SEMICON® EUROPA CONNECT
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## TechARENA: MedTech

M. Kaiser
Senior Manager Business Development
SEMI Europe, SEMI Europe, Berlin, Germany

**Biography**
After his studies of Industrial Engineering Michael Kaiser started his career in 2015 as Product and Quality Engineer at NXP Semiconductors in Hamburg, Germany.
In 2009 he moved to NXP Hong Kong as Innovation Manager with focus on backend manufacturing and packaging.
3 years later Michael Kaiser took over the role as Sector Manager Microelectronics for the City of Dresden in Europe's leading cluster for Microelectronics.
In parallel he worked as Project Manager for the Silicon Europe initiative as part of the Silicon Saxony Management GmbH.
In 2015 Michael Kaiser joined as program manager with focus on 5G and tactile Internet development the Vodafone chair of TU Dresden.
Today he works as Senior Business Development Manager for SEMI Europe.

## Is digital health dead?

R. Roashan
Senior Analyst
IHS Markit, Healthcare Technology, Hellerup, Denmark

**Abstract**
A growing skepticism is causing key stakeholders in healthcare to doubt the value proposition of digital health, and whether it will transform how healthcare is delivered. This is likely what will push digital health to fulfill its promises of efficiency, quality and personalization.

This session will provide an industry update on key application markets across clinical care, virtual healthcare, consumer medical, and sports, fitness and activity monitoring. In addition, these markets will be addressed alongside disruptive forces, such as artificial intelligence, genomics, and robotics.

Does digital health require a complete new system for healthcare, or can it thrive in conventional healthcare models? The session will also try to answer these questions, as it is fundamental to whether continuous investment in digital health is appropriate or not.

**Biografie**
Roeen Roashan is a Senior Analyst in the Healthcare Technology research team at IHS Markit. His specific area of coverage is digital health, where he has developed an industry-leading intelligence service on topics such as consumer medical devices, virtual healthcare and wearable technologies. Roeen has been quoted in Forbes, Fortune, Time Magazine, Wall Street Journal, Washington Post, Le Monde and Al Jazeera.

Before joining IHS, Roeen held positions in analyst and consulting roles. Roeen received his BSc from Copenhagen Business School in Denmark, where he conducted research on NFC based mobile payment systems.

He received his MBA from California State University Long Beach in Long Beach, California. Roeen is currently based in Copenhagen, Denmark.

# Low power circuit architectures for 22FDX-Technology

G. Teepe
Director Marketing for Europe
GLOBALFOUNDRIES, MK, Dresden, Germany

**Abstract**
The „Internet of Things" (IoT) is identified as the new driver for semiconductor growth. Emerging applications like machine vision, virtual reality and automotive advanced driving functions are becoming the next big driver for the microelectronics industry. Also, new RF-architectures for 5G-radios will be driving significant silicon volumes in the future.

In this context the FDSOI-Technology offers significant power reductions, as this technology comes with a substantial new design freedom on the back-gate bias control. Those circuit functions can be used to steer the circuit into high performance or into low power at run-time through software control. It can also be used for Process-Voltage-Temperature (PVT) corner tightening, when the supply voltage is reduced down to 0.4 Volt. This point operates close to the transistor threshold voltage, where spreads on transistor parameters are widening. Here the back-gate bias mechanism provides a very smart compensation method.

GLOBALFOUNDRIES has developed the 22FDX™-Technology, a planar, fully depleted SOI-technology with a roadmap into 12FDX™. Compared to bulk technology, 22FDX™ realizes significantly higher transistor packing densities. The greater drive strength of the transistors can be used for higher clocking speeds than bulk or, alternatively, to reduce the power dissipation.

FDSOI-technologies like our 22FDX™-Technology are a natural progression path forward from bulk-based silicon technologies for low power embedded-control- and for the emerging IoT-applications.

**Biografie**
Dr. Gerd Teepe
Director Marketing for Europe
CMOS Platforms Business Unit

In his role as Director Marketing for Europe, Gerd is responsible for leading the CMOS Platforms marketing initiatives in this region. Prior to this, he was leading the Design Engineering Organization of GLOBALFOUNDRIES in Europe. Dr. Teepe has been with this company since its creation in 2009 and is based at the FAB1-site in Dresden. Before GLOBALFOUNDRIES, Gerd was with AMD, Motorola-Semiconductors, and NEC, Japan in R&D, Design, Product Management and Marketing roles.

Gerd holds a Master's Degree and a phd. from Aachen University (RWTH), Germany.

# Glass Processing with LIDE technology for MedTech Applications

T. Lietz
Sales Manager
LPKF Laser & Electronics AG, Garbsen, Germany

**Abstract**
Glass offers a unique set of material properties which renders it an ideal material for medical electronics. In addition to its proverbial transparency, glass shows a very high chemical inertness, allows for packages with a high hermeticity and has almost ideal isolating properties. However, micro processing of glass is either limited to the surface or impairs the reliability of the glass components due to process induced micro-cracks, chipping or mechanical stresses. The drawbacks of today's glass micro processing technologies are overcome by newly developed Laser-Induced-Deep-Etching LIDE technology. In LIDE single laser pulses are used to locally modify glass across the entire thickness. These modifications can subsequently etched anisotropically to form micrometre-scale holes or micro-cuts in case multiple modifications are placed close to each other. As a high throughput technology LIDE can unlock thin glass as a material for a multitude of future medical electronics.

**Biografie**
Thorne Lietz did an information electronics apprenticeship at Deutsche Bahn from 1985 to 1989 and then worked as an industrial electronics technician in the geophysical surveying technology production department at Geocom GmbH until 1994. He attended the Technicians College Hannover from 1994 to 1996, and then joined LPKF Laser & Electronics AG as a technician in 1996 where he started his work in the service team. He was later promoted to Manager Service & Support (international/national) for Rapid PCB Prototyping, and has been responsible for the national sales and marketing of these systems from 2006 to 2016. Since 2016 he is Sales Manager and Technology Specialist at the LaserMicronics GmbH which is laser job-shop service provider and a 100% subsidiary of the LPKF Laser & Electronics AG.

# Digital Health in Cardiology: Evolution of Implantable Monitors

C. Piorkowski
Head of Department of Invasive Elctrophysiology
Steinbeis Research Institute Electrophysiology
and Cardiac Devices, Dresden, Germany

Herzzentrum Dresden
UniversitätsKlinik
an der Technischen Universität Dresden

**Abstract**
Telemedicine is an old concept for enhanced patient management, which should allow for earlier reaction and medical intervention in case of patient deterioration. Initial studies, however, using nurse guided telemedicine recordings of body weight, blood pressure and heart rate failed to improve clinical patient outcome.
Only later on the usability of automatically transmitted biological signals obtained from implantable monitoring devices created add-on benefit on top of conventional care. The automatic mode of signal transmission and the fast cause-to-response time were identified as main reasons for better clinical outcome.
Pacemaker and defibrillator technologies have played a pivotal role in that development. Today, however, implantable purely diagnostic sensor and monitoring devices have taken over the forefront of technological innovation.
Although many of these technologies still share similarities with the pacemaker and defibrillator business - e.g. transmission lines and monitoring platforms – differences in customer needs push technological change and adaptation of functionality.
The talk will introduce various technological approaches to monitor cardiovascular biological signals from the perspective of the implantable sensor technology.
Apart from that it will highlight the aspect of data transmission, data management and data access, which gains overwhelming relevance using such treatment pathways.
Today's initiatives to assemble larger cardiovascular e-health networks will be discussed together with opportunities of big data harvesting and big data analysis to predict and prevent clinical outcome events.

**Biografie**
CURRICULUM VITAE
PERSONAL DATA
· name: Christopher Piorkowski
· born: 5th of February 1975
· address:
University of Dresden, Heart Center
Department of Electrophysiology
Fetscherstrasse 76
01307 Dresden

TRAINING AND EDUCATION
June 1993 Graduation from High School
November 1999 Graduation from Medical School (Charité, Berlin)
September 2002 Completion of American licensing (USMLE I, II and CSA)

PROFESSION
01/00 - 07/05 House Officer and Fellow, Department of Electrophysiology, University of Leipzig, Heart Center
08/05 - 08/07 EP consultant, Department of Electrophysiology, University of Leipzig, Heart Center
08/07 - 03/11 Head consultant, Department of Electrophysiology, University of Leipzig, Heart Center
04/11 - 09/11 Director, department of Electrophysiology, Center of

Cardiovascular Medicine, Bad Neustadt
01/12 – 01/13 Head consultant, Department of Electrophysiology,
University of Leipzig, Heart Center
Since 02/13 Director, Department of Electrophysiology,
University of Dresden, Heart Center
Since 06/14 Director, Steinbeis Research Institute,
Electrophysiology and Cardiac Devices
May 2006 Exam for specialisation in Internal Medicine
June 2007 Exam for specialisation in Cardiology

FOREIGN EXPERIENCE
08/97 – 08/98 „Medical School of the University of Bristol“(UK)
08/98 – 10/98 „Rush Presbytarian Medical School Chicago“(US)
06/99 – 09/99 „University Coimbra“(Portugal)

DOCTORAL THESIS
July 1997 Doctoral thesis covering the subject:
„Comparative analysis of Carvedilol and Metoprolol in failing Human myocardial organ preparations – a contribution to athomechanism and therapy of heart failure“

ASSOCIATE PROFESSOR
November 2011 Thesis covering the subject:
„Catheter ablation of Atrial Fibrillation“

FIELDS OF SCIENTIFIC WORK
· Catheter ablation of atrial fibrillation
· Image integration in interventional cardiac electrophysiology
· Catheter navigation and catheter contact technologies
· Future developments of Cardiac Resynchronisation Therapy

REVIEWER FOR
· Heart Rhythm Journal
· Journal of Cardiovascular Electrophysiology
· Europace
· European Heart Journal
· European Journal of Heart Failure
· International Journal of Cardiovascular Imaging
· CardioVascular & Interventional Radiology

MEMBER OF
· German Society of Cardiology
· European Society of Cardiology

## Wearable as medical devices

N. Van Helleputte
R&D Manager
imec, MEDIC, Heverlee, Belgium

**Abstract**
Recent years have seen a significant advancement in wearable technology for healthcare. This talk will discuss how wearables can make a difference in medical applications. For a number of chronic diseases like COPD, hypertension and sleep apnea, today there are no convenient methods available for reliable long-term disease management. This is an area where wearables can make a significant difference. The talk will focus on current state-of-the-art and discuss technological advancements and breakthroughs that are needed to achieve this. Furthermore, quite a few of these chronic conditions are related to lifestyle. Hence these can in theory be prevented. Unfortunately this involves behavioral change, which is an extremely tricky thing to accomplish. The current crop of wearable medical devices doesn’t really address this space. The virtual coach program aims to develop systems and technologies to truly enable personalized coaching towards effective and acceptable change behavior. By combining physiological and contextual information, behavior profiling is achieved. The virtual coach will use this information to analyze your personal behavior, cravings, triggers and provide directed feedback at the right time. As such through programs like the virtual coach, wearable health devices are transformed into active devices that can enable behavioral change and hence achieve true preventive medicine.

**Biografie**
Nick Van Helleputte received the MS degree in electrical engineering in 2004 from the Katholieke Universiteit Leuven, Belgium. He received his Ph.D. degree from the same institute in 2009 (MICAS research group). His PhD research focused on low-power ultra-wide-band analog front-end receivers for ranging applications. He joined imec in 2009 as an Analog R&D Design Engineer. He is currently R&D manager of the biomedical circuits and systems team. His research focus is on ultra-low-power circuits for biomedical applications. He has been involved in analog and mixed-signal ASIC design for wearable and implantable healthcare applications. Nick is an IEEE member and served on the technical program committee of VLSI circuits symposium and ISSCC.