

Startup Contest Application

International Conference on Electron, Ion, and Photon Beam Technology and Nanofabrication

Please submit only one application per venture.
Type over/remove grey text from the completed application. Do NOT delete
black text.

1. Venture Name. ATLANT 3D Nanosystems

2. Team Leader and Primary Contact Information.

Dr. Maksym Plakhotnyuk, CEO and founder; DTU Science Park, Diplomvej 378,
Kongens Lyngby, 2800 Denmark mp@atlant3d.com

3. Additional Team Members.

Ivan Kundrata, Head of Technology R&D, co-founder; Pr. Julien Bachmann,
Chief Chemistry Scientist and co-founder, Friedrich Alexander University of
Erlangen-Nürnberg, Faculty of Sciences, Universitätsstraße 40, 91054 Erlangen,
Germany ik@atlant3d.com; jb@atlant3d.com

4. Describe the business opportunity.

ATLANT 3D Nanosystems develops first ever atomically layer advanced
manufacturing technology that enables advanced electronic materials
development and micro/nanodevices fabrication, such as MEMS & Sensors, RF
devices, photonic/optics, with design flexibility and material versatility and cost
efficient direct writing processes. A huge technological gap for materials
development and rapid and scalable prototyping and manufacturing of micro-
/nanodevices processes between 100 microns and 100 nm reported by DARPA
and other scientific communities. We foresee that our technology is the key to
democratisation and decentralisation for novel materials and scalable micro and
optoelectronic devices manufacturing.

5. Describe your technological solution.

ATLANT 3D Nanosystems has developed an advanced technology that enables
ultra-precise hybrid (additive and subtractive) processing for rapid advanced
materials development and micro and nanodevices prototyping and
manufacturing. Our technology derives from solving interdisciplinary challenges
spanning the fields of microtechnology, solid-state physics, chemical material
synthesis, nanotechnology, machine learning (ML) and artificial intelligence
(AI), high precision mechatronics and control electronics. The key innovation of
this technology is first-ever atomic layer advanced manufacturing system, the
ATLANT 3D Nanofabricator.

6. Who is your competition and what are your product differentiators?

Due to ATLANT 3D technology being a new advanced technology, there are no direct competitors. The companies in Fig.3 are examples of indirect competitors that provide micro- and nanofabrication techniques which can deliver similar results, while using different technologies. Existing thin film technology providers provide large scale thin film deposition and require patterning technology such as photolithography. Photolithography technology is the most common technology used in micro- and nanofabrication today. ATLANT 3D technology combines the 3D printing concept with thin film technology, atomic layer deposition. We can directly write and remove patterns of atomically precise layers of material. Microscale Additive Manufacturing and Micromachining is a competitive area due to the three-dimensional aspect of their technology, unlike thin films and photolithography, which are 2D or 2.5D techniques. They are competitors to ATLANT 3D Nanosystems in terms of Microfabrication as a Service (MaaS), but potential customers in terms of equipment. ATLANT 3D Nanosystems combines each of these competing technologies' advantages: wide material compatibility, direct patterning in a compact package at a fraction of the cost.

7. Describe the Market Opportunity. [Optional Section]

ATLANT 3D Nanosystems targets the advanced electronics material development and high-resolution direct material micro and nanofabrication market. There are more than 11000 potential customers in different market segments and industries that require R&D and manufacturing equipment, processes and services. We estimate the potential total addressable market in the range of 10B Euro and Served Addressable Market in the range of 10% and our target market is advanced materials R&D and MEMS and Sensors with estimated size of 300M Euro.

8. Describe the Team. [Optional Section]

We are now 14 people with offices and facilities in Denmark and Germany. In 2020 we secured our team with world class experts that are bringing experience in microtechnology, optoelectronics, chemistry, software development and business development. The expertise that our team bring has already translated into projects with customers in Space, Pharma, Optics and Semiconductor industries.

9. Describe any traction. [Optional Section]

We have secured €2.5M in EU and Danish public funding and gain strong support from a network of global leaders with a total projects funding of €13.5M. We have collectively published over 100 scientific articles with more than 3000 citations (ATLANT 3D h-index: 50). We have developed and tested the initial technology from scratch within less than 2 years. We bootstrapped highly complex technology and company until Series A. We also secured customers like Merck and Sony and won several industry awards such as Falling Walls 2020 and the 3D Pioneers Challenge 2020. Currently we are running 4 pilot projects with Fortune 500 companies and assembling 2 machines for Fortune 500 and NASA.



Figure 1: The problem and solution illustration, showcasing how the Nanofabricator simplifies microfabrication.

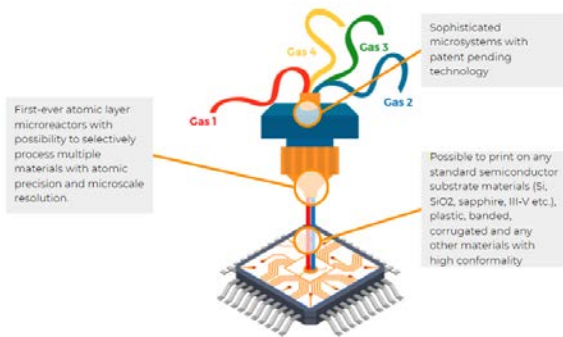


Figure 2: The illustration showcases the core technology of the Nanofabricator – ATLANT 3D Micronozzle.

Link 1: How does Nanofabricator work video: <https://vimeo.com/406123828>

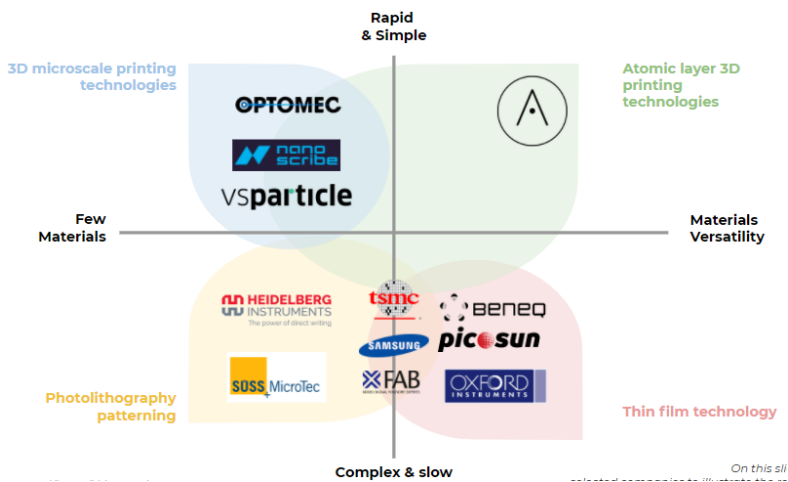


Figure 3: Our innovation created a new domain with only indirect competition.