until midnight. *MH, JM*

FURTHER NEWS

Deutschland & Indien - Germany & India

The "famous" printed paper solar cells from the Institute for Print and Media Technology nowadays reside in India. Surely, you want to know why. For those who did not notice: this year is devoted to the celebrations of 60 years of diplomatic relations between Germany and India. The project called "Germany and India 2011-2012: Infinite Opportunities" was launched by various project initiators and partners like the Foreign Office Germany, the Asia-Pacific Committee of German Business, the Goethe-Institute, the Federal



Ministry of Education and Research and many more.

The thematic focus lies on "StadtRäume – CitySpaces" featuring the prestigious main project "Indo-German Urban Mela". According to the project's homepage www.germany-and-india.com, the concept combines "elements of design from both countries with state-of-the-art textile technology, thus creating a symbiosis of art, architecture and technology".

Among the exhibitors is the Institute for Print and Media Technology, Chemnitz, which shows its well-known solar cells. The cells are presented in one of the many white pavilions shaped in the form of six different modules. According to one of the organisers, the cells arouse considerable interest. Since no researcher from pmTUC can take part in the exhibition, students from IIT Mumbai, the so-called "science guides", presented the solar cells to the visitors. The Urban Mela also features cultural events, foods, beverages and conferences.

The Urban Mela travels to five different cities and remains there for ten days. Mumbai and Bangalore were the first to be visited; now, three cities are yet to come:

Chennai	August 24 – September 2
New Delhi	October 26 – November 4
Pune	January 1 – January 20

RV

TU Chemnitz cricket team wins tournament

The first Indo-German Cricket Tournament was held on 7th and 8th July 2012 at Chemnitz University of Technology. The event was supported by the Department of Sports Equipment & Technology and the Institute for Print and Media Technology. To prepare the beginners for the match, seminars and workshops were offered for the newcomers prior to the tournament. In the competition, students from Halle, Jena and Chemnitz faced each other. With a mix of sun and rain, the Chemnitz Cricketing Warriors defeated their challengers, taking home the trophy. CONGRATULATIONS! *RV*

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