myfab

Realize your nano vision

Annual Report 2025

Myfab is Sweden's open-access micro- and nanotechnology research infrastructure, with cleanroom laboratories at Chalmers, KTH Royal Institute of Technology, Lund University and Uppsala University.

Myfab supports researchers and companies across diverse scientific and technological disciplines.

4	750	93	120	843
cleanrooms	tools	expert staff	companies	users

Myfab - the Swedish research infrastructure for micro- and nano fabrication

CHALMERS · KTH VETENSKAP OCH KONST · LUND UNIVERSITY · UPPSALA UNIVERSITET

Vetenskapsrådet
Swedish Research Council

Myfab Annual Report 2025

As Myfab entered its sixth operational period in 2025, the national research infrastructure embarked on a transformative phase designed to strengthen Sweden's position in the global landscape of micro- and nanofabrication. Building on renewed expectations from the Swedish Research Council, Myfab broadened its mandate, reinforced its governance model, and expanded its workforce across all four cleanroom laboratories.

This shift enabled the organization to sharpen its long-term strategic focus and respond more effectively to the growing technological demands of academia, industry, and emerging innovation ecosystems.

Throughout the year, Myfab invested heavily in operational stability and future-proofing its laboratories. Important policy documents were finalized, development of a ten-year strategic roadmap advanced, and major upgrades to facilities and equipment were initiated - ranging from new high-precision tools to improvements that enhance both environmental performance and workplace safety.

At the same time, Myfab strengthened its international presence and deepened its role in Europe's collaborative efforts to expand semiconductor capabilities.

Together, these developments have laid a solid foundation for sustained national coordination, greater research impact, and the next generation of breakthroughs enabled by open-access nanofabrication infrastructure.

Key Numbers 2025 2024

•	Publications: 431	469
•	PhD Graduates: 51	47
•	Companies: 120	120
•	Staff: 93	88
•	Users: 843	877
•	Investments: 18	16

Financial 2025

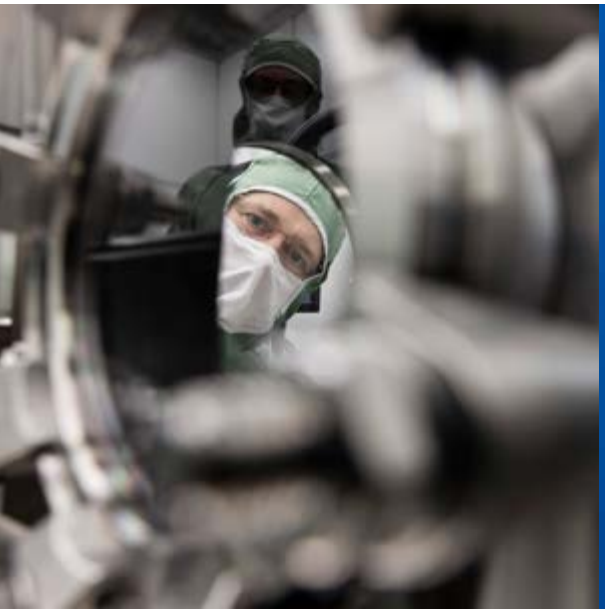
Funded by the participating universities, user fees and by a 70 MSEK grant for operation and investments 2025-2026 från the Swedish Research Council.

Additional for investment: 27 MSEK 2025

Yearly turn over is more than 270 MSEK.

Steering Committee's Work 2025

- The Steering Group strengthened governance by updating key documents, clarifying roles and responsibilities, improving resource allocation principles, and ensuring structured budget follow-up.
- Strategic work advanced through preparation of a new steering document, coordinated national recruitments, and planning of long-term development, including a new ten-year strategy focused on national coordination and international collaboration.
- The Steering Group and Myfab's Director worked closely throughout the year, with lab managers participating in selected meetings to support strategic alignment.
- Decisions included investing in a new advanced wafer bonder for Electrum Lab (10 MSEK) and allocating 10 MSEK in 2027 for upgrading wet benches and wet-chemistry equipment to improve environmental performance and laboratory safety.



Myfab's cleanroom laboratories 2025

Myfab operates cleanroom laboratories at four universities, covering a total area of 5,165 m^2 - roughly the size of six and a half handball courts.

Each lab is equipped with a broad range of tools and processes, complemented by specialized expertise:

- Myfab Chalmers: Two strong areas in devices and circuits for microwave and photonics, and quantum technologies.
- Myfab KTH: Specializes in Si CMOS, MEMS, SiC process lines, and materials and devices for photonics integration, nanoscience based on new active nano and quantum materials.
- Myfab Lund: Offers extensive expertise in the growth and synthesis of compound semiconductor materials. The facility has also developed strong capabilities in wide bandgap materials technologies, supporting advancements crucial to the energy transition.
- Myfab Uppsala: Concentrates on materials science, thin film technology, biomedical engineering, power generation and storage, and Si nanoelectronics.

Key Developments:

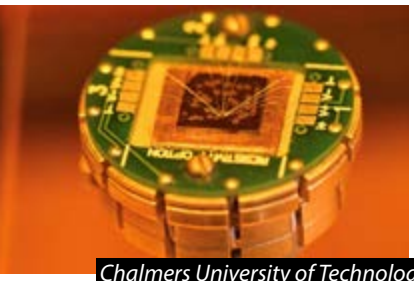
Myfab Chalmers:
- Several new tools installed as part of the five-year reinvestment plan.
- Major additions include:
  Pulsed laser deposition system (Demcon TSST)
  Electron beam lithography system (RAITH)
  Femtosecond laser micromachining system (3D-Micromac)
- Procurement started for seven additional tools, expected deliveries during the second half of 2026.
- Average tool age reduced from 17 years (2018) to 14 years (2025), heading toward 12 years.
- Ongoing cleanroom upgrades, including full redundancy for compressed air.
- Two new staff hired to support three externally funded projects (Tillväxtverket, EU transnational access, EU WBG pilot line).

Myfab KTH:
- Governance clarified as KTH confirmed responsibility for the Electrum Laboratory, enabling a 10-year reinvestment plan.
- Staff relocation to main campus reduced daily interactions among researchers.
- RISE acquired SiC epitaxy tools from the Coherent Corp. closure.
- One process engineer hired to strengthen support.
- New automated wet processing platform improved safety and reduced chemical use.
- A wafer bonder for heterogeneous integration and chiplet packaging procured (funded by Myfab + VR)
- EU/Vinnova-funded programs (Swedish Chips Competence Center, Semiconductor Arena, WBG Pilot Line) strengthened KTH's role as a national semiconductor hub.

Myfab Lund:
- Strong financial performance in 2025.
- Staff expanded from 11.3 to 14.9 FTE (including 7 PhDs).
- Recovery supported by funding from LTH, Lund University, Tillväxtverket, and Myfab.
- Organizational changes started to prepare for the future Science Village Lund nanolab.
- LTH approved the next design phase and reaffirmed support for a co-located research environment.
- Additional staff improved onboarding, support, and external work capacity.
- Tool uptime increased thanks to better preventive maintenance.
- Major investments reached full operation: III-V MOVPE, PECVD, and a new SEM with advanced EDS.

Myfab Uppsala:
- Focus on staff renewal, long-term investments, and outreach to new user groups.
- Two retirements replaced; additional hires delayed to early 2026.
- Pilot program with student coworkers launched to increase efficiency.
- Tillväxtverket-funded procurements:
  Dicing saw – contract signed
  Laser lithography tool – contract signed
  Dry etcher – still in specification phase
- After 30 years, the facility requires major renewal.
- Cleanroom maintenance ongoing; ventilation upgraded by Akademiska Hus.
- Outreach efforts aim to reach more non-academic users.

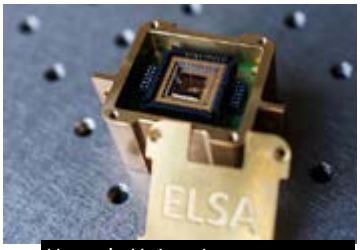
Selected Scientific Highlights



Chalmers University of Technology
Photo: Roselle Ngaloy

Material breakthrough paves way for major energy savings in memory chips

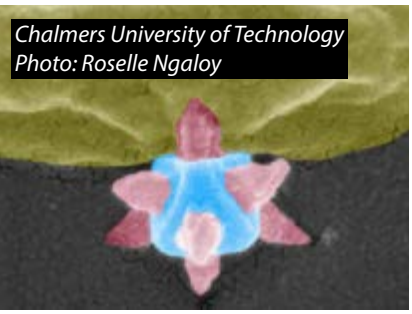
It is anticipated that, within just a few decades, the surging volume of digital data will constitute one of the world's largest energy consumers. Now, researchers at Chalmers University of Technology, Sweden, have made a breakthrough that could shift the paradigm: an atomically thin material that enables two opposing magnetic forces to coexist – dramatically reducing energy consumption in memory devices by a factor of ten. This discovery could pave the way for a new generation of ultra-efficient, reliable memory solutions for AI, mobile technology and advanced data processing.



Uppsala University
Photo: Tobias Sterner/Bildbyrån.

New possibilities for quantum breakthroughs

When it comes to choosing the word of the year, quantum is a strong candidate. Not only is quantum mechanics celebrating its 100th anniversary in 2025, but this year's Nobel Prize in Physics is also awarded for research into quantum mechanical phenomena. But what is the key to successful quantum experiments? In a lab at the Ångström Laboratory, a unique type of refrigerator can drive breakthroughs.



Chalmers University of Technology
Photo: Roselle Ngaloy

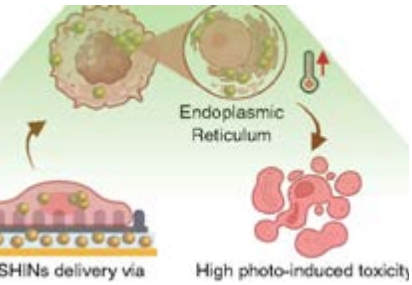
Nobel Prize-awarded material that puncture and kill bacteria

Bacteria that multiply on surfaces are a major headache in healthcare when they gain a foothold on, for example, implants or in catheters. Researchers at Chalmers University of Technology have found a new weapon to fight these hotbeds of bacterial growth – one that does not rely on antibiotics or toxic metals. The key lies in a completely new application of this year's Nobel Prize-winning material: metal-organic frameworks. These materials can physically impale, puncture and kill bacteria before they have time to attach to the surface.

Chalmers University of Technology
Photo: Mia Halleröd Palmgren

A platform of gold reveals the forces of nature's invisible glue

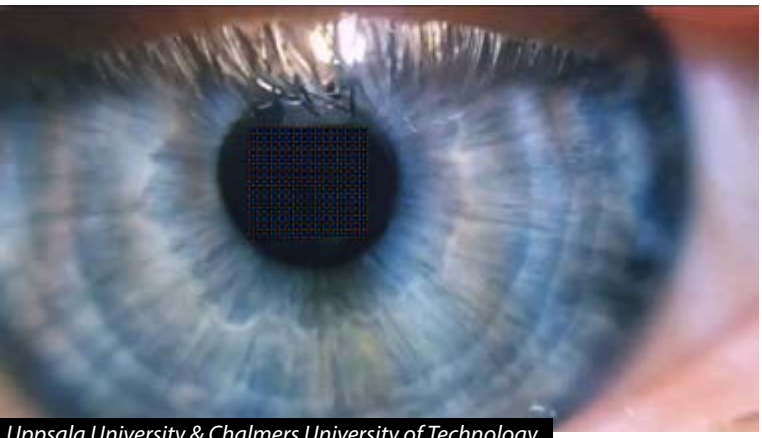
When dust sticks to a surface or a lizard sits on a ceiling, it is due to 'nature's invisible glue'. Researchers at Chalmers University of Technology, Sweden, have now discovered a quick and easy way to study the hidden forces that bind the smallest objects in the universe together. Using gold, salt water and light, they have created a platform on which the forces can be seen through colours.



Lund University

Injecting nanoparticles in cancer cells enhances treatment

Enhancing cancer treatment by improving how therapeutic nanoparticles enter and act within cells is a promising direction. Christelle Prinz and her team have shown that photothermal therapy is more effective when the nanoparticles target the endoplasmic reticulum, which is achieved by performing nanostraw injections.



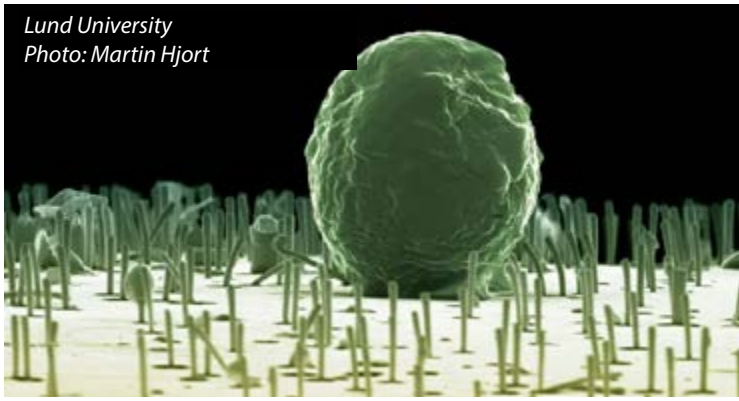
Uppsala University & Chalmers University of Technology
Photo: Mia Halleröd Palmgren

Minimal pixels achieve the highest possible resolution visible to the human eye

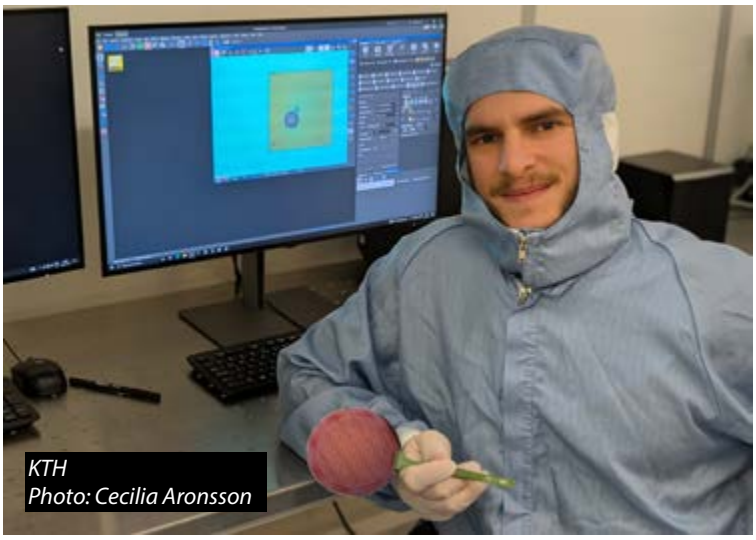
In an article in the science journal Nature, researchers from Chalmers, the University of Gothenburg and Uppsala University, Sweden, present a technology with the smallest pixels ever, in a screen with the highest resolution possible for the human eye to perceive. The pixels reproduce colours using nanoparticles whose dimensions and arrangement control how light is scattered, and whose optical properties can be electrically tuned. This breakthrough paves the way for the creation of virtual worlds that are visually indistinguishable from reality.

Electric field doubles the speed of ultrafast magnetic processes

Polymer nanowires remain conductive after lithography-free manufacturing enabling an excellent path for intracellular bioelectronic manipulation of stem cells and algae. A new study spearheaded by NanoLundians Damien Hughes and Martin Hjort presents a simple, yet efficient way to bring conductive polymers into a nanowire shape suitable to interface with living cells – and even allowing them to get really cozy together!



Lund University
Photo: Martin Hjort



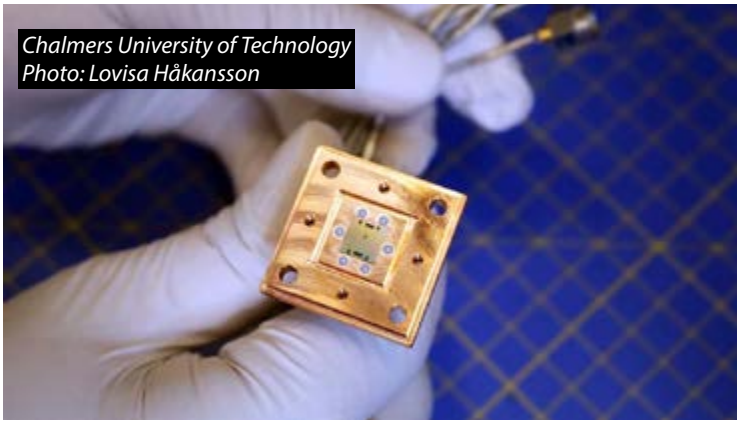
KTH
Photo: Cecilia Aronsson

Researchers develop holes 60,000 times smaller than human hair

New process offers extreme precision that could revolutionize medical diagnostics and beyond.
KTH PhD student Fabio De Ferrari and colleagues have discovered a cost-effective way to create ultra-small pores in silicon - smaller than 5 nanometers in diameter.
Using gold nanoparticles and a method called metal-assisted chemical etching, the researchers also discovered a self-limiting effect—like a drill that stops automatically at just the right depth—making the technique highly precise and scalable.

Quantum fridge enables reliable quantum computers

Quantum computers need extreme cooling for reliable calculations, with qubits requiring temperatures close to absolute zero. Researchers at Chalmers and the University of Maryland have developed a new refrigerator that autonomously cools superconducting qubits to record low temperatures, enhancing the reliability of quantum computation.



Chalmers University of Technology
Photo: Lovisa Håkansson

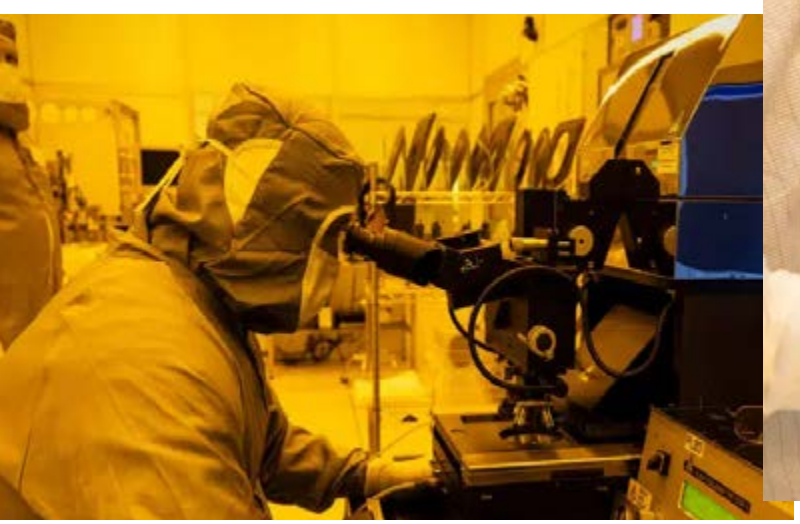
Selected SME highlights

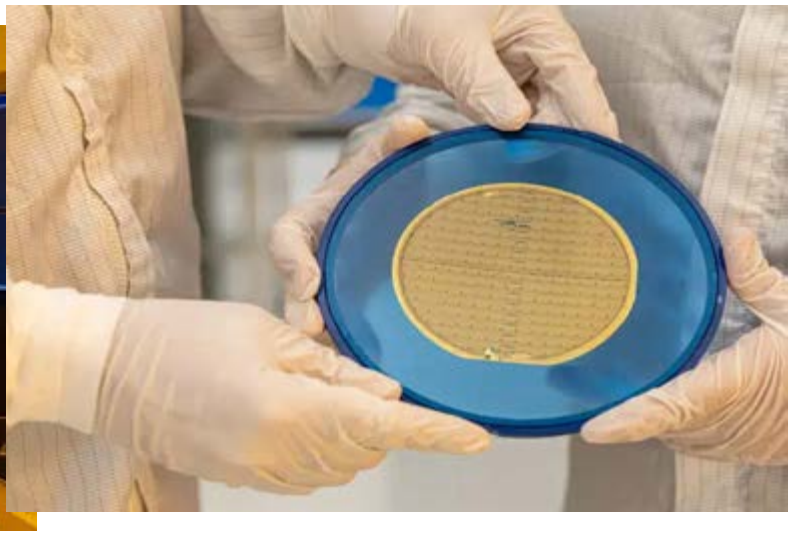
AlixLabs scales up with €14M investment

What started as a discovery in Lund Nano Lab ten years ago is now turning into a sustainable path for the semiconductor industry. AlixLabs recently closed a €14.1 million Series A funding round, and aims to build a new generation of semiconductor manufacturing solutions.
"Myfab Lund/ Lund Nano Lab has been foundational. AlixLabs would not exist without it. The lab provided the infrastructure, expertise, and long-term perspective needed to develop atomic layer etch and pitch splitting. It shaped both the technology and the mindset behind the company and remains a critical success factor today," says CEO Jonas Sundqvist.

KISAB speeds development of key clean-energy materials with Myfab KTH's support

Kiselkarbid i Stockholm AB (KISAB), a materials company based in Kista, is working to develop next-generation 8-inch silicon carbide substrates – a material increasingly in demand as industries shift toward electrification. Larger substrates with lower defect densities are considered essential for improving the performance and lowering the cost of technologies such as electric vehicles, charging infrastructure and renewable-energy systems.





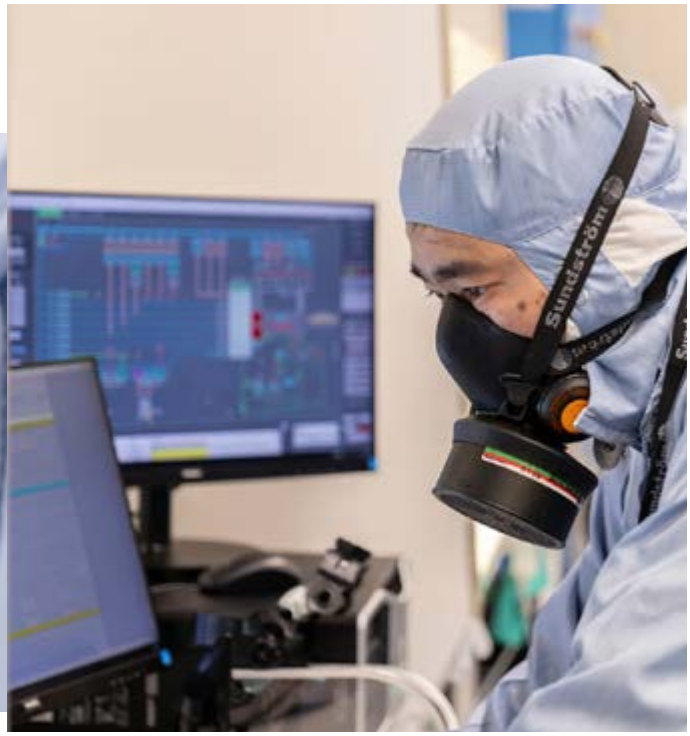
APR Technologies develops core pump technology at Myfab Uppsala

APR Technologies AB, based in Enköping, Sweden, is advancing its core pump technology through cutting-edge microfabrication – an essential yet resource-intensive process.
As the technology is still undergoing development and verification, the company has opted against investing in dedicated fabrication facilities at this stage. Instead, APR leverages access to Myfab. This provides APR with a professionally maintained environment that includes advanced equipment, chemical handling protocols, high cleanliness standards, and specialized processes such as lithography.

Low Noise Factory (LNF) advances cryogenic microwave amplifier technology at Myfab Chalmers

LNF, a spin-off from Chalmers and Caltech founded in 2005. Their transistor technology requires advanced microfabrication, which is why access to cleanroom is essential. It enables fast iteration, process refinement, and innovation – without the cost of building their own facility. LNF develops cryogenic microwave amplifiers that operate at extremely low temperatures. These amplifiers boost faint signals used in space research, quantum computing, and radio astronomy, and are key components in many advanced scientific experiments.

Selected Media Highlights



Impact Loop visits Myfab KTH

For nearly four decades, the Myfab KTH / Electrum Laboratory in Kista has been at the forefront of research and development—especially in semiconductors, an increasingly critical component in everything from mobile phones to electric cars. As Europe ramps up its efforts to strengthen regional value chains, Electrum is taking on a key role.
But what does it really take to build a lab of this scale? To find out, we went to Kista, put on protective gear, and got a behind-the-scenes look at the work in progress.

Swedish Television visits Myfab Chalmers

Sweden's news editorial SVT visited Myfab Chalmers, highlighting the high demand for Chalmers University's dust-free lab in Gothenburg, which plays a crucial role in semiconductor research. Semiconductors are essential for modern technology, and Europe aims to reduce its dependence on Taiwan, China, and the USA.

Utbildningsradion (UR)

UR, the Swedish public service broadcaster with a special educational mandate. UR visited Myfab Chalmers and created a videos explaining how quantum research relies on cleanrooms because quantum devices are extremely sensitive and must be fabricated and handled in ultra-clean, precisely controlled environments.

International networking, user meetings and expert groups 2025

Nordic Nanolab Network (NNN)

The Nordic Nanolab Network strengthened its coordination and joint planning during the year through management meetings and collaborative initiatives. Key topics included communication within the Nordic network and preparation for upcoming user meetings. Planning for the Nordic Nanolab User Meeting (NNUM) 2026 in Uppsala progressed, with preliminary more than 300 partiipants.

EuroNanoLab

Myfab is an active partner in EuroNanoLab, participating in Steering Committee meetings on ENRIS coordination, expert group activities, and future international collaboration, including initial discussions on a Global Nanolab initiative. Thomas Swahn represents Myfab and Sweden in the EuroNanoLab Steering Committee.

ENRIS 2025, Bologna

ENRIS 2025 (https://enris2025.org) in Bologna gathered ~240 participants with plenaries, talks, posters, and an industrial exhibition. ENRIS remains a key forum for nanofabrication infrastructures, with Myfab in a leading role. Thomas Swahn chaired the Program Committee 2025. ENRIS 2027 will be hosted in Brno, Czech Republic.

Nordic Nanolab Network - Management meeting Island

ENRIS in Bologna

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Thomas Swahn, Director Myfab

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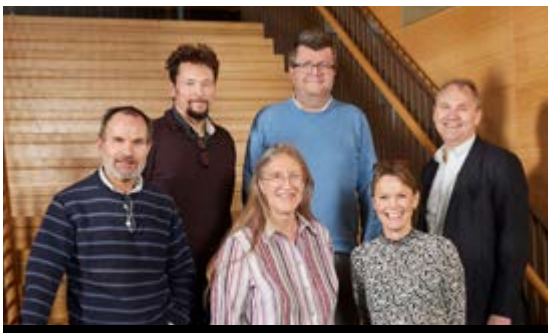

From Left: Luke Hankin, Peter Modh, Thomas Swahn, Stefan Nygren, Carina Zaring, Eva Hellberg

Photos: From the member universites, full description on www.myfab.se

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