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Press Release

LOPEC 2019 in Munich, Germany

Printed electronics: A revolution in diagnostics

From ultra-thin sensors that monitor body functions to lab-on-a-chip for quick tests at the patient's bedside: Printed electronic components expand the possibilities of medical diagnostics. LOPEC, the leading International Exhibition and Conference for the Printed Electronics Industry in Munich, will provide information about new developments in that area from March 19 to 21, 2019.

Healthcare spending is increasing from year to year. More cost-effective and at the same time faster diagnostics could save a lot of money, because the earlier health problems are identified, the greater the chance of recovery and the lower the cost of treatment. LOPEC 2019 will therefore focus on medical applications of printed electronics: It will provide information on diagnostics chips for a fast and meaningful on-site analysis as well as on printed sensors that monitor health parameters—whether of athletes, elderly persons or patients in hospital beds.

“As patient diagnostics and care becomes more decentralized, printed electronics becomes an enabling technology due to the rapid advancement of materials and printing technology,” says Dr. Kerry Adams, Market Segment Manager at DuPont Advanced Materials in the UK. Dr. Adams will chair the session “Biomedical applications”, which is going to take place on March 20 as part of the Technical Conference of the LOPEC Conference. As technology-based solutions provider, DuPont is a leader in the highly exacting materials needed for the biomedical industry, contributing significantly towards the growing success of printed electronics in this market. Materials used here must meet high standards: Films with printed-on sensors that are worn on the skin may not present any health risk. The material of a diagnostic chip for the detection of bacteria or other living cells should also be free of cell-toxic substances that could falsify the analytical result.

Press Contact
Messe München GmbH
Isabella Lauf
Tel. +49 89 949-21487
isabella.lauf@messe-
muenchen.de

Press Contact OE-A
Sophie Verstraelen
Press & Public Relations
Tel. +49 69 6603 1896
sophie.verstraelen@oe-a.org
oe-a.org

Messe München GmbH
Messegelände
81823 München
Germany
messe-muenchen.de

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One of the highlights of the session “Biomedical applications” will be a presentation by Jaye Tyler, CEO of the US company Nissha Si-Cal Technologies. Tyler is going to examine the development and manufacturing process of printed electronics, discussing various printing techniques and medical example cases. The portfolio of Nissha Si-Cal and its subsidiary GSI Technologies includes printed electrodes for rapid tests for blood glucose, cholesterol and heart attack biomarkers. Moreover, the company is involved in the growing market for microfluidics. Microfluidics chips, also known as lab-on-a-chip, are miniaturized instruments for a rapid on-site diagnosis, for example at a patient’s bedside or at the scene of an accident. You only need one drop of sample, usually blood or urine.

Diagnostics in mini-format

A lab-on-a-chip consists of a structured plastic or glass substrate with fine channels, tiny reaction chambers, detectors and other elements. Because of this complex structure, the chips cover another diagnostic field and are more sensitive than test strips used for drug or pregnancy tests, for example.

The first microfluidics chips of this kind were produced in the 1990s from silicon and glass under clean room conditions using elaborate and expensive photolithography. With printing processes such as 3D inkjet technology, the fine chip structures—the channels and chambers as well as the electronic components—can be produced more cost-effectively and without additional assembly steps in the future. A combination of printed electronics and conventional techniques of plastics processing is also possible: Here, the chip with the fine channels and other microfluidic structures is produced using injection molding or embossing techniques. Then the conductor paths, light-emitting diodes and other electronic elements are printed onto the chip.

Versatile sensors

The stands of the LOPEC exhibitors clearly show how versatile printed electronics can be in medical applications. The Heidelberg-based company InnovationLab, for example, already presented its prototype for the OccluSense system at LOPEC 2017. Meanwhile, the diagnostic tool for dentists that revolutionizes chewing pressure control is already in production and available on

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the market. Instead of a specially colored paper, the patient bites on a foil with integrated sensors that measure pressure conditions at over 250 pressure levels. A mobile hand-held device records the data and transmits it to an app. LOPEC exhibitor Brewer Science, on the other hand, has developed a humidity sensor for monitoring breathing. Numerous other bodily functions from temperature to oxygen saturation of the blood can also be monitored with printed sensors.

Printed electronics have already established themselves in many areas of medicine and diagnostics. However, their potential is far from exhausted. Analysts from consulting company Mordor Intelligence predict that by 2023, printed electronics in the healthcare market will grow by almost 25 percent. Jaye Tyler of Nissha Si-Cal emphasizes that one of the challenges in the commercialization of printed electronics is for the various players in the development and manufacturing process to work together. LOPEC makes a significant contribution here, because with its combination of leading international exhibition and accompanying conference, it connects company representatives and scientists from all over the world—across all sectors and stages of the value chain from research to the marketing of the end product.

Service

Further information and background data can be found at www.lopec.com. Image material is available from the [media database](#). All contributions from LOPEC TV can be found on our [webpage](#) as well as in the [media library](#). In the [download section](#), original recordings from LOPEC in broadcast quality are made available to you free of charge.

LOPEC

LOPEC (Large-area, Organic & Printed Electronics Convention) is the leading international event for printed electronics. The combination of an exhibition and a conference is the perfect way to depict the complex and dynamic nature of this young industry. Around 2,500 participants from 51 countries attended the event in 2018. There were 153 exhibitors from 21 countries, and 188 conference presentations from 25 countries. LOPEC is organized jointly by the OE-A (Organic and Printed Electronics Association) and Messe München GmbH. The next event takes place from March 19 to 21, 2019 at the ICM – Internationales Congress Center München in Munich, Germany. www.lopec.com

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Messe München

Messe München is one of the leading exhibition organizers worldwide with more than 50 of its own trade shows for capital goods, consumer goods and new technologies. Every year, a total of over 50,000 exhibitors and around three million visitors take part in more than 200 events at the exhibition center in Munich, at the ICM – Internationales Congress Center München and the MOC Veranstaltungszentrum München as well as abroad. Together with its subsidiary companies, Messe München organizes trade shows in China, India, Brazil, Russia, Turkey, South Africa, Nigeria, Vietnam and Iran. With a network of associated companies in Europe, Asia, Africa and South America as well as around 70 representations abroad for over 100 countries, Messe München has a global presence.

OE-A

The OE-A (Organic and Printed Electronics Association) was founded in December 2004 and is the leading international industry association for organic and printed electronics. The OE-A represents the entire value chain of this industry. The members are world-class global companies and institutions, ranging from R&D institutes, mechanical engineering companies and material suppliers to producers and end-users. Well over 200 companies from Europe, Asia, North America, South America, Africa and Oceania are working together to promote the establishment of a competitive production infrastructure for organic and printed electronics. The OE-A is building a bridge between science, technology and application. The OE-A is a working group within VDMA.
www.oe-a.org