



**PRESS RELEASE**

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**3D Silicon and Glass Interposers:  
Technologies, Applications & Markets**

Next Generation Package Substrates

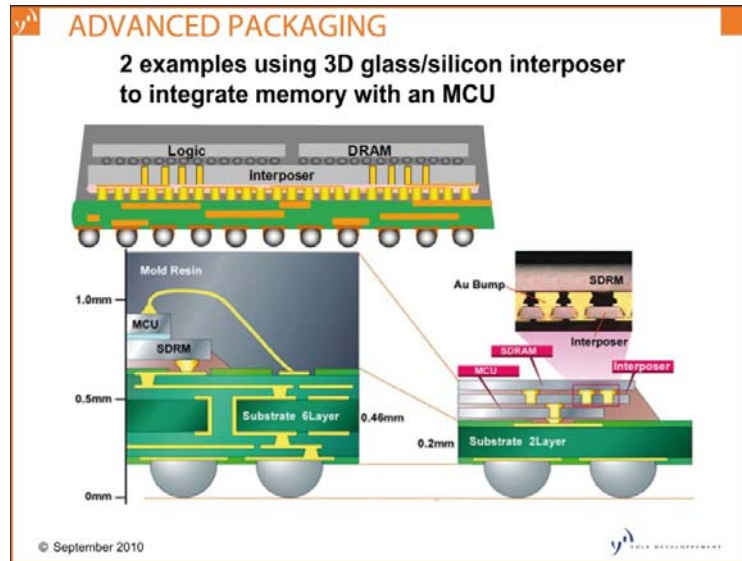
***Myth, niche or high volume necessity?***

*August 10, Lyon, France – Yole Développement announce the release of its latest research study about 3D silicon and glass interposers, named **3D Silicon and Glass Interposers: Technologies, Applications and Markets**. This report contains a list of all the 3D silicon/glass interposer opportunities by application. Yole Développement analyze the key drivers, expected benefits, and the various technology options and alternatives. In addition, the company will cover the 3D interposer industry players and the respective supply chain changes.*

Several concurrent factors account for the growing momentum of 3D silicon and glass interposers: the continuously increasing gap between printed circuit boards and integrated circuits, both in terms of geometries and materials, has driven research and development of new innovative semiconductor assembly and packaging solutions over the past 10 years, including System-in-Package (SiP), Package-on-package (PoP), flip-chip Ball grid Array (fc-BGA) or more recently fan-out Wafer Level Packaging. The introduction of these recent technologies fills the gap by offering finer pitch interconnections and by alleviating the external IO interface thanks to recombined interconnections inside the package. However, a growing number of industry players now claim that the gap has become so wide that a new disruptive technology, such as 3D silicon or glass interposers, is needed.

Concurrently, the so-called “mid-end infrastructure” (foundries for wafer level packaging operations) has developed at an unprecedented pace over the past 3 years to meet the growing demand for Wafer-Level Chip-Scale Packaging (or “fan-in WLCSP”) and flip-chip. These new facilities, half way between front-end foundries and conventional assembly and packaging facilities now support high volume manufacturing on large size wafers, thus permitting economies of scale.

*“These players, in search of growth opportunities, have positioned as service providers for the back-end operations for the making of through silicon vias (TSV’s) and other related wafer-level assembly operations, explains Jean-Marc Yannou, Project Manager at Yole Développement. Thanks to 3D silicon/ glass interposers, they can go one step further, and actually propose products combined with their service offer.”*



*2 examples using 3D glass/silicon interposer to integrate memory with an MCU*

The industry is not clear where 3D interposers will have the most impact. These new interposer technologies, based on silicon wafer technologies such as wafer-level photolithography, are introducing thinner and denser substrates which can profoundly change the semiconductor packaging and assembly ecosystem. Of course, the upfront investments can sometimes limit the technology benefits.

This report first focuses on the driver applications and the associated drivers by application. For each application, Yole Développement's analysts simulate costs and compare them with projected market prices, they compare the 3D si/glass interposer solution with existing and other emerging alternatives and we derive detailed market and wafer forecasts.

Will 3D silicon/glass interposers be an intermediate step to 3D TSV's in active IC's, or is this a long term trend? How will the supply chain evolve to serve these emerging technologies? ... These are the questions Yole Développement address in this first-ever dedicated report on 3D glass/ silicon interposers. Despite the emerging character of the 3D silicon/glass interposer solutions and the associated uncertainties, this report brings clear answers as to which applications and uses they are likely or unlikely to support in the future, and whether these will stay niche or rather expand to high volume manufacturing.

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#### **About the Authors of this new research study:**

**Jean-Marc Yannou** recently joined Yole Développement as technology and market expert in the fields of advanced packaging and Integrated Passive Devices. He has 15-years of experience in the semiconductor industry. He worked for Texas Instruments and Philips (then NXP semiconductors) where he served as "Innovation Manager" for System-in-Package technologies

**Jérôme Baron** is leading the MEMS and Advanced Packaging market research at Yole Développement. He has been involved in the technology analysis of the 3D packaging market evolution at device, equipment and material supplier levels. He was granted a Master of Science degree in Micro & Nanotechnologies from the National Institute of Applied Sciences in Lyon, France.



### 3D Silicon & Glass Interposers report

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For special offers and the price in dollars, please contact David Jourdan ([jourdan@yole.fr](mailto:jourdan@yole.fr) or +33 472 83 01 95)

### Other Advanced Packaging reports:

- **Wafer Level Packaging Report, 2010, Edition:** Be ready for the next generation of IC packaging & substrate assembly waves! Both Fan-Out WLP and Chip embedded package technologies analyzed - Key market drivers, benefits and challenges application by application - Market trends and figures with detailed breakdown by application.
- **IPD Market Report 2009, Technologies, Applications, Markets & Players:** First complete study on Thin Film Integrated Passive & Active Devices. It exhaustively lists the existing and upcoming technologies and applications for IPDs. The report not only describes the market and the associated technologies deep inside the applications, but it also provides a broad overview of the thin-film IPD market and its forthcoming growth opportunities.
- **Memory Applications, Packaging & Integration Trends 2009:** New study aims at answering the following questions: What are the end applications driving the use of 3-D integrated memories? Who are the key players doing it? How will it happen? When will the market ramp up? What is the impact of the current economic turmoil? How big is this 3-D memory market going to be and at which conditions? How will 3D TSV technologies boost new applications and drive the growth of flash and DRAM market?

### About Yole Développement in the Advanced Packaging industry

From technologies to market, we help our clients to develop their business in the Advanced Packaging industry. Our commitment is to facilitate market access for innovative technologies, equipment and materials.

We study comprehensive technology, market and value chain analysis of the semiconductor packaging industry throughout the many available packaging platforms, from equipment and materials down to the end-user applications.

Yole Développement works worldwide with the key industrial companies, R&D institutes and investors in order to help them to understand the markets and technology trends. We take into account the complete value chain in our analysis, from materials and equipment business to device and system manufacturers and final users.

Yole is working with its customers at every stages of the development, from R&D to industrial development, from initial ideas to market launch of finished products.

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