SEMICON EUROPA OCT 25–27, 2016 GRENOBLE, FRANCE CONNECT

Start-Up Pitch

“Trash 2 Cash”

W. Drescher
CEO
Siltectra GmbH, Dresden, Germany

SILTECTRA

Abstract
Every year, material losses from the wafer manufacturing process are in the billions.

The conventional wafer production process uses a wire saw to separate them from the raw material. This leads to a loss of 50% of the valuable material through the resulting material loss and the necessary finishing steps.

Cold Split will change this!

The Cold Split process, developed by Siltectra, allows the processing of semiconductor materials such as silicon, gallium arsenide, germanium, silicon carbide, gallium nitride, and sapphire, as well as bulletproof glass and display glass. A defined layer is first introduced by laser into the material volume. Using a special polymer that tightly shrinks at low temperatures, the wafer is then divided along the pre-defined level.

There are little to no material losses in this process. The wafer characteristics are also better than those of comparable wafers produced by using a wire saw. Additionally, wafers can be made thinner using the Cold Split method. This process allows for up to 50% more yield from the raw materials than with the conventional sawing process. The yield even increases to as much as 95% more when thinning wafers, compared to conventional production methods.

Due to the higher raw material yield and the simultaneous reduction of process costs, the Cold Split method results in huge potential profits.

Biografie
Dr. Wolfram Drescher received his doctorate at Dresden Technical University's Faculty of Electrical Engineering. He gained his initial experience in industry at Applied Materials Inc. of Santa Clara, California. In 1999, he founded Systemonic AG Dresden, which was later acquired by Philips Semiconductors (now NXP). There, Dr. Drescher held the position of Advance Development Director, and made major contributions to the research, development and market placement of a wide variety of commercial chip sets in the field of mobile communications systems. In 2008, he established the start-up Blue Wonder Communications GmbH, where he held the position of the managing director. The fast growing LTE-chipset developer was

acquired by Infineon Technologies AG, respectively Intel Corp. By end of 2012 Dr. Drescher joined Siltectra GmbH, Dresden, as CEO. Under his leadership Siltectra's "Cold Split" process evolved beyond PV application towards utilization in the optoelectronics and high-power semiconductors industries.

SMOLTEK Tiger™ - an advanced packaging platform utilizing carbon nanostructures.

A. Johansson
CEO
Smoltek, Gothenburg, Sweden

Abstract
Smoltek specializes in development of nanostructure fabrication technology to solve advanced materials engineering problems, primarily within the Advanced Semiconductor Packaging space.

The company has developed the SMOLTEK TigerTM smart assembly platform - a platform for proprietary nanostructure fabrication and integration. SMOLTEK TigerTM is based on catalytic low temperature growth processing, resulting in formation of nanostructures and optimized for a particular Advanced Packaging applications such as:

• 2.5D & 3D Interconnects
• Integrated solid state mini-supercapacitors
• Thermal Interface Material

A key technology building block for next generation of 2.5D and 3D Advanced Semiconductor Packaging applications involves chip stacking technology facilitated by fabrication of microbump arrays, used for electrical and thermal interconnect between integrated circuits (ICs) and a substrate or an adjacent IC.

The SMOLTEK Tiger™-process utilizes patterned arrays of Carbon Nanofibers (CNFs) to enhance existing Cu-based pillar technology, and eventually replace Cu-based pillars in 2.5D and 3D packaging process flows. Smoltek's CNF technology can provide near term benefits such as improved electrical, mechanical and thermal performance and reliability, and provides a high confidence development path to scale microbump pitches down to sub-micron level. Other promising application areas for Smoltek's patented CNF technology within the advanced packaging space includes integration of extreme low-profile solid state mini-supercapacitors and thermal interface solutions.

Biografie
Smoltek is a privately held company based in Gothenburg Sweden. Smoltek was spun out from Chalmers University of Technology in 2005 with a vision to see conductive nanostructures improve the efficiency and performance of integrated circuits and other semiconductors. Since then we specialize in development of nanostructure fabrication technology to solve engineering problems in the advanced semiconductor packaging space.

Smoltek has now launched SMOLTEK Tiger™ - a proprietary nanostructure based assembly platform that enables fabrication of optimized and integrated conductive nanostructures for significant improvements of advanced semiconductor packaging application areas such as interconnects, integrated energy storage and thermal dissipation.

Smoltek protects its innovative nanomaterials technology with an IP portfolio of more than 60 patents granted and pending globally, as well as a significant body of know-how and trade secrets. Smoltek offers a commercial licensing model to its extensive IP, this model also includes knowledge transfer and test projects.

From wafer scale graphene production to 2D-materials foundry

R. van Rijn
CTO
Applied Nanolayers, Nijmegen, Netherlands

Abstract
Applied Nanolayers (ANL) is the foundry for the development and fabrication of product based on 2D materials such as graphene. ANL has developed its own production platform and production process for high quality graphene and other 2D materials on semiconductor standard wafer scale (200mm). This, combined with a proprietary wafer to wafer transfer technique allows ANL to start integrating the materials it produces with regular semiconductor production processes in a fully automated way. This places ANL in a unique position to reliably develop applications based on graphene such as Hall sensors, optical modulators and thin membranes.

Biografie
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Fast 3D imager system on chip

C. Florin
CEO
Fastree3D SA, Ecublens, Switzerland

Abstract
Fastree3D SA imaging 3D Time-of-Flight (ToF) sensors help recognize and measure the distance to fast moving objects in real-time. Fastree3D is a fabless semiconductor company based in Lausanne, Switzerland

Applications

ADAS (automotive driving assistance)
Autonomous navigation
Machine Vision, metrology
Robotics, people and objects detection

We provide fast motion sensing based on 3D imaging at low cost (CMOS). The technology relies on a measurement of time of arrival of the reflected illumination from infrared lasers (VCSELs) detected by single photon avalanche diodes. Our 3D imaging sensors are characterized by

high resolution
accuracy
range
speed
strong background illumination resistance
size
price

Why solid-state Lidar

Recently, it has been shown a demand for solid-state Lidar in automotive driving assistance (ADAS) to complement existing sensors like radar, mono & stereo camera or ultrasonic.

Solid-state sensors offer a very attractive price as well as a reasonable size thanks to the standard CMOS technology. The combination of SPAD sensors and VCSEL Laser illumination helps to reach an accuracy close to 10mm @ 30m. Fastree3D is today developing a 160x120 pixels SoC.

Biografie
Claude Florin is a Venture Partner at Polytech Ventures an early-stage fund and principal at Venture Concept providing interim management and investment advisory services . He is President of A3 Angels, a business angel club at the Swiss Federal Institute of Technology providing seed investment and supporting a portfolio of 30 start-up companies. He launched investor education for 200 business angels at the Swiss Commission for Technology and Innovation.
Experience:
2008-2015 Partner Venture Concept and President A3 Angels. Investor and advisor in Lemoptix (MEMS microprojectors), Antlia (drug delivery), Sophia Genetics (genetics), Haloya (VoIP), Ukko Mobile (mobile data), Fastree3D (3D vision), Vivamea (wellness), Domosafety (home care), Nebion (genomics), Jemmic (trading software) and an electric vehicle infrastructure provider.
1996-2010 Director Strategic Marketing, HP communications and Media Solutions. Responsible

for innovation within HP’s 1B$ telecommunication
infrastructure software business . Deployed video, VoIP and mobile prepaid solutions .
Investment steering board member, coordinated M&A
and ventures (Pipebeach , Alcatel-Nextenso, Ericsson, Nokia, Cisco).
Managed service provider sales at 15 top worldwide accounts.including two of the world’s largest deployments (Orange Business System VoIP
and mobile prepaid at Vodafone and TelesP /Vivo).
1989-1995 Corporate development manager, HP Medical Group.
Managed 7 EU R&D project with €25M budget. Launched healthcare and medical information systems : over 100 hospital patient care projects, created digital radiology products for Philips and GE, managed product
design for intensive care and monitoring and clinical laboratory systems

Directly produced semiconducting carbon nanotubes and their application

V. Bezugly
CRO, co-founder
ProNT GmbH, Dresden, Germany

Abstract
For the development of the semiconductor industry and applications, there is an urgent need of new materials which allow further miniaturization of active elements and enable increased energy efficiency and reliability of devices operation.
Carbon nanotubes (CNTs) are nanoscopic tubular objects consisting of carbon atoms. Single-walled nanotubes (SWCNTs) have extraordinary electronic and thermal conductivities and are very attractive materials for the use in innovative electronic devices like computer chips, sensors, displays, photodetectors and other.
However, conventional processes to produce SWCNTs are not optimal, they yield a mixture of metallic and semiconducting SWCNTs, having also admixture of other chemical substances like catalysts. This induces failures and dysfunctions when integrated in the SWCNT-based applications.
Start-up company ProNT GmbH is engaged in the production of carbon nanotubes. Our know-how is a new method of catalyst-free production of high-quality SWCNTs with defined electronic properties, either semiconducting or metallic. This technology solves the problem of the direct production of SWCNTs with specified electronic properties. This will finally allow using the high potential of SWCNTs in electronic and photonic applications. Moreover, compared to SWCNTs obtained by sorting-out the raw mixture, nanotubes produced with our methods are defect-free, have no rests of catalyst particles or other chemicals. Such kind of SWCNTs was not available on the market up to now.
Our production procedure yields ready-to-use SWCNTs allowing their direct application by customers without a pre-treatment. The obtained products are materials and components which have a high potential in the application in innovative electronic and photonic devices. We provide optimally designed SWCNTs and SWCNT monolayers on different substrates for the individual needs of customers from academia, R&D and industry.
Several applications of semiconducting SWCNTs are presented.

Biografie
Viktor Bezugly studied Physics at Kharkov National University (Ukraine) and got his Master in Physics in 1998. In 2004 he obtained his PhD in Physics at the Max-Planck-Institute for the Physics of Complex Systems, Dresden (Germany). After this he worked as a research associate at the Max-Plank-Institute for Chemical Physics of Solids, Dresden. In 2010 he joined the chair of Prof. Cuniberti at TU Dresden where he heads a research group "Nano- and Mesoscopic Systems". There he works on structural and electronic properties of carbon nanotubes, effects at the nanotube-lead interface, synthesis and chemical functionalization of CNTs for their application in organic solar cells, gas sensors, biosensors, thermoelectric and nanophotonic devices. He is CRO and a co-founder of ProNT GmbH.

POLLEN METROLOGY

J. Foucher
CEO
POLLEN Metrology, Moirans, France

Abstract
POLLEN METROLOGY is a technology startup specialist in metrology and nanotechnologies. We are offering Nanometrology software suited for different industrial domains and interoperable with any type of metrology equipment & data format.

Today, nanomaterials are present in many daily life products: electronics, cosmetics, textiles, food, …Production yield becomes more difficult to contain because of the use of nanomaterials & their tight specifications. Regulation is becoming more and more restrictive and requires both control & traceability of Nanometrology data.

The measurements done today at the nanoscale are not accurate enough. The measurement accuracy can affect the value chain of industrials using nanomaterials due to a false analysis.

Market needs more efficient metrology tools to comply with regulation, reduce time to market & increase production yield

Nanomaterials become so complex and difficult to analyze that decision makers need to use the benefits of various complementary metrological tools (microscopes) to support them.

Current metrology software have many limitations to answer to these requirements:
- Specific to one metrology technique
- No Data aggregation & fusion
- Measurement process takes longer time
- No traceability
- No automatic reporting related to process

Our technology consists in a universal software which is composed of 3 independent layers that can handle and fusion any type of data coming from any metrological equipments. This unique software architecture which embed state of the art algorithms allows the aggregation of the strengths of each individual metrology technique in order to virtually create a perfect metrological tool which is mandatory for advanced nanoprocesses control

PLATYPUS software can be used in different development cycles of the product: R&D, production, quality control, certification & end of life. The software has been designed to cope with various industrial segments (semiconductor, health, transport...)

Biografie
After receiving his PhD in 2003 from Grenoble University with a specialization in plasma physics and his usage for advanced semiconductor CMOS gate etching, Johann Foucher worked until 2012 for CEA/LETI institute as a researcher and project manager in the field of nanometrology for semiconductor industry. He has contributed to major AFM3D and CD-SEM enhancements for IC Manufacturing. From 2008 to 2012, he was assignee at IBM Fishkill where he has jointly developed new metrology methodologies for sub-30nm node technologies. It leads to the introduction of the hybrid metrology concept for the industry in order to get the best from each metrology technique to reduce R&D cycle time and increase yield ramp. In 2014, he has co-founded and is currently the CEO of the start-up POLLEN METROLOGY which develops and commercializes software solutions dedicated to hybrid metrology based on data fusion

methodology. Such platform can be applied to any type of industry which produce or integrate nanomaterials in order to reduce drastically cycle time and produce sustainable nanotechnologies

Energy Filter for Ion Implantation - A major Improvement in Semiconductor Power Device Manufacturing

F. Krippendorf
CEO
mi2-factory GmbH, Jena, Germany

Abstract
mi2-factory GmbH from Jena/Germany develops, distributes and uses an innovative tool named “Energy Filter for Ion Implantation“ (EFII). The application field of EFII is the processing of semi-conductor wafers. Amongst our customers are major semiconductor companies which use this novel, unique and very precise technology for the production of power devices. At the moment the EFII technology focuses on the doping of silicon carbide (SiC) devices, such as SiC-Schottky-diodes and SiC-Superjunction-MOSFETs. Another application field is the doping of Si-IGBTs.

Power devices based on the semi-conductor material SiC have superior properties over those consisting of silicon. In today’s chip production one can not exploit the advantages of SiC completely, since the epitaxially grown drift layer - which is the core element of all SiC power devices - has usually a relatively high doping inaccuracy of 20-25%. This directly translates into larger and therefore more expensive power chips. Another problem with doping via epitaxy is the lack of possibilities to produce doped trench-structures in the epitaxial layer. Therefore, Superjunction-MOSFETs can not be produced in SiC.

Fortunately, mi2-factory offers a solution for the above described problems. The main feature is the usage of high-energy ion implantation in combination with our innovative, in-house developed EFII. This tool, which is matched for every customer application, consists of a microstructured membrane which enables a highly precise distribution of foreign atoms in any semi-conductor material. Doping inaccuracy is only about 1%. EFII is the only evident technology which is scalable to production volume for SiC-SJ-MOSFETs.

mi2-factory offers EFII to semiconductor power device manufacturers, high-energy ion implantation foundries, ion beam accelerator manufacturers and end-station manufacturers. If you want to learn more about EFII, please contact us: info@mi2-factory.com.

Biografie
Florian Krippendorf

Since 2016
Co-Founder and Chief Executive Officer at start-up company mi2-factory GmbH in Jena, Germany.
2011 . . . 2016
Doctoral studies on Energy Filter for Ion Implantation at Friedrich-Schiller-University Jena
2009 . . . 2011
Master studies in Scientific Instrumentation at University of Applied Sciences Jena
2006 . . . 2009
Bachelor studies in Physical Engineering at University of Applied Sciences Jena

Inline Wafer Edge Inspection System for Yield Enhancement of Thin Wafer Production

T. Jerman
CEO
Bright Red Systems GmbH, General Management,
Graz, Austria

Abstract
In 2015 the semiconductor's thin wafer market was valued at USD 6.76 Billion and is projected to reach USD 9.17 Billion by 2022, at a CAGR[1] of 3.7% between 2016 and 2022. This market affects MEMS, CMOS Image Sensors, Memory, RF Devices, LEDs, as well as Logic Devices[2].

While this market is growing, problems have increased because wafers are getting thinner and thus more likely to break. This breakage is caused by broken and chipped wafer edges which may result in functional failure or total wafer breakage during production or at the customer's site. Production processes as well as production equipments responsible for these kinds of defects have to be identified and improved.

Hence, Thomas Jerman raised the following question: “What if I could develop a technology which identifies damaged wafers automatically and simultaneously keeps throughput high?”.

Based on the patented Ranging Edge Detection Technology of BRS, now the company focuses on yield enhancement for thin wafer production by providing their contactless screening LED- and laser-micrometers called Screeners. Therefore BRS-Screeners profile the wafer edge thickness during a common wafer pre-alignment process to quantify upper and lower wafer edge defects while saving precious inspection time. They also determine wafer alignment parameters as well as wafer bow.

With that introduced, BRS-Screeners help semiconductor manufacturers to increase yield, save precious inspection time and help to deliver only the best wafers to semiconductor customers.

However, developing measurement technologies is only half of the story, because successful quality assurance can only be achieved by essential system integration services, which BRS also passionately provides.

[1] Compound Annual Growth Rate
[2] Thin Wafer Market by Wafer Size, Process, Application and Region - Global Trend and Forecast to 2022, Publisher: marketsandmarkets.com, Publishing Date: January 2016.

Biografie
Thomas Jerman has a master's degree in electrical engineering from Graz University of Technology. He focused on information technologies and optical metrology while he was gaining experience in the semiconductor industry (ams AG and Infineon Technologies Austria AG). After graduation he founded the company Bright Red Systems GmbH, supported by the academic business incubator Science Park Graz and the Austrian research promotion agency FFG. Together with Dr. Tatiana Strapacova and Dr. Robin Priewald he has been running BRS for five years now. Today Thomas Jerman can already look back on fourteen years of experience within the semiconductor industry.

IJD technique: a new approach to pulsed electron deposition

G. Tedeschi
CEO
Noivion Srl, Rovereto, Italy

Abstract
A new thin film deposition method – **Ionised Jet Deposition (IJD)** – based on pulsed energy delivered by ionized gas jet to a solid target (material source) is presented.
A pulsed electron plasma beam is extracted from a gas jet and used to transfer energy to a material source (target) causing its ablation. The plasma is created by high voltage (up to 30 kV) vacuum discharge within the spatially free gas stream formed by a metallic nozzle. The electron and energetic plasma stream is generated and subtracted from spatially free equipotential space biased negatively with respect to the target. As the whole process of energetic particle generation from initial discharge up to the target ablation is performed in the free space overcoming the limitations of comparable techniques. The whole equipment is build from metallic parts for a simple and rugged construction well suited for industrial applications.
IDJ is enabling the electronic manufacturing industry to access the benefits of techniques like Pulsed Laser Deposition and Pulsed Electron Deposition that are not suitable for mass manufacturing due to high costs, complex system geometry, low yield or reliability. The last generation of IJD electron sources from Noivion are extremely compact (CF40 mounted) and thanks to the advanced electrode geometry can be mounted on the side or under the target allowing the design of large area and multi-source deposition systems. IJD more relevant advantages are target composition conservation and low temperature deposition at high deposition rate thanks to high plasma ionization and ion energy. IJD works well with metals, event high melting point ones, semiconductors, insulating and optically transparent materials; operates in both in reactive or non-reactive mode allowing a wide level of flexibility.

Biografie
Noivion is startup company devoted to the design and construction of thin film deposition equipment and components based on the new Ionized Jet Deposition technology. Located in Rovereto, Italy, in the Alps region, in the heart of Europe, Noivion is currently incubated at Progetto Manifattura – the Green Innovation Factory.
Noivion is built on a solid team with deep mutual trust gained in previous work experience. The team presents strong multi-disciplinary competences and many years of experience in respective fields.
Noivion's CEO Gianpiero Tedeschi is an engineer with over fifteen years of experience in industrial automation and project management mainly matured in the industrial production of photovoltaic manufacturing equipment and devices (cells and modules). Prior to founding Noivion with a group of trusted fellows he served as managing director of a start-up in thin film photovoltaics.

Hprobe - A magnetic field wafer-level tester for MRAM

L. Lebrun
CEO
Hprobe, Grenoble, France

Abstract
Hprobe offers the missing test and monitoring solution for MRAM manufacturers and researchers with our 3D magnetic field wafer-level electrical test prober.

To test and design the MRAM stacks, people have to make measurements under perpendicular and planar magnetic fields. In case of Perpendicular MRAM, strength of the field must reach up to 0,5 Tesla.

For Semicon Europa, Hprobe and Spintec, associated laboratory, manufacture an alphatool on an existing prober to be able to make demos and sample tests.

Since 2003, Spintec develops probers with magnetic field generation. For the perpendicular MRAM, Spintec designs a special magnetic head to generate high fields on wafer. This magnetic head is implemented on standard probers and Spintec develops specific softs for testing and analysing MRAM.

Hprobe designs a magnetic head able to generate 3D vectorial magnetic field with a maximum of 0,5 T in perpendicular. This head is patented by CNRS in january 2016. Moreover, Hprobe offers softwares for testing protocols and for physics analysis of statistics measurements.

First application is for MRAM R&D Laboratories.
When Foundries would launch production, they need to have production test system with good throughout and Hprobe develops this tests system.

Biografie
Laurent LEBRUN - CEO, « Arts et Métiers » engineer, PhD
Jean-Pierre NOZIERES – President, founder/Past Director Spintec/CNRS, founder/past CTO Crocus, founder/President eVaderis

Smart Force Technologies – Nanoparticle based fabrication within reach

J. Cordeiro
CEO
Smart Force Technologies SAS, Grenoble, France

Abstract
Smart Force Technologies (SFT) develops and provides affordable, user friendly and table-top equipment for actors working in the fields of micro and nanotechnologies.

SFT has a strong expertise in nanoparticle handling and more widely in micro/nanofabrication. It especially provides the world first commercial equipment – SF-Research – dedicated to nanoparticles controlled depositing and organization. This equipment has been designed to take advantage of the enormous potential of synthesized nanoparticles in aqueous solution. Indeed, it gives access to their systematic study and their use as building blocks, in order to develop nano-components of the future and integrate them in end products. Application fields are optics, life sciences, communication & microelectronics and nano-manufacturing.
In addition, SFT will soon extend its product portfolio with a new lithography equipment based on a disruptive approach and designed for rapid micro-prototyping.

SFT is a young “Hi-Tech” company born from a joint project between the CNRS and CEA (Grenoble, France). It is supported by the French National Research Agency (ANR), the SATT-LINKSIUM (Business incubator for innovative entrepreneurship) and the competitiveness clusters Minalogic and Lyon Biopole.

Biografie
Julien Cordeiro received a master degree in Nanotechnologies and Nanobiosciences from the University of Burgundy, Dijon, France. He joined the Laboratory of Technologies of Microelectronics (LTM), Grenoble, France, as a PhD student working on 3D colloidal architectures for photonics and plasmonics applications. He then co-founded the company Smart Force Technologies where he works as CEO and as manager of marketing and sales.

Unique and cost effective ultrasonic ceramic motors

J.-M. Meyer
CEO
miniswys SA, Biel / Bienne, Switzerland

Abstract
miniswys is a technology provider of specific and patented cost effective ultrasonic ceramic micro motor, optimized for mid to high mass production applications.
miniswys provides custom solutions for OEM applications in highly challenging B2B markets.

The miniswys motors are very well adapted for application as :
- autofocus for telecommunication system (camera module)
- optical image stabilization system for telecommunication and automotive
- zoom applications
- micro dosing pumps
- optics (no backlash) & tracking system
- security devices (locking systems)

Compared to other technology providers, the miniswys ultrasonic ceramic motors have an extremely simple structure and have some excellent key features :
- High force or torque density
- Simple & compact design
- High-speed (linear or rotary)
- Direct drive with high resolution
- Very small current consumption (constant over the full stroke for linear version)
- Self-locking without current
- Very low settling time
- Excellent thermal dissipation

The miniswys ultrasonic ceramic motors are manufactured only using existing and mature technologies, such as stamping or injection molding.

The business model is based on selling licenses to manufacturing companies. The technology transfer and the support for the process engineering are part of the activities provided by miniswys to its partners.

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August 2016

Biografie
JEAN-MICHEL MEYER Executive Management, International Sales B2B (OEM), Quality Management CH 2504 Biel-Bienne - Switzerland • jmme@prodym.com +41 32 341 04 44 office • +41 79 250 27 63 mobile EXECUTIVE-LEVEL SALES&MARKETING AND OPERATIONS An executive-level sales and marketing expert with nearly 20 years experience in development,

process engineering and production of mechatronic systems (medical device and implantable products, automotive, textile, HVAC, optics and mobile hydraulics) integrating motion control units. Specializations include Lean Manufacturing, 6 Sigma, Key Account Management, Benchmarking and Risk Management, and a strong knowledge of ISO 9001, 13485, 14001 and 16949 quality standards. PROFESSIONAL HISTORY MINISWYS SA BIEL-BIENNE, SWITZERLAND CEO, 2013-present Miniswys SA is a technology provider, active in proprietary piezomotor technologies with unique and cost effective solutions, providing custom oriented solutions for OEM product in highly challenging B2B markets, such as automotive, mobile telecommunication and automation. PRODYM SOLUTIONS SA / AG , BIEL-BIENNE, SWITZERLAND Managing Director and Owner, 2012-present Prodym Solutions is a company specialized on the B2B market of high technological products providing state of the art best practices from the automotive and medical device fields : - Executive coaching - Coaching for ISO quality Management certification (ISO 9001, ISO 13485, ISO TS 16949 and EN 9100) - Additive Manufacturing Solutions FAULHABER GROUP BIEL-BIENNE, SWITZERLAND Chief Operating Officer / Business Development Director 2007-2012 - Direct sales and marketing of Mechatronic Systems. - Manage a team responsible for the design , the quality management and the manufacturing of micro mechatronic systems used in implantable medical device systems (classe III device) and optic industries - Create unique, customized technological solutions for the defense, optics, and electronics industry using high precision mechanical components, electrical motor, gearhead and electronic driver technology. SONCEBOZ, SA SONCEBOZ, SWITZERLAND Business Unit Manager, 2001-2007 - Managed a global business unit of 120 staff, that conceived, developed, and produced mechatronic (motion control) systems for medical and automotive industries. - Oversaw all operations of the division including value chain, strategy, R&D, innovation, purchasing, product management, production, marketing, sales, logistics, HR, quality systems , risk management, and finances. SONCEBOZ, SA SONCEBOZ, SWITZERLAND Product Manager, 1995-2001 - Achieved double-digit growth of turnover in sales of mechatronics systems in the French, English, American, and Italian markets. SONCEBOZ, SA SONCEBOZ, SWITZERLAND Head of Electrical Motor R&D Development, 1992-1995 - Developed electrical motors (stepping, BLDC, and torque motors) - Delivered professional development, performance reviews, and staff support in a fast-paced development environment. EDUCATION Ecole d'ingénieur Neuchâtel (1978-1984) CRPM LAUSANNE LAUSANNE, SWITZERLAND Executive Masters of Business Administration (EMBA) 2007 LANGUAGES FRENCH, ITALIAN, ENGLISH, GERMAN

Development of a sensitive End Point Detection method for wafer etching applications

S. Dine
CEO
SOLAYL SAS, Orsay, France

Abstract
SOLAYL is a provider of R&D and process control solutions for wafer etching applications in the microelectronics industry. New process control solutions are needed because the new generations of chips require the development of new wafer etching steps to manufacture devices smaller than before at the nanometer level, with complicated 3D structures and new materials.

Problem
The same processing time cannot be used for every wafers because of the inevitable wafer-to-wafer variability. The processing time must be adjusted in real-time. Proper detection of the endpoint, known as End Point Detection (EPD), is therefore essential. The traditional optical method (called OES) doesn't work anymore in some critical applications. We want to provide an alternative EPD solution using our proprietary electrical method.

Technology
Our solution in development is compatible with the existing etching tools. We use an electrical probe to monitor in real time the delivery of the radiofrequency electrical current to the wafer processing area. Our solution detects the appearance of small electrical signals to adjust the processing time. This technique is known since the eighties and has seen very little use in production because the optical method was cheaper and good enough... until now. We introduced multiple proprietary innovations to increase dramatically the sensitivity of this electrical method for End Point Detection.

We are already commercializing a first version of that probe called the "Vigilant Power Monitor" for various R&D applications: PECVD, etching, troubleshooting of etching tools.

Applications
We target the "hard to control" etching steps that can ruin the fabs yield. They are two types of etching applications used in both memory and logic for which the traditional optical EPD method is getting less and less reliable or don't work anymore: "low open area" etch and/or "high aspect ratio" etch.

Visit us at our booth to discuss about potential partnerships to try our technology!

Biografie
M. Dine is the founder and manager of SOLAYL SAS. Before founding the company, M. Dine worked several years in Silicon Valley for Lam Research Corp as a Process Engineer and R&D engineer for plasma etching applications. He managed many R&D projects dealing with RF power engineering and process control. He is convinced that in-situ RF metrology solutions will be needed inside the plasma etchers to manufacture the next generations of silicon chips. He founded SOLAYL SAS in october 2011 to develop and comemrcialize such metrology solutions.

Next Generation Human Activity Sensing For Smart Buildings

G. CROZET
VP Sales & Marketing
IRLYNX, Sales & Marketing, Grenoble, France

Abstract
IRLYNX develops and manufactures **human activity sensing modules for Smart Cities, Smart Buildings and Smart Homes**.

We use thermal infrared technology to deliver **advanced data about people activity**. In particular, our sensing modules are able to detect presence or absence, count people, evaluate location, assess motion direction, distinguish human from animal and recognize posture.

IRLYNX all-in-one sensing modules include optical lens, pyroelectric sensor, microcontroller and dedicated firmware. They deliver already processed data and are ready for integration into end-user products (intelligent sensors, smart lights, connected objects...).

IRLYNX products enable an increase in comfort, energy savings, enhance home security and assist elderly people in their day-to-day living.

A disruptive technology

IRLYNX designed a passive infrared detection array that uses the heat that any human is emitting and transform it into electric signals.

To do so, we acquired an exclusive, all markets license of a specific infrared technology based on CMOS, and that has already been industrialized for thermal fingerprint sensors. This technology is compatible with mass-market and allows **very low cost**, hence shifting a paradigm in the IR sensors market.

Another innovation is our **module approach**: we combined our unique thermal technology with radically new IR optics, along with state-of-the-art embedded algorithms. This module approach brings several advantages:
- The product is plug & play. One just needs to put it into a casing and to add a power supply and communication module to build an end-user product.
- The IR signal is processed directly inside the module, allowing real-time data processing, low power consumption, along with guaranteeing people's privacy.

Conclusion

IRLYNX’s sensing modules offer an unparalleled price-performance ratio, delivering the right level of advanced human activities information for the best, affordable and consumer market compatible cost.

Biografie
Guillaume CROZET
VP Sales & Marketing
Graduated from the EDHEC Business School, 15 years of experience in the technology and software markets
Joined IRLYNX in January 2016 to accelerate business development and accompany IRLYNX’s customers in their product launches.

Innovating the world of high-speed 2D & 3D sensing for robotics, drones, automation and more!

M. Ruffo
CEO
Terabee, St-Genis-Pouilly, France

Abstract
This session highlights the innovations Terabee has made in high-speed 2D and 3D distance and object sensing and the impact on Industry 4.0. In collaboration with CERN, Terabee has developed high performance, modular and lightweight sensing solutions that can be utilised in applications and locations not previously viable. Where other solutions are physically heavy, these are light. Where other solutions are data-heavy, these are not. The differences and benefits are many. You'll discover the opportunities these breakthrough solutions create and why this top-30 start-up organisation is fast gaining recognition for innovation.

Biografie
Max Ruffo is founder and CEO of Terabee - a dynamic organisation transforming the way drones and robots perceive and navigate complex, cluttered environments. Prior to Terabee, Max was a pioneer of the 3D printing industry and headed a Boeing R&D centre department for Advanced Manufacturing. With a PhD in innovation and new technology introduction, Max is always at the forefront of disruptive new technologies and high-growth businesses. He is an energetic and well-received public speaker and holds a black belt in the Six Sigma and Lean process methodologies. He also coaches skiing and skydiving!

Enabling flexible displays and sensors with high-performance OTFT technology

R. Agaiby
Senior Business Development Engineer
FlexEnable Ltd, Cambridge, United Kingdom

Abstract
FlexEnable has pioneered a flexible electronics technology platform that allows electronics to be manufactured on flexible plastic film, the thickness of a sheet of paper. It can be used for the manufacture of glass-free, flexible displays and sensors that enable game-changing products. The versatile applications of flexible displays and sensors across markets such as wearables, automotive, digital signage, medical and security, lead to an end-user market opportunity of $33Bn by 2020. We are working with leading consumer brands who want flexible displays and sensors to bring surfaces to life for the next wave of hardware products.

FlexEnable offers a solution that breaks through the constraints of glass and amorphous silicon – the materials found in most displays and sensor arrays today. Our approach uses organic transistors that are fundamentally flexible, and lower cost than any other flexible transistor because of the low temperature (<100°C) process. We have replaced the glass substrate with plastic to enable flexible displays and sensors that are ultra-thin, light and shatterproof. FlexEnable's technology brings unique benefits to products and manufacturing processes that simply aren't possible with silicon thin-film transistors. We have already achieved several breakthroughs with flexible colour and video-rate plastic displays (LCD and OLED) and flexible X-ray image and fingerprint sensors.

Organic thin-film transistors (OTFTs) are now widely acknowledged as the lowest cost and most flexible transistor technology - and FlexEnable is the world leader in OTFT industrialization. The technology is already de-risked and proven to be reliable and high-yield in production, and now has higher performance than amorphous silicon. By re-purposing existing display factories across Asia, this technology can be quickly scaled to high volumes, achieving a high margin business through licensing and royalties for mass market and fabless supply for high value niche markets.

Biografie
Dr Rouzet Agaiby is Senior Business Development Engineer at FlexEnable. She has over ten years' experience in a variety of technologies including semiconductor manufacturing, solar cells and flexible electronics with special focus on sensors. Rouzet is responsible for growing the implementation of FlexEnable's flexible electronics technology in X-ray detectors and fingerprint sensors. She also sets up and manages key strategic developments in sensors applications with major market players to bring products to market that have added value both for OEMs and for the end user. Rouzet leads the work on integrating graphene and other 2D materials in FlexEnable's flexible electronics technology in order to bring these wonder materials from Lab to Fab.

Rouzet has a PhD in semiconductor technology from University of Newcastle and an MBA from Manchester Alliance Business School.

High-end low-cost Radar-chips (MMICs) for a broad spectrum of established and emerging sensor applications for crash avoidance and obstacle detection –robotics, automation, UAVs and process industry

A. Bölicke
CEO
Silicon Radar, Frankfurt (Oder), Germany

Abstract
Currently, various conventional technologies of short range distance measurement are too costly, consume too much power, place and material, are too heavy, are not robust and reliable enough to enable precise measurements. Advanced sense and avoid applications for power limited systems like drones and robots are simply not feasible.
Silicon Radars 120GHz radar frontend is a miniaturized, mixed signal SiGe chip that consumes significantly less power than conventional radars. As silicon based component it is a true low cost solution at high volumes and it is the first of its kind on the market. It provides high accuracy distance measurements (<1mm resolution). It is satisfying a huge un-met technical need coming from emerging markets (robotics, drones, autonomous transportation).
Silicon Radar - that's a German-based SME with long year expert knowledge in high frequency chip design. Silicon Radar designs and delivers Millimeter Wave Integrated Circuits (MMICs) on a technologically advanced level, manufactured in affordable Silicon-Germanium- Technology (SiGe). We offer high frequency circuits for radar solutions, phased-array-systems and wireless communications. As a so called fabless chip design company Silicon Radar provides both custom specific ASIC design services and supply of standard circuits in frequency range from 10GHz (X-band) up to 200GHz and above. Currently Silicon Radar primarily distributes its ready to use radar chips operating at 24GHz and 120GHz ISM band, radar front ends working at 60GHz are coming soon.
Development, testing, assembly and sales - all from one source - Silicon Radar.

Biografie
In January 2010 Mrs. Anja Bölicke (40) joined the team of Silicon Radar – a premier technology startup designing first class high performance RF-chips. As CEO she oversees the operational and sales aspects bringing in her long year experience in managing RF-projects. She completed her studies of economics and engineering at University of Marburg with excellence and began her professional career as head of sales controlling department of Dresdner Druck- und Verlagshauses (DD+V), part of the Gruner+Jahr publishing group. In 2001 she joined the team of lesswire AG in Frankfurt (Oder) and worked as technical project manager. Among the projects she managed are a location based guiding solution for New Mercedes-Benz Museum Stuttgart, the official CeBit FairGuide for mobile devices as well as the development of a smart-metering device for the German market leader of metering services. In 2008 and 2009 Mrs. Bölicke worked as the sales director of Acoustiguide Germany.

Antaios : The leading supplier of fast, highly reliable, non volatile memory solutions

J.-P. Nozieres
CEO
Antaios, Grenoble, France

Abstract
Advanced processors require large amounts of memory to save programs and data on-the-fly. There is however a huge latency gap between the processor, clocked at multi-GHz, and the main (DRAM) memory, which requires a complex memory hierarchy involving multiple (SRAM) caches. A memory technology that would be fast enough to be embedded within the processor core, yet non volatile to retain data when the power is turned off would be a big step forward.

Antaios' proprietary "SOT" memory technology is the only emerging memory technology that combines non volatility, sub-nanosecond speed and infinite endurance, at a smaller footprint (e.g. cost) then SRAM, with a similar core technology (materials, process) then as the recently developed MRAM, therein providing an easy industrialization path.

As a technology provider, Antaios will provide memory turn-key solutions, from core technology to licensed IP blocks,in return for licensing fees and royalties.

Antaios SOT technology will be king for applications where speed and endurance are key, such as high end Micro Processor Units, from processor cores in PC and servers, to advanced System-On-Chip (SoC) in mobile applications (tablets, cell phones, ...). Antaios embedded memories will first replace SRAM at a lower cost (e.g. silicon area) with the added value of non volatility (e.g. zero standby power), then, if density allows, potentially DRAM as well.

With the key cornerstone technology patents in hand, a team of worldwide experts in the field, an seasoned management having already experienced multiple start-ups in France and abroad, a frugal business model relying on key technology partnerships and a fast growing market with no competing solutions in sight, Antaios offers tremendous opportunities, both for internal development and exit strategy.

Biografie
From permanent magnets to MRAM, Dr. Jean-Pierre Nozières has been involved in magnetics research and development since the late 80’s. After graduating with an Electrical Engineering Degree and a PhD in Physics, he has equally split his career between industry and research, from IBM (USA) where he pioneered the work on “spin valves” to Spintec, one of spintronics premier research laboratory, through Laboratoire Louis Néel, one of France’s major magnetism research lab, Applied Magnetics Corporation, a disk-drive head company, PHS, a french MEMS start-up and Crocus Technology, an MRAM start-up which he founded and acted as the CTO for 4 years. In the past few years, Dr.Nozières has launched eVaderis, a fabless memory IPs company and Antaios, a memory technology company. He is also involved in Hprobe, an test equipment company, to be launched early next year.

FeFET - The ideal semiconductor memory for the age of IoT

S. Müller
CEO
FMC / NaMLab gGmbH, Dresden, Germany

Abstract
The Ferroelectric Memory Company – FMC solves one of the most important hardware challenges in the age of Internet-of-Things. Fabless companies as well as semiconductor manufacturers are nowadays looking for embedded nonvolatile memory solutions (eNVM) that enable products like microcontrollers (MCU) to follow Moore's law. However, legacy eNVM solutions like eFlash cannot provide cost effective solutions that are so in need for the age of IoT. FMC commercializes a disruptive material innovation that will solve this problem for current and future technology nodes, i.e. eNVM based on ferroelectric hafnium oxide (FE-HfO2). The unexpected physical effect of ferroelectricity in HfO2 allows for the transformation of classical high-k metal-gate (HKMG) transistors into nonvolatile ferroelectric field effect transistors (FeFET). In this way, MCUs can easily be scaled from e.g. 65 nm down to 28 nm and beyond enabling tremendous advantages for the overall system: SoC cost reduction of around 80%, per bit write energy reduction by a factor of 1000 and an overall performance gain of the system of around 70% due to the transition to advanced process nodes. The FeFET concept has already matured significantly since single cell proof was demonstrated in 2012. First 64 Kbit active arrays have successfully been manufactured and characterized in close collaboration with the Dresden R&D consortium GLOBALFOUNDRIES, NaMLab gGmbH and Fraunhofer IPMS-CNT. Moreover, FMC has recently taped-out a 28 nm SoC prototype in collaboration with design partners RacyICs GmbH and Contronix GmbH that will enable the demonstration of a fully functional 28 nm SoC with 8 Mbit embedded FeFET memory by Q4/2016. Due to the close relation of FeFET and CMOS baseline, there is no roadblock for FMC's technology to be applied also to alternative technology nodes like 22 nm FDSOI, 1X nm FinFET and beyond. FMC plans to enter into technology qualification by 2017 and is currently looking for Series A investment.

Biografie
Dr. Stefan Müller received the joint master's degree in Microelectronics from Technical University Munich, Germany, and Nanyang Technological University Singapore in 2011. He also holds a German diploma degree in Mechatronics and Information Technology as well as a bachelor's degree in Mechanical Engineering both from Technical University Munich, Germany (2011/2008). In 2011, he joined NaMLab gGmbH, a research institute originally founded as joint-venture between DRAM manufacturer Qimonda and the University of Technology Dresden. In 2015, he received his PhD degree from Dresden University of Technology for his work on HfO2-based ferroelectric devices. He then became project leader of the publicly funded research transfer project "EXIST Forschungstransfer" aiming at the commercialization of ferroelectric hafnium oxide. Since 2016, he is CEO of FMC – The Ferroelectric Memory Company.

Roll to Roll CVD Graphene Technology for Transparent Electrode and Flexible heater

Y.Y. Jung
CEO
Nanotech Digital GmbH, Management & Marketing, Dresden, Germany

Abstract
As a result of significant scientific research and progress over the past, the commercialization of graphene material has attracted tremendous attentions from various industries seeking new materials. When graphene was first introduced, it was immediately recognized as the “wonder material” of the future, as it has multifunctional and unrivalled combination of tensile, electrical, thermal, and optical properties. Opportunities and potentials for commercializing graphene technologies are extensive however there are many technological challenges to overcome. The process of mass producing graphene technology is called Roll to Roll CVD graphene. Nanotech Digital GmbH has introduced the foremost advanced method of Roll to Roll CVD graphene production

Biografie
About the presenter:

The founder/CEO of the company has a Master’s Degree in semiconductor and display engineering as well as an AICPA MBA degree. He has worked as an OLED mass production and micro mass production engineer. He has extensive knowledge in the thin film process, and equipment process. With his expertise in various display and semiconductor equipment process, he established “Nanotech Digital GmbH,” to develop various Roll to roll CVD graphene and applied graphene technology products.

About Nanotech Digital GmbH:

“Nanotech Digital GmbH” is a startup company headquartered in Nanocenter Dresden, Germany. Our goal is to make mass production of Roll to Roll CVD graphene possible by utilizing our deep experience in semiconductor and display equipment engineering and integrating our extensive networks. We are now seeking for partners and investors to capitalize on our roll to roll CVD grapheme technology in developing new products and applications.

Conformal 3D interconnects: enabler of wafer-level 3D system-in-package and ultra-compact 3D IPD for IoT

A. GHANNAM
CEO
3DiS Technologies, Labège, France

Abstract
With the Internet of Things (IoT) been labeled as "the next Industrial Revolution", focus is centered on integration and wafer level packages (WLP) to deliver greater functionality, improved cost, and higher performance, all in the smallest form factor. System integration on package level known as System-in-Package (SiP) is higly adapted for IoT devices since it offers the capability of heterogeneous integration (several dies/component in the same package). However, compared to System-on-Chip approach (SoC), SiP suffers from performance loss due to long connections between components (dies, passives, etc.).

3DiS Technologies tackles the problems of integration for IoT by providing solutions for wafer-level 3D system packaging and for integration of high performance, ultra-compact 3D IPD (Integrated Passive Device). These solutions, based on patented conformal peripheral 3D interconnects technology, promise to reduce package size and interconnect length as well as to enhance SiP performance through native 3D integration. The 3D interconnection is performed through routing of high density (15µm L/S) vertical copper interconnects at the edge of a chip (or chip stack) as well as on top of the chip and substrate, be it a package structure, a board, a wafer or a flex substrate. Therefore, it doesn’t use wire-bonds, bumps nor Through Silicon Vias (TSV) for chip to package connection, nor PoP for 3D integration. Additionally, since IoT are communicating devices, high performance 3D inductive devices (coils, transformers, antennas, …) can be integrated simultaneously in the SiP, using the same metallization step. This enables further size and cost reduction of SiP. 3DiS technologies also offers standalone 3D IPD products integration capability that are 2 to 5 times smaller than conventional IPD.

Biografie
About the Presenter:
Ayad Ghannam received Ph.D degree in Microwave, Electromagnetism and Optoelectronic from University of Toulouse III, France, in 2010.

During Ph.D, he worked as a research engineer at Freescale Semiconductors, France branch, and LAAS-CNRS where he designed high-Q power inductors and developed an Above-IC process for their integration. After graduation, he continued working in LAAS-CNRS as a research engineer where he developed an innovative 3D interconnect technology. He co-founded 3DiS Technologies in 2014 and he is now its CEO and CTO.

About 3DiS Technologies:
3DiS Technologies was founded by Ayad GHANNAM, Thierry PARRA and David Bourrier the 29th of April 2014 (100% privately owned). 3DiS is developing innovative, peripheral 3D interconnection-based, advanced IC 3D packaging & 3D IPD technologies to help electronic device manufacturers miniaturize and improve the performance of their systems, cost-effectively, without using wire-bonds, TSV nor PoP. Current technology development level is demonstrator-prototyping (TRL 6). The company is already prototyping its technologies with clients from the aerospace and defense market.