



## PIXCAN Silicon Device Critical Dimension Measurement

### THE PROBLEM

Silicon device testing in the nm range is subjective, prohibitively slow and cannot meet high-volume manufacturing requirements for device defect inspection.

The current state of the art CD-SEM test equipment is struggling to meet device inspection throughputs and the measurement requirements associated with the shift to more complex patterns and smaller devices in the sub 5nm range.

### SOLUTION / OPPORTUNITY

MTU has developed PIXCAN, a test platform for critical dimension measurement of Silicon devices. PIXCAN has the following advantages when compared to current systems:

- Results are not subjective
- Faster characterisation method
- High throughput wafer scale testing
- Capable of detecting defects <5nm
- Smaller physical footprint

PIXCAN is based on the *Resonant Scattering Spectroscopy (RSS)* technique which enables the realisation of automated, non-invasive, and high throughput device characterisation at wafer scale. RSS allows a complete characterisation of the modes of a defect state in a silicon device.

### OTHER APPLICATIONS

Non-invasive system to test the individual components of an optical circuit at wafer scale.

### VALUE PROPOSITION

**Process Engineers** in Silicon-based Foundries will use the **PIXCAN** test platform for faster, higher-throughput, less subjective and more cost efficient process monitoring.

### STAGE OF DEVELOPMENT

The CAPP [www.cappa.ie](http://www.cappa.ie) research group has already developed a functioning prototype to a Technology Readiness Level of 4. The project was funded through an Enterprise Ireland Commercialisation Fund project to develop the technology. The team plan on completing a follow on project to develop a prototype test platform which can be used onsite in a Silicon foundry. The system is expected to reach TRL7 (prototype demonstration in operational environment) in 2023.

### IP STATUS

A PCT patent was filed in December 2022. The patent will be published in mid 2023.

MTU is seeking a commercial lead with the necessary contacts, network, experience and skills to become involved in an R&D project to spin out and lead a company focused on commercialising this technology.

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