



**Malvern  
Panalytical**  
a spectris company

## MRD XL Automation via SECS/GEM

A fully automatable solution to more efficient wafer analysis



# Growing need for a seamless semiconductor process

The compound semiconductor market is maturing, and manufacturers are under increasing pressure to deliver more complicated devices at ever-lower costs. This pressure has led many manufacturers to explore new, innovative ways to optimize their manufacturing process, with an emphasis on speed, efficiency, and cleanliness yet using applications in fabs that were previously restricted to labs.

And automation of our X'Pert<sup>3</sup> MRD XL X-ray diffractometer is the ideal solution. With greater accuracy and increased agility, automated processing is a strong replacement for manual techniques. However, in such a high-speed and high-tech environment, automation requires intensive machine communication and extreme precision – which often comes at a significant cost.

## Introducing MRD XL Automation

With its new automation software, our advanced X'Pert<sup>3</sup> MRD XL tool can now perform host controlled wafer analysis, by using the SECS/GEM protocols while retaining its flexibility to perform applications across the board.

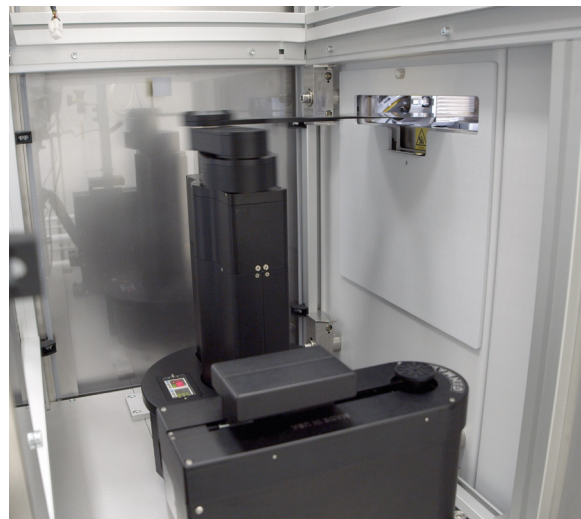
As well as enabling faster and more effective analysis, these automation capabilities also help to address the critical issue of contamination in wafer processing. Since humans are a major source of contamination in wafer analysis, eliminating any hands-on human intervention is an important solution for ensuring a cleaner production environment.

## Key benefits

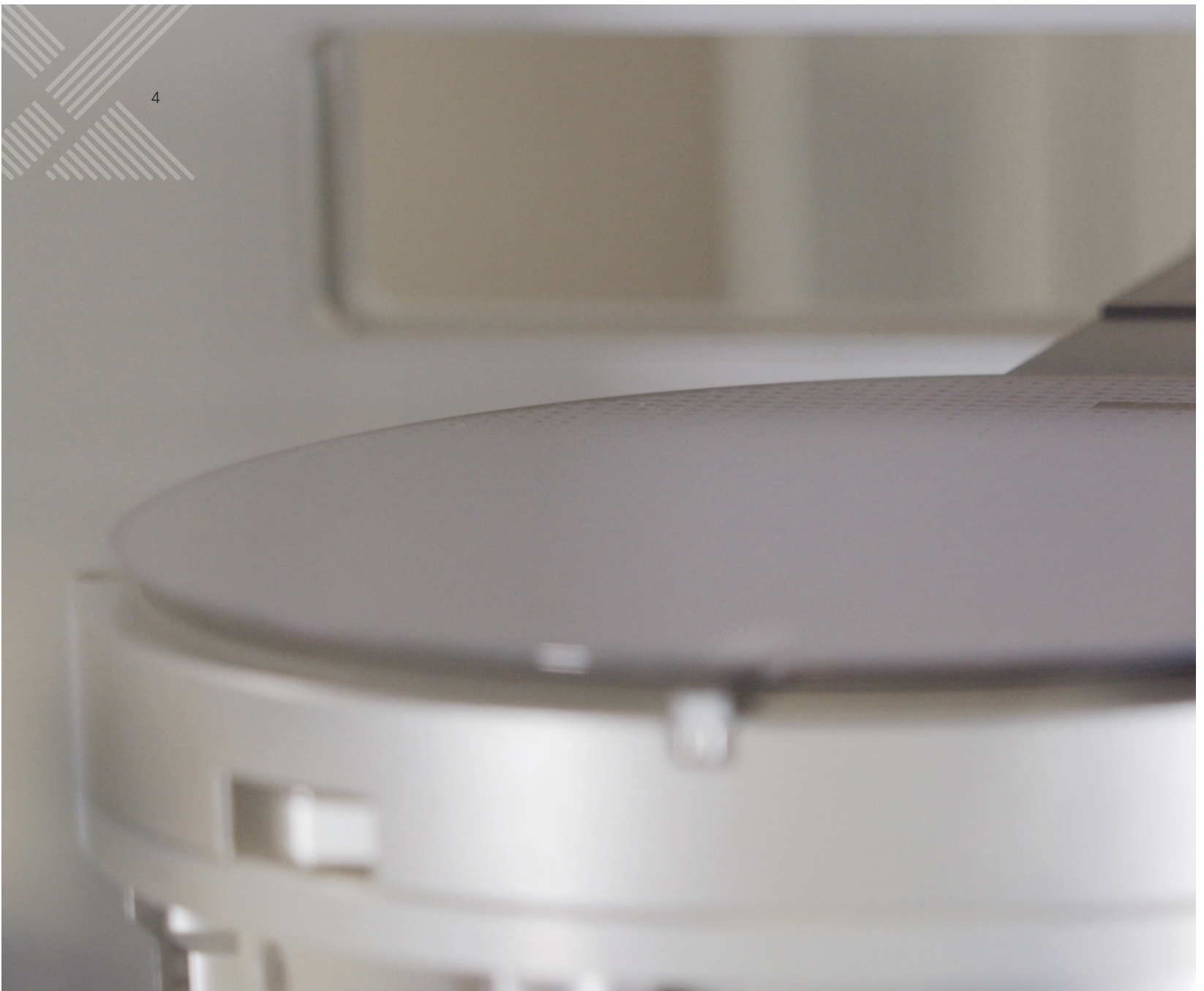
- **Advanced automation capabilities**, removing the need for human intervention
- **Fully customizable** software configurations to fit your needs
- A **flexible**, all-in-one solution capable of meeting rigorous industry demands for LED, HEMTs, Piezomaterials and EUV mask stacks
- Suited to multiple environments, including **cleanrooms**
- **Future-proofed** for an extended service lifetime

“Good results have been acquired until today using this equipment. The equipment is versatile, robust and perfectly suits the use for research.”

Otávio Berenguel  
LNNano - CNPEM



***X'Pert<sup>3</sup> MRD XL***



### **A cleaner solution**

As quality benchmarks and cleanroom practices become increasingly stringent, the need to limit contamination in wafer analysis is a growing imperative for many researchers and manufacturers. Removing human involvement is one of the most effective ways to do this – and MRD XL Automation makes this possible.

### **Future-proofed functionality**

As automation becomes increasingly widespread across laboratory and production environments, this software package ensures that your operation keeps pace with industry developments. Further upgrades and improvements to this solution will make sure that your wafer analysis process is future-proofed – today and in years to come.



## **A customizable framework**

MRD XL is already an extremely versatile research, development, and quality control XRD system, but the addition of automation functionality truly takes this instrument to the next level. With an automation framework that is fully adaptable and customizable, this functionality can also be adapted to meet your specific needs. So, whatever your application or requirements, it has you covered.



INNOVATION



PROCESS



PRODUCTIVITY

AU



TECHNO



INTEGRA

## Looking ahead

Moving forward, we'll continue to build on the capabilities of our MRD XL to meet new and ever-more demanding industry challenges. From advancing its automation capabilities and enabling better equipment-to-host communication to more individualized solutions, we'll make sure that your operations can stay ahead of the semiconductor curve.

## Here when you need us

You can rest assured knowing that our solutions are backed by the highest levels of customer service. As well as our service engineers, our global customer support network is always on hand with support and advice – so don't hesitate to reach out to us!

# UTOMATION

A hand is shown pointing towards the center of the frame. The background is a dark blue/black gradient with a glowing cyan hexagonal grid pattern. Overlaid on this grid are several cyan icons and text labels. At the top, the word 'UTOMATION' is written in large, bold, cyan letters. To the left of the hand, there is an icon of a document with a pencil and the text 'NOLOGY'. In the center, over the hand, is a gear icon with a checkmark inside, and the text 'CONTROL' below it. To the right of the hand, there is an icon of a document with lines of text and the text 'SYSTEM'. In the bottom left corner, there is another gear icon with a checkmark and the text 'RATION'.

"We are happy with the XRD tools, one of our most important analysis methods. Easy to use XRD equipment. No complaints. Very good expert support by Dr. Lars Grieger."

Kai Christiansen  
Aixtron SE



## About Malvern Panalytical

We draw on the power of our analytical instruments and services to make the invisible visible and the impossible possible.

Through the chemical, physical and structural analysis of materials, our high precision analytical systems and top-notch services support our customers in creating a better world. We help them improve everything from the energies that power us and the materials we build with, to the medicines that cure us and the foods we enjoy.

We partner with many of the world's biggest companies, universities and research organizations. They value us not only for the power of our solutions, but also for the depth of our expertise, collaboration and integrity.

We are committed to Net Zero in our own operations by 2030 and in our total value chain by 2040. This is woven into the fabric of our business, and we help our employees and customers think about their part in creating a healthier, cleaner, and more productive world.

With over 2300 employees, we serve the world, and we are part of Spectris plc, the world-leading precision measurement group.

**Malvern Panalytical. We're BIG on small™**

## Service & Support

Malvern Panalytical provides the global training, service and support you need to continuously drive your analytical processes at the highest level. We help you increase the return on your investment with us, and ensure that as your laboratory and analytical needs grow, we are there to support you.

Our worldwide team of specialists adds value to your business processes by ensuring applications expertise, rapid response and maximum instrument uptime.

- Local and remote support
- Full and flexible range of support agreements
- Compliance and validation support
- Onsite or classroom-based training courses
- e-Learning training courses and web seminars
- Sample and application consultancy



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