

FORWARD AS ONE SEMICON® EUROPA



SMARTx - SMART Mobility

A revolution in Smart Factory is coming – driven by Autonomous, SW-defined, Service-oriented, Fully Connected Cars. Are you ready?



L. Vivolo
Sr. Business Development Manager,
Semiconductor & Automotive
Dell Technologies, Scottsboro, United States

DELLTechnologies

Abstract

In this session we will discuss the rise of electronics in vehicle design, from Advanced Driver Assistance Systems and Autonomous Driving (ADAS / AD) through electrification and ultimately the connected, SW-defined car – focusing on how Smart Factory deployments of the near future must themselves be connected, up and down the supply chain in order to manage and leverage continuous streams of data. We will introduce the concept of a data stream, which is continuous and without end, as the means to improve quality while opening the door to new revenue streams – all with an eye toward security and privacy.

The automotive industry is in the midst of an electronics revolution. Safety-critical features are in high demand; emissions standards are pushing manufacturers toward electrification; 5G, Smart Cities and the Connected Car will drive the need for ever increasing data streaming and management; and the trend toward Serviceable oriented Architectures (SoA) will create new opportunities for revenue. The Smart Factory of the near future will be the center hub of connectivity, with data streams coming from all directions. Traditional functions, like Predictive Quality, will be extended both up the supply chain, to individual components, and down to the consumer for post-production support. New revenue opportunities have already been identified and many more will come. Data is where the money is and where the challenges lay. It must be processed, managed and shared in real-time -- even as it grows exponentially. Growing concerns and regulations related to cybersecurity and privacy must also be addressed by design, as they can single-handedly derail the entire supply chain. In this session we will introduce the concept of the data stream, and how deploying it securely is a critical enabler of the future, fully connected Smart Factory.

Biography

Lawrence Vivolo is a world-wide Sr. Business Development Manager for Automotive and Semiconductor Design, Validation and Manufacturing at Dell Technologies. Lawrence received his Bachelor of Science degree in Electronic Engineering from California Polytechnic State University, San Luis Obispo, and his Master in Business Administration from Santa Clara University, Santa Clara, California. Lawrence's interests and 30+ years of experience include CPU architecture specification, semiconductor and system-level solution validation, Advanced Driver Assistance and Autonomous Vehicle (ADAS/AD) verification, distributed R&D enterprise infrastructure architectures. Lawrence was most recently awarded a patent for automatic

generation of properties to assist hardware emulation in 2017.

Different worlds: How Bosch Semiconductors manages trade-offs and synergies between automotive and consumer with great success.



T. Sinanoglu
Director Business Development Semiconductor
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Abstract

In this session we will discuss the challenges of semiconductor design in automotive and consumer electronics and the importance of the semiconductor design and technology knowledge for an ideal vertical integration that Bosch offers for the Mobility Solutions.

Bosch Semiconductors specializes in designing microelectronics for the automotive and consumer world. Bosch's IC and MEMS solutions are typically function-rich and highly integrated, embedding the vast experience of Bosch as a system supplier.

The portfolio for automotive includes power transistors and power modules, highly integrated system chips and peripheral system ICs, inertial and pressure MEMS sensors. The portfolio for consumer includes 3-, 6-, and 9-DOF inertial sensors, VOC sensors, IMUs and sensor hubs.

The EU has approved the first project of common European interest (IPCEI) for research and innovation in microelectronics. Our new 300mm fab in Dresden is a logical addition to our IC and MEMS fab in Reutlingen, enabling manufacturing and supply of innovative semiconductor products for automotive, the internet of things and the consumer market for many years to come. For more information, visit www.bosch-semiconductors.com.

Biography

Tamer Sinanoglu is the Director of Business Development for Semiconductor in Automotive and Consumer Electronics at Robert Bosch GmbH. Tamer received his Diploma of Science in Microelectronics from University of Siegen GERMANY and was able to gain early industry experiences in automation and 3D optical sensing. He started his career in Bosch Automotive Electronics in 2005 as analog ASIC designer for pressure, acceleration and gyroscope products. 2010 he moved within Bosch to Bosch Sensortec (a 100% daughter company of Bosch) and adopted his knowledge from automotive products to consumer sensor products, like magnetic and projection sensors as well as acceleration, gyroscope and pressure sensors. During his time in Bosch Sensortec he was an ASIC Design group manager in 3 different locations like Reutlingen, Dresden and Milano. He was the office director of the Executive Vice President for Semiconductors and Components in Bosch. Today he is responsible for the portfolio management and strategy of the automotive and consumer semiconductor business in Bosch, including the search for new semiconductor business fields, technology portfolio and M&A opportunities.

Automotive Reliability – Contamination Management and Maturity of the Ecosystems



A. Amade
VP of sales for the Microcontamination Control
division in EMEA/NA and Head of the Entegris
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Entegris S.A.S., Microcontamination Division,
Moirans, France



Abstract

As we move into a more electrified and automated reality, the sustainability of functional safe and secure electronic systems is a major concern of automobile manufacturers. The complexity of high-performance systems is not possible without the application of the latest semiconductor technology nodes. Now more than ever, auto makers must dig even deeper into their supply chains to identify and eliminate the root causes of potential hazards, many of which are created during the manufacture of the semiconductors that build the systems upon which drivers rely.

To truly address functional safety, it is essential that the automotive industry and semiconductor manufacturers work together to create frameworks that improve functional safety for all stakeholders by exploring and optimizing the intersection of contamination control, inspection, and test.

Since SEMICON Europa 2018, Entegris has been spreading, with the support of SEMI and car makers, a New Collaborative Approach, a process to tackle defectivity with an improved contamination management strategy.

With this presentation we want to share our progress. Is there any meaningful trend that is worth to report in terms of defectivity management? What have we learnt in terms of maturity of the ecosystems? Any correlation with the major technology inflection points? Where should semiconductor manufacturers focus their efforts?

Biography

Mr. Antoine Amade joined Entegris in 1995 as an application engineer in our semiconductor business. Today, he is the VP of sales for the MC Division in EMEA/NA focused primarily on growing the semiconductor business and developing new market opportunities through market strategies and the management of business teams. He also leads the Entegris automotive program.

Mr. Amade has a degree in Chemical Engineering from ENS Chimie Lille and is a member of the SEMI Electronic Materials Group, the Global Automotive Advisory Council for Europe (GAAC) and the Platform for Automotive Semiconductor Requirements Along the Supply Chain (PASRASC).

Advanced Silicon Carbide Single Wafer Wet Chemical Etching and Polishing at Ambient Temperature



H. Kühnlein
Senior Vice President Technology & Innovation
RENA Technologies GmbH, Gütenbach, Germany



The art of wet processing.

Abstract

Silicon carbide (SiC) is the material of choice for next generation power devices in fast growing applications like electromobility and renewable energies. While a strong market demand meets a challenging wafer manufacturing process, material shortage drives substrate costs and limits faster roll out of this technology. Additionally, the well developed and established wet chemical etching and cleaning processes for silicon substrates like RCA clean, SPM and APM do not achieve the required performance for SiC processing due to the chemical inertness of this new material. By increasing the temperatures of the wet processes and applying pressure, the desired etching rate could be reached, but the required equipment solutions and the wet chemical processes would get very complex and challenging for integration in high volume production.

Electrochemical etching can overcome these hurdles at ambient conditions. This contribution introduces a novel technology for single-wafer electrochemical etching of SiC, porous SiC formation and polishing. The patented solution relies on touchless electrical contacts. It ensures fast SiC etching at zero edge exclusion and competitive costs. The system allows new degrees of freedom in device design and enables advanced process flows for SiC wafer and device manufacturing.

Biography

Holger H. Kuehnlein, PhD
Dipl. Chem.
Senior Vice President Technology & Innovation
RENA Technologies GmbH

Holger H. Kuehnlein has his scientific background in physical chemistry with focus on electro and polymer chemistry. Starting his chemistry studies in 1999 at Technical University of Dresden he was able to gain early industrial experience for ECD of flip chip bumps and packaging at KSW Microtec AG a local startup company for flexible RFID labels and devices. Until 2004 the scientific works at university focused on improving mass transfer rates and metal deposition properties in microstructure using pulse plating technologies supported by magnetic field effects.

For his PhD thesis at ATOTECH Germany GmbH Berlin he worked on kinetic and material property studies of the electrodeposited ternary alloy system Cu_2ZnSn and the transfer to CZTSSe compound semiconductor material for thin film photovoltaics. This base opened the opportunity for him to enter RENA Technologies in 2007 during early industrial spread of silicon PV. After guiding different positions as product manager and R&D team leader Holger H. Kuehnlein is heading since 2015 the Department of Technology & Innovation inside the RENA group. While his focus remained on wet chemical processes he drove the successful diversification strategy of RENA and entered with his team the business fields of glass displays, semiconductor wafering and plating. His current development works focus on new wet chemical processes for compound semiconductors as Silicon carbide and Lithium ion batteries using electrochemical processes for polishing, porosification and deposition.

FlexPoint – A novel inspection methodology to address typical MEMS wafer inspection challenges



P. Egger
Senior Manager
Bosch, Reutlingen, Germany



BOSCH
Invented for life

Abstract

Presentation Description

MEMS devices serve a wide range of sensor applications in today's smartphones, tablets, wearables, drones, robots, automobiles, and variety of smart devices – but manufacturing of these devices involves advanced processes that require tight process control. This presentation explores some of the typical challenges that are seen during the manufacturing of a MEMS device and shows a novel method for addressing these challenges.

Biography

Peter Egger is currently working as Senior Manager at Bosch in the semiconductor plant. He joined Bosch in 2002 as a Process Engineer supporting cleaning steps for MEMS products. In the past 19 years Peter has worked on various topics in the field of cleaning processes and defect engineering for MEMS processing. In 2007 he took over the lead of the defect engineering group in the MEMS fab. Peter received his Master (Diploma) and Dr. rer. nat. degrees in Physics from Technical University of Munich.