

Chip-to-Wafer Direct-Metallic-Bonding Technology Developed at Leti Used In Customized 300mm Device Bonder

*CEA-Leti Partnering with SET, STMicroelectronics, ALES and CNRS-CEMES
On Advanced Chip-to-Wafer Technologies for 3D Integration*

GRENOBLE, France – Feb. 22, 2010 – CEA-Leti today announced a multi-partner project to demonstrate high-alignment-accuracy ($<1\mu\text{m}$) chip-to-wafer structures made by direct metallic bonding. Such structures are required for high-performance 3D integrated circuits and could enable a wide range of applications in microelectronics as well as in optoelectronics or MEMS.

Leti has acquired a customized 300mm FC300 pick-and-place tool from SET, Smart Equipment Technology, to demonstrate the technology.

The customized system will be used by the Minalogic PROCEED project. Minalogic is the global competitive cluster specialized in micro- and nanotechnologies and embedded intelligence. In addition to Leti and SET, partners are STMicroelectronics, ALES and the CNRS-CEMES; PROCEED Minalogic project is a 4.2 Million Euros, 24 months project started in Dec 2009 and supported by French FIU (*Fond Interministeriel Unique*).

The chip-to-wafer direct-metallic-bonding technology was developed at Leti to break through certain 3D-integration limitations. For example, the technology allows chips to be attached to a substrate at low temperature and with a low bonding pressure. This technology also allows interconnecting the chip and the substrate electrically through local metallic bonding.

"This collaboration puts Leti in a very good worldwide position for 3D-technologies development," said Leti CEO Laurent Malier. "We will identify the key challenges of 3D product engineering, and chip-to-wafer strategy with direct-metallic bonding is a very promising option for overcoming those challenges."

The equipment was developed by SET based on its high placement accuracy FC300 system to adapt it to direct metallic bonding requirements.

"SET is proud of leading the Minalogic project, PROCEED, in collaboration with STMicroelectronics, CEA-Leti, ALES and the CNRS-CEMES," said Gaël Schmidt, managing director of SET. "It provides cutting-edge equipment solutions enabling the CEA-Leti process integration. SET has a strong interest for this non-thermocompression metal-to-metal bonding, which may be a key to throughput improvement required for the adoption of 3D-IC integration."

About CEA-Leti

CEA is a French research and technology public organisation, with activities in four main areas: energy, information technologies, healthcare technologies and defence and security. Within CEA, the Laboratory for Electronics & Information Technology (CEA-Leti) works with companies in order to increase their competitiveness through technological

innovation and transfers. CEA-Leti is focused on micro and nanotechnologies and their applications, from wireless devices and systems, to biology and healthcare or photonics. Nanoelectronics and microsystems (MEMS) are at the core of its activities. As a major player in MINATEC campus, CEA-Leti operates 8,000-m² state-of-the-art clean rooms, on 24/7 mode, on 200mm and 300mm wafer standards. With 1,200 employees, CEA-Leti trains more than 190 Ph.D. students and hosts 200 assignees from partner companies. Strongly committed to the creation of value for the industry, CEA-Leti puts a strong emphasis on intellectual property and owns more than 1,700 patent families.

Visit www.leti.fr.

About SET

SET, Smart Equipment Technology, is a world leading supplier of High Accuracy Die-to-Die, Die-to-Wafer Bonding and Nanoimprint Lithography solutions. With more than 300 Device Bonders installed worldwide, SET is globally renowned for the unsurpassed placement accuracy and the high flexibility of its Flip Chip bonders. From the KADETT semi-automated R&D Device Bonder to the automated FC150 and FC300, SET offers a continuous process path from research to production. SET bonders cover most bonding technologies and offer the unique ability to handle and bond both fragile and small components onto substrates up to 300 mm. SET is a wholly owned subsidiary of Replisaurus Technologies. Further information is available on www.set-sas.fr.

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