microVEGA™ xMR

SELECTIVE LASER ANNEALING FOR MONOLITHIC MAGNETIC SENSORS

The microVEGA™ xMR system provides high-throughput laser annealing for monolithic magnetic sensor formation.
Thanks to its highly flexible tool configuration, the microVEGA™ xMR can accommodate both Giant Magnetoresistance (GMR) and Tunnel Magnetoresistance (TMR) sensors. It simplifies the pinning for monolithically integrated sensor chips to an easily adjustable one-step-process - making it an ideal production solution in terms of cost, throughput, yield and sensitivity.

HIGHLIGHTS

- Single platform for both GMR and TMR sensors
- Cost-efficient production of monolithically integrated sensor chips in just one production step
- Very high energy homogeneity - resulting in improved sensor quality
- Flexible recipe programming and wide parameter range
- Allows for sensor processing close to read-out electronics

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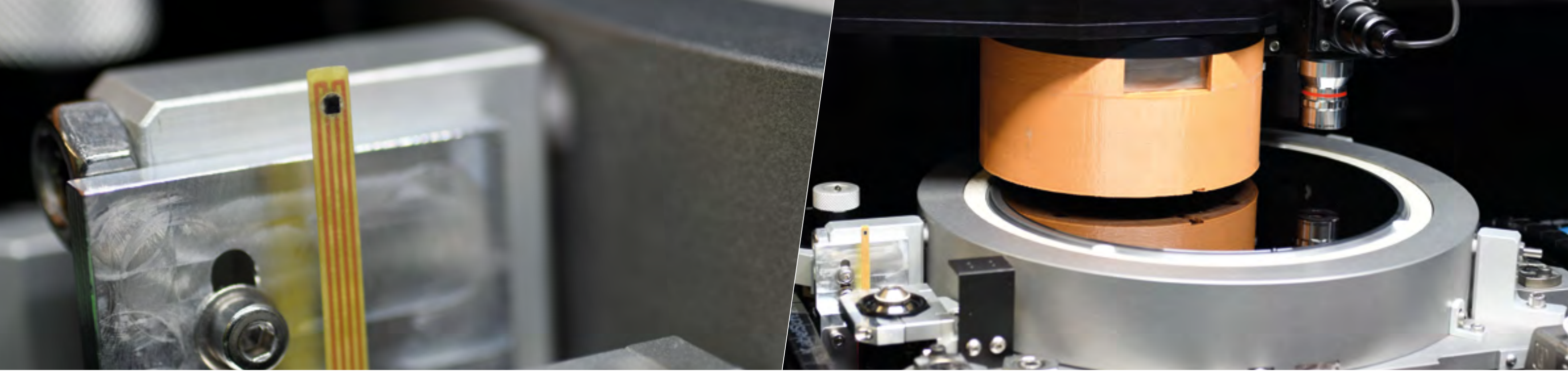

microVEGA™ xMR - SYSTEM CONFIGURATION

The microVEGA™ xMR uses on-the-fly spot and variable laser energy to provide selective heating of the pinning layer in each sensor in order to „imprint“ the intended magnetic orientation.

Magnetic field strength and orientation are adjustable by recipe, while high-temperature gradients ensure low thermal impact. This allows sensors to be processed directly next to read-out electronics as well as closer together, and enables the production of smaller sensors - freeing up space for processing more devices per wafer.

Suitable for	Adjustment of magnetic orientation, sensor position and sensor dimension for • Giant Magnetoresistance (GMR) sensors and • Tunnel Magnetoresistance (TMR) sensors
Wafer dimensions	• Wafer sizes up to 300 mm
Accuracy	• System accuracy: ± 5 µm • Accuracy of magnetic field direction (orientation): ± 0.010°
Laser source and beam path	• ns laser source • NIR laser wavelength • Variable laser spot size selectable by recipe • Spot in X and Y freely programmable
Integrated messurement	• Energy sensor at laser exit • Power sensor at chuck level • Beam analyzer at wafer level or laser exit • Gauss-meter integrated • All relevant data are saved in log files
Standards	• CE/UL as option • Laser class 1 • ISO class 5
Options	• Heating chuck • Automatic wafer handling • SECS/GEM interface
System dimensions	• 2,716 mm x 2,317 mm x 2,118 mm (width, height, depth) including automatic wafer handling

Rev. 2022-06 Changes in accordance to technical progress are reserved.

3D-Micromac AG
Technologie-Campus 8
09126 Chemnitz, GER

www.3d-micromac.com
+49 371 40043 222
sales@3d-micromac.com