
Chipmetrics Oy Commercializes Test Chip Developed by VTT

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The PillarHall test chip for analyzing 3D thin film structures is ready for market. Chipmetrics Oy, a spin-off of VTT, is now starting to commercialize the solution. The test chip enables the production of smaller nanostructures and components. This opens up new opportunities for the development of semiconductors, memory circuits and smart devices, among others.

3D manufacturing and integration are megatrends in the semiconductor industry, as they can be used to improve the performance and energy efficiency of transistors and memory circuits. New micro-scale structures and materials as well as shrinking geometry are challenges for semiconductor manufacturers because they require process equipment, measurement and testing developed for 3D. [PillarHall](#) is the solution to these challenges.

Large global market

Artificial intelligence is being integrated everywhere, and intelligent transport, data centres and medical technology, among others, are affecting on people's lives. Components are now required to be more reliable than ever before, and more measurement and testing is needed to this end. The PillarHall test chip is suitable for the reliable, fast and cost-effective comparison of manufacturing processes of thin film structures. It can be used to measure the conformality of the thin film process, i.e. the ability to coat a 3D object evenly.

"The PillarHall disposable test chip can be used to compare different 3D thin film processes and reactors. The method is exceptional, as typically measurements have been made directly from the processed wafers using demanding and expensive measuring devices. The test chip can be used to accelerate process development and also monitor production in the future," says [Chipmetrics](#) founder, Dr. Mikko Utriainen.

"[VTT](#) has patented the unique structure of the test chip and developed manufacturing methods for the production of test chips. This provides a good technological basis for the

growth of Chipmetrics in the global market,” says Tauno Vähä-Heikkilä, Vice President of Microelectronics, VTT.

Manufacturing to continue at Micronova

The test chip is the result of deep technological expertise: its background is the leading-edge research in atomic layer deposition (ALD) in [Finland](#) and VTT's experience in MEMS manufacturing processes. The test chip has been developed by VTT through various research projects since 2013. The development has taken place at Micronova, a unique, collaborative research, development and production environment that combines research and industry. In addition to VTT and Aalto University, some 20 companies operate in Micronova.

"With my experience in business development at VTT and 14 Research to Business projects, I am familiar with the challenges of a research-oriented start-up for an academic entrepreneur. PillarHall's journey has so far been exceptionally successful in many ways. Its unique business model and product, market, demand, customer feedback, sales channels and scalability are all very promising," says Utriainen.

The initial market focus of the test chip is in ALD. In addition to ALD equipment and process developers, component manufacturers have shown great interest in the test chip. The solution can also be used to develop any other thin film process technology to meet 3D requirements.

VTT has already piloted the test chip on the international market. The commercialization of this technology will further boost development, and Chipmetrics indeed aims to create a global business. ALD technology is widely used in many high-tech sectors. The PillarHall test chip is an important demonstration of [Finland](#)'s strong expertise in ALD, and it strengthens our position in the areas of application of this technology.

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