

## IX-300 ChromaDice wafer dicing

J P Sercel Associates (JPSA Laser) offers 6" GaAs and silicon wafer handling and dicing capability, with its patented IX-300 ChromaDice UV-DPSS laser wafer dicing system.

ChromaDice now has an upgraded air bearing stage that provides higher speed and acceleration in addition to greater travel for up to 6" wafers. It is also available with either 355nm or 266nm high-power, short pulse UV lasers for high speed, high yield processing of sapphire, silicon, and GaAs wafers, as well as other materials.

An upgraded laser diode wafer detector is available for

all wafer types on the new ChromaDice system. This detector module interfaces with the new motion control system and allows any type of wafer up to 6" to be processed on standard dicing tape frames with no damage to the dicing tape, allowing breaking and stretching for pick and place die transfer. The wafer detector allows partial wafers to be processed as well, with no tape damage.

JPSA also announced sales of its Excimer and UV-DPSS Laser Systems to undisclosed customers in Japan, with further sales into the Japanese market expected soon.

## GaAs focused laser dicing system

Swiss-based Synova SA is offering a water-jet guided laser technology to provide cool laser dicing, grinding and cutting, with the laser coupled to a fine stable water-jet and conducted to the work piece by means of total internal reflection, as through an optical fiber. The relatively low water pressure (10-50MPa) of the tiny jet (diameter 28-75 $\mu$ m) results in a negligible force on the sample.

The mechanical and chemical properties of GaAs requires specialised technology. In particular, the back-end process of wafer singulation has proved to be delicate. Different dicing methods exist, but important differences in results can be observed. Sawing creates chipping as well as broken edges. Conventional lasers can cause

heat damage. Scribe and break can create cracks that tend to break wafers.

Synova claims the laser dicing system to be faster and cleaner than any other process for GaAs wafer singulation, generating burr-free kerf quality without toxic gas. For example, 100 $\mu$ m thick GaAs can be diced in streets of 26 $\mu$ m width, at the speed of 60 mm/s. Cutting is allowed in any direction with the same cut quality, impossible with blades; for example, cutting at 45° to the crystal plane.

Further, since the Laser-Microjet is able to cut through metal, it simplifies dicing of wafers with back-side metal, while metal in the streets causes problems to conventional scribe and break methods.

### PTSA ICP Plasma Etcher SI 500

PTSA ICP source  
High etch rate  
Low damage  
High aspect ratio  
End point detection



GaAs via hole

GaAs/AlGaAs VCSEL

Si micro lenses

**SENTECH**

SENTECH Instruments, Carl-Scheele Str. 16  
12489 Berlin, Germany  
www.sentech.de, info@sentech.de

## IQE's 20% Ge strain

IQE Silicon Compounds Ltd has released its latest strained silicon product at 20% Ge strain. According to assessments by several wafer manufacturers and IDMs, the material exhibits surface micro roughness at less than 1Å on 1 $\mu$ m $\times$ 1 $\mu$ m field size, low threading and low pile up dislocation densities, with germanium and thickness uniformity.

IQE's strained silicon product family of wafers exhibit virtually 100% strain relaxation at 10%, 17%, 19% and now 20% Ge content. Full lattice relaxation is critical in ensuring maximum levels of strain in the surface silicon film, hence maximising mobility enhancement and ensuring thermal stability during subsequent wafer processing.

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*Darren Cummings Tel: +44 1865 843829*

*E-mail: d.cummings@elsevier.com*