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## ***“Glass wafer market will reach more than 15M 8” EQ WSPY by 2018,” estimates Yole Développement***

«Glass Substrates for Semiconductor Manufacturing», a report from Yole Développement

*Lyon, France – April 11, 2013: Yole Développement announces its **Glass Substrates for Semiconductor Manufacturing** report. This analysis provides a glass substrate wafer forecast for the next five years and predicts future application trends. In addition to key insights into future glass technology trends & challenges, the report delivers an overview of glass’s functionalities and the end-applications that use glass.*

**Glass is everywhere: from MEMS, CMOS image sensors and power to memory, logic IC and microfluidics**

Glass is widely used in everyday life and found in large quantities in many industries, such as flat panel display applications. Over the last few years, glass has gained considerable interest from the semiconductor industry due to its very attractive electrical, physical and chemical properties, as well as its prospects for a relevant and cost-efficient solution.

The application scope of glass substrates in the semiconductor field is broad and highly diversified.

This report covers the following end-applications and functionalities:

- End-applications: MEMS, CMOS Image Sensors, LED, Memory, Logic IC, RF/Analog ICs, Power, micro-batteries, Optoelectronic components, Microfluidics
- Functionalities: Support substrate, WLCapping, 3D TGV/2.5D interposer, carriers, micro-structuring

The demand for glass is growing, and glass has already been adapted for various and unique wafer-processing functionalities and platforms supporting a wide range of end-applications. For example, WLCapping is driven mainly by MEMS and CMOS Image Sensors. In the coming years, the availability of other glass functionalities such as 3D TGV/2.5 D interposer in conjunction with end-applications like memory and logic IC will be the driving force for growth, creating new challenges and new technical developments along the way.

This report provides a detailed overview of glass’s functionality (or platform) aspects, as well as the various end-applications it’s relevant for.

**Mainly driven by the Wafer-Level Packaging industry, the glass wafer market is expected to grow from \$158M in 2012 to \$1.3B by 2018, at a CAGR of ~41% over the next five years**

*“Initially driven by CMOS Image Sensor and MEMS applications, this growing industry will be supported by relevant end-applications such as LED, memory and logic IC, where glass is on its way to being commercialized. In terms of wafers shipped, a 4x glass wafer growth is expected in the semiconductor industry over the next five years, achieving more than 15M 8” EQ WSPY by 2018,” explains Amandine Pizzagalli, Market and Technology Analyst, Equipment & Materials Manufacturing, at Yole Développement.*

This report offers a detailed forecast of the glass substrate market’s next five years by end application.

**Glass substrate: a key enabler of various functionalities in the semiconductor field**

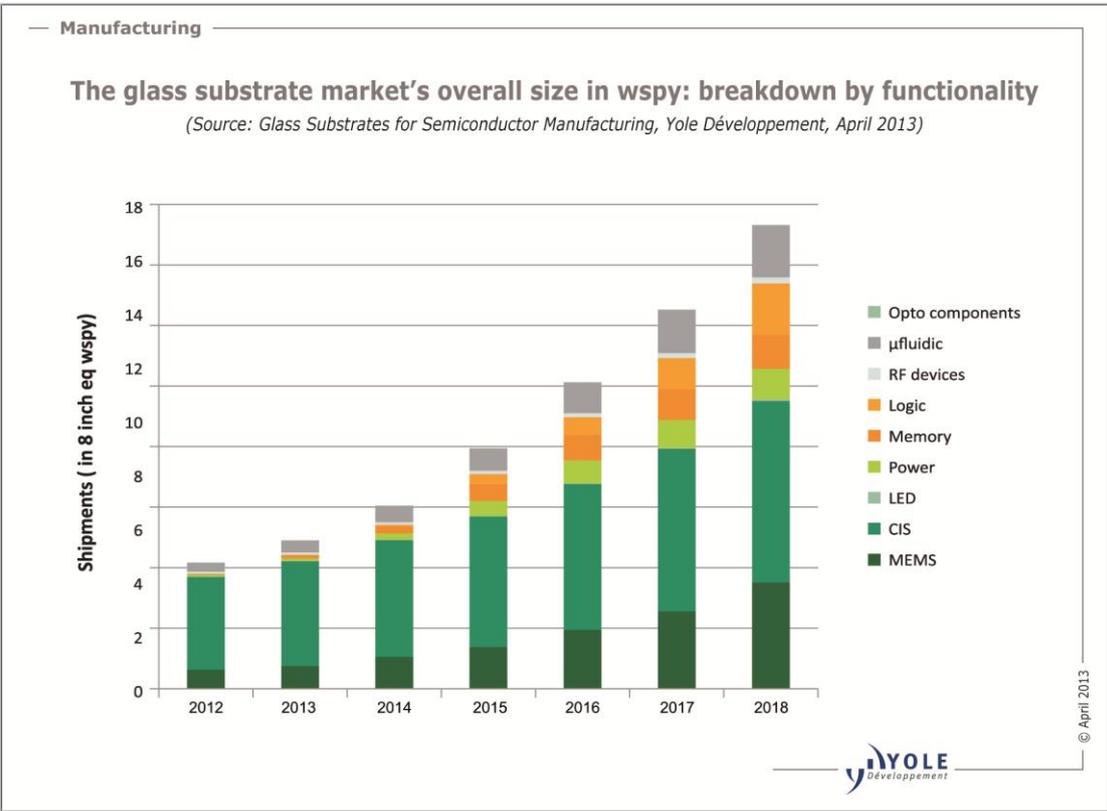
The glass WLCapping platform is a mature functionality already adopted with significant volume in CMOS Image Sensors, where more than 3.3M glass caps were shipped in 2012. This market is expected to grow slowly, with a CAGR of 14% from 2012-2018, mainly supported by MEMS devices impacted by the request for further miniaturization. On the flip side, the glass market for WLOptics will likely decline from 2015-2018 due to the development of competing technologies.

All of this said, we expect to see strong growth in the glass market, mainly supported by two emerging WLP platforms: with a CAGR of 110% and 70% respectively, the glass-type 2.5D interposer emerging platform and the carrier wafer will be glass’s fastest-growing fields over the next five years, since glass offers the best value proposition in terms of cost, flexibility, mechanical rigidity and surface flatness.

If glass is qualified for 2.5D interposer functionality, the glass market could exceed \$1B revenue by 2018. However, it’s still unclear how BEOL wafer fabs will choose glass over the current silicon technology used for logic IC applications (for the 2.5D/3D SOC and system partitioning areas), but the glass variety of 2.5D interposer substrates is expected to significantly impact future glass wafer demand, and it’s obvious that the 2.5D Glass interposer will attract many newcomers.

The use of glass interposers in packaging will certainly be on the HVM roadmap within a few years.

This report delivers an overview of glass substrate’s technology trends and functionalities in the semiconductor industry.



## **Glass substrate: The top five players hold almost 80% of the market**

In the semiconductor industry, the glass substrate market is split amongst five main suppliers. Schott (G), Tecnisco (JP), PlanOptik (G), Bullen (US) and Corning (US) will share more than 70% \$158M glass substrate market this year, driven mainly by demand for WLCapping.

In the midst of this growing market, semiconductor glass suppliers are trying to differentiate themselves by proposing a variety of glass substrate material properties with a good CTE, solid thermal properties and no polishing/grinding steps required, which would result in reduced costs.

Many glass substrate suppliers such as AGC, Corning and HOYA are expected to increase their business in the next few years since they are quite aggressive in 2.5D interposers and glass carrier wafers, and are expected to ramp-up into high volume production. Since the big players are already deeply entrenched in the glass market, it will be very challenging for a new entrant to break through in the foreseeable future.

This report provides a summary of key glass substrate suppliers and examples of the main supply chain end-applications.

### **About Glass Substrates for Semiconductor Manufacturing report:**

#### ○ **Author:**

**Amandine Pizzagalli** joined Yole Développement Advanced Packaging and MEMS manufacturing teams after graduating as an engineer in Electronics, with a specialization in Semiconductors and Nano Electronics Technologies. She worked in the past for Air Liquide with an emphasis on CVD and ALD processes for semiconductor applications.

#### ○ **Catalogue price:**

Euros 5,990.00 (Multi user license) - Publication date: April 2013.

For special offers and the price in dollars, please contact David Jourdan (jourdan@yole.fr or +33 472 83 01 90).

#### ○ **Companies cited in the report:**

AGC, Amkor, Anteryon, ASE, Audi, Berliner Glass, Boehringer Ingelheim, Bosch, Bullen, Colorship, Corning, Dolomite, Heptagon, Hoya, Hoya, Honeywell, Hynix, Qualcomm, Ibiden, IMT AG, IPDiA, Infineon, Lemoptix, Microfluidic ChipShop, Micronit, Micron, MikroGlass, Murata, Nemotek, Omnivision, Osram, OptoPac, PlanOptik, Saint-Gobain, Sensoror/Infineon, Samsung, SK Hynix, STATSChipPAC, STMicro, Schott, Sony, SPIL, Tecnisco, Texas Instruments, Toshiba, TSMC, Ulcoat, VisEra, and more...

### **About Yole Développement – [www.yole.fr](http://www.yole.fr)**

Founded in 1998, Yole Développement has grown to become a group of companies providing marketing, technology and strategy consulting, media in addition to corporate finance services. With a strong focus on emerging applications using silicon and/or micro manufacturing, Yole Développement group has expanded to include more than 50 associates worldwide covering MEMS, Compound Semiconductors, LED, Image Sensors, Optoelectronics, Microfluidics & Medical, Photovoltaics, Advanced Packaging, Nanomaterials and Power Electronics. The group supports industrial companies, investors and R&D organizations worldwide to help them understand markets and follow technology trends to develop their business.

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## **MEDIA**

- Online disruptive technologies website: [www.i-micronews.com](http://www.i-micronews.com)
- Editorial webcasts program
- Six magazines: Micronews - MEMS Trends – 3D Packaging – iLED – Power Dev' - New in 2013: Image Sensors Industry
- Communication & Webcasts services

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