

MEMS



K. Biasio
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Biography

For more than 15 years, Karl Biasio has been involved at both technical and business levels in the field of innovative technologies, mainly for listed B2B companies. He holds a Technology University Degree in Physical Measurements from the Université Joseph Fourier of Grenoble, and joined ASM in 2001 as Field Service Engineer, where he installed and sustained epitaxy equipments worldwide for key customers such as Intel, AMD, and Soitec, starting the first 300mm epitaxy tool in the world. After completion of a Master Degree in Marketing from Grenoble Ecole de Management, he moved to Soitec from 2010 to 2014 as Business Intelligence Analyst, in charge of building the global market vision for the company, covering Electronics, Solar and LED activities. Then he held various Sales & Marketing consulting positions for high tech Startups and SMEs, in particular for McPhy Energy, where he structured the IPO strategy deployment at global level. Since 2014, he has been managing Tronics Microsystems' Marketing strategy, addressing the challenges of both the MEMS ecosystem and the financial markets in terms of communication and market positioning.

Gas sensors market and technology trends



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Abstract

Air quality is becoming a major concern, and therefore gas sensors are increasingly attracting interest. Gas sensing technologies are not new. Gas sensors embedded in gas detectors for defense and industrial safety applications form a highly regulated and mature market. But the growing awareness of the air quality is creating new applications and opportunities. These include gas sensors in consumer products like home devices, wearables and smartphones, or for buildings and cars, including indoor/in-cabin air quality monitoring.

The consumer market is very attractive as it can drive very large volumes depending on user case adoption, cost and technical maturity. The smartphone industry has revolutionized the sensor industry as mobile applications today aggregate ever more sensors. Gas sensors could be the next to be integrated in smart phones and/or wearables.

For this application, sensors require good sensitivity, reliability, and low cost, small form factor and low power budget. MOS seems to be the best candidate as cost and size fit the requirements for wearables and smartphones. However, as smartphones get more sensors, power consumption is becoming critical and sensors therefore need to be very low power today. Furthermore, MOS sensor sensitivity isn't very good. Surprisingly, with the latest achievements in size reduction of optical gas sensors based on NDIR, this technology is now challenging MOS technology for consumer applications. NDIR sensors are already used in home products.

In our presentation, we will address the potential applications of gas sensors and benchmark them. We will show the variety of gas sensor applications, each with their own technical requirements, such as the gases to be measured, sensitivity and selectivity, response time, lifetime and power consumption, as well as their own business requirements.

We will review the major players, the new comers with their innovative approaches based on existing MEMS and optical integration platforms.

Biografie

Claire Troadec has been a member of the MEMS manufacturing team at Yole Développement since 2013. She graduated from INSA Rennes in France with an engineering degree in microelectronics and material sciences. She then joined NXP Semiconductors, and worked for 7 years as a CMOS process integration engineer at the IMEC R&D facility. During this time, she oversaw the isolation and performance boost of CMOS technology node devices from 90 nm down to 45 nm. She has authored or co-authored seven US patents and nine international publications in the semiconductor field and before joining Yole Développement managed her own distribution company.

Characterization of MEMS Performance by Optical Measurement - Current Challenges & Recent Developments



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Abstract

Optical metrology provides versatile tools for the solution of many measurement and inspection tasks. Applications in many fields benefit from the non-contact nature, the non-destructive working principle, the fast response and from high sensitivity, resolution and accuracy. In the field of MEMS optical measurement can provide a convenient access to both static and dynamic mechanical properties of a device thus providing complementary information to just electrical testing. These measurement data are necessary for the verification of new MEMS prototypes, the validation of FE models, and for MEMS reliability testing. A general technology and application overview with special emphasis on Laser-Doppler-Vibrometry will be concluded with the most recent progress as optical (sub-) pm 3D vibration analysis and ultra-high-frequency vibrometry.

Biografie

Heinrich Steger studied Physics at Bonn University and got a PhD in Molecular Physics from Freiburg University. Since 2003 he is with Polytec GmbH and responsible for Strategic Product Marketing in the Business Unit Optical Measurement Systems.

Strategy to address key MEMS challenges



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Abstract

With the huge deployment of MEMS sensors in consumer products, this industry has experienced exponential growth in the last decade, but is now facing commoditization of its products. That means market saturation and shrinking margins.

To overcome the "commodization paradox", Yole has identified 3 key factors: innovation, technology platforms and added value through software.

This presentation will show how Leti with its 30 years' experience in the field of MEMS is helping addressing these issues to continue supporting its industrial partners in this highly competitive environment.

Biografie

Jean-Philippe Polizzi holds an engineering degree from French Ecole Nationale Supérieure des Arts et Métiers and a master degree from Clemson University, USA, where he studied fabrication and modeling of micromachined silicon beam components in the frame of his thesis. He has been involved for more than 20 years in the field of microsystem based products developments in different companies. At SAGEM, he participated to micromachined pressure sensors and accelerometers development for the automotive market. He joined Auxitrol in 1997 as the pressure sensor group manager, where he developed a variety of MEMS based aerospace sensors for clients such as Airbus or Boeing. From 2002 to 2004, he was the head of the MEMS group in Thales corporate research centre, where he worked on RF switches and piezo-electric sensors and actuators. He is currently in charge of strategy and business development for the MEMS sensors and actuator activity at CEA Leti.