

MSG Lithoglas AG wins IC Industry Award 2009 for "Materials Improvement" Cool Glass – Microstructured Borosilicate Thin-Films as Hermetic Wafer-Level Passivation for robust and reliable sealing of sensors and devices



Berlin / Dresden October 7, 2009 - Bringing the **benefit of glass** to electronic packaging is the mission of **MSG Lithoglas AG**, a technology company started up by engineers from Fraunhofer IZM, Berlin and SCHOTT AG in December 2006. We design and manufacture robust and hermetic passivation and wafer-level packaging solutions for optical semiconductors, sensors and components on basis of our microstructurable low-temperature glass deposition technology. The enabling technology allows for hermetic sealing directly on the surface of the device on wafer-level, thus making "cheap" or "no packaging" solutions for further housing viable and still meeting harsh environment reliability requirements. Lithoglas™ is used in photosensor packaging and is about to be rolled-out to high power semiconductors (thyristors, high-brightness LED, high-power solar cells, etc.) as well as harsh environment electronics and sensors (high temperature, moisture, fluids with high, medium and low pH).

The renown **IC Industry Award 2009** was granted to MSG Lithoglas AG by EuroAsia Semiconductor at the SEMICON EUROPE 2009 in Dresden. The committee underlined the outstanding innovation within the field of low-temperature, hermetic wafer-level passivation, which was acknowledge and voted as winner in the category "Materials Improvements" by the majority of the more than 20,000 participating internet votes. "We are honored and happy about the strong support our unique technology experienced by the industry experts and insiders, which selected Lithoglas as winner with their thousands of votes.", says Dr. Juergen Leib, Business Development at MSG Lithoglas AG. "And we thank EuroAsia Semiconductor for short-listing us on their excellent platform to present new technologies and spread the word about best practices in industry around the globe. Winning the IC Industry award will definitely us help to promote the unique benefits and capabilities of Lithoglas and enable more outperforming products for our customers."

Borosilicate glass is well known for its chemical inert behavior and stability. It is temperature stable and hardly dissolves in most acids, bases and solvents. It is the close-to-perfect material for semiconductor packaging in respect to its electrical, chemical and physical properties. Though being successful in special applications like anodic bonding or glass-to-metal seals, the use of glass for mainstream packaging of semiconductors was limited by lacking CMOS process compatibility and other manufacturing limitations.

MSG Lithoglas AG has developed and implemented a deposition and structuring technology, which enables the production of **microstructured borosilicate glass thin-films** with a thickness of 100 nm to 30 µm on a large variety of substrates at temperatures well below 100 °C.

The deposition of the glass is done by a plasma-assisted e-beam evaporation process. It is a high rate deposition process with at the same time low substrates temperature. With the high deposition rate typical film thicknesses of 3 - 10 µm can be achieved easily and production can be run as a cost effective batch process. Thicker layers as thick as 100 µm have been demonstrated in R&D. They have proven to exhibit low stress in the deposited layers and leverage from their thermal expansion being matched to silicon.

The glass layer can be microstructured by lift-off. Since the deposition process is working at low temperatures standard photo resists can be used for masking.

As a mainstream application the glass thin-films are used for passivation of opto-semiconductors on Si or GaAs easily meeting harsh environment reliability requirements e.g. for automotive or space applications as well as the cost targets for hermetic packaging in consumer industry. High Brightness LED, High Power Solar Cells as well as Power Devices benefit from the thermal stability and match of the thermal expansion of the glass passivation to silicon. Flow- and Pressure Sensors however benefit most of the unique chemical and moisture resistance of Lithoglas™ - especially when immersed in water or hot, chemical reactive fluids.

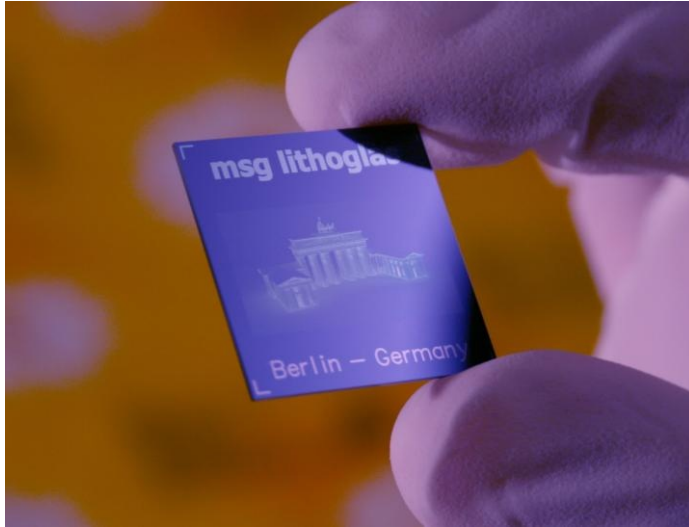
The high-volume Lithoglas™ process is CMOS-Backend compatible and runs e.g. on SEMI standard silicon device wafer, but also allows for processing of thin-film glass for a large variety of other applications incl. Ge, InP, SiC, LiNbO₃, Borofloat or Pyrex, HTCC or LTCC substrates or even flexible substrates.

The combination of a low temperature deposition process with the excellent properties of glass being hermetic, chemically stable and robust enables a unique and revolutionary solution for the passivation of semiconductors or other sensitive devices.

Lithoglas™ - the benefit of glass

Acknowledgements:

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Lithoglas™ on Silicon Test Chip

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Meet us:

SEMICON Europa 2009 – Neue Messe, Dresden, October 6 – 8, 2009
as partner of Fraunhofer IZM Hall 4, Booth 4.012

MikroSystemTechnik Kongress 2009 – Estrel Hotel, Berlin, October 12 – 14, 2009
as partner of Cluster Mikrosystemtechnik Booth 36/37
and Fraunhofer IZM Booth 27
at our **Presentation on Wednesday, October 14, 2009 at 10:30, Estrelsaal B**

Online: www.lithoglas.de

Download Picture:

www2.izm.fhg.de/Bilder/Lithoglas_auf_Silizium_Strukturierte_Borosilikatglasschicht_auf_Silizium-Testchip.jpg

Web Links:

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