

"Research and Technology Infrastructures for the European Nanotechnology Ecosystem" Workshop

Organised by **ASCENT+**

May 4th, 2021 _ 13:30 - 15:30 (Dublin/Lisbon)

Development of nanotechnology, from fundamental research to market-ready applications, requires access to advanced tools and expertise that may not be readily available within local networks of academic researchers or companies. Accordingly, the distributed research infrastructure model is particularly suited for supporting and promoting research and innovation ecosystem in nanotechnology.

Six major projects that cover the full TRL range and the value chain, from nanomaterials to nanofabrication and nanoelectronics, will present the unique aspects of their individual offerings and discuss the current models and future outlook for providing user access to advanced research and fabrication providers.

Topics to be discussed:

- Access support provided by integrated advanced research infrastructures for the development of Nanomaterials, Nanofabrication and Nanoelectronics
- Challenges and best practices in providing Transnational Access
- New issues arising from roadmapping activities

Program:

13:30 ASCENT+ European Infrastructure for Nanoelectronics empowering Research from Materials to Systems by Giorgos FAGAS – Tyndall National Institute

13:45 SUSNANOFAB Project: European Strategy and International Cooperation for sustainable nanofabrication by Margherita CIOFFI - RINA Consulting S.p.A

14:00 NFFA-Europe PILOT by Giorgio ROSSI – University of Milano

14:15 EnABLES - Power IoT Access experiences and potential synergies with nanotech by Mike HAYES – Tyndall National Institute

14:30 EuroNanoLab by Michel de Labachellerie – CNRS Paris

14:45 EURO PRACTICE – the Trusted One-Stop -Shop enabling Microelectronic Innovations by Academia and Start-ups by Romano Hoofman - IMEC

15:00 Panel Discussion – Moderator Ricardo Migueis - INESC Brussels HUB

Speakers:



Giorgos Fagas
Coordinator of ASCENT+
Tyndall National Institute



Margherita Cioffi
Coordinator of SusNanofab
RINA Consulting S.p.A



Giorgio Rossi
Coordinator of NFFA-Europe PILOT
University of Milano



Mike Hayes
Coordinator of EnABLES
Tyndall National Institute



Michel de Labachellerie
Coordinator of EuroNanoLab
CNRS Paris



Romano Hoofman
Coordinator of NEXTS/EUROPRACTICE
IMEC

Panel Discussion Moderator:



Ricardo Migueis
INESC Brussels HUB

ASCENT+ opens the doors to the world's most advanced nanoelectronics infrastructures in Europe

ASCENT+ serves as a direct entry point to a European Nanoelectronics Research Infrastructure of global scale offering access to key enabling capabilities in state-of-the-art processing, modelling and simulation data sets, metrology and characterisation, and devices and test structures. Focus areas include:

- Quantum advantage using solid-state platforms
- Low-power, energy-efficient, high-performance computing based on disruptive devices
- Increased functionality through advanced integration of a diverse range of materials and innovative technologies

ASCENT+ offers an unparalleled opportunity to users, empowering them to respond to new problems and to advance knowledge and technology through generating novel results.

ASCENT+ enables and stimulates its user community to bridge the gap between scientific exploration and development of proof-of-concept technologies to accelerate innovation pathfinding.

<https://www.ascent.network/>

Next Europractice eXtended Technologies and Services: “The access point for the future generation of electronic components and systems”

The mission statement of NEXTS is to provide the European industry and academia with a platform to develop smart integrated systems, from advanced prototype design to volume production. The latter will be achieved by providing easy and affordable access to a wide range of fabrication technologies and tools complemented with training and support to the customer in all critical steps which are needed. NEXTS will act as a true one-stop shop for technologies enabling fully integrated systems and providing direct routes for industrial up-scaling of those systems and consequently it will sustain and grow jobs in Europe in the areas of design and fabrication of microelectronic component and systems. As a value chain aggregator, NEXTS aims to close the gap between the supply- and demand- side for electronic smart systems in virtually all applications domains.

<http://www.europractice.com/>

NFFA-Europe PILOT aims at expanding and consolidating the operation of a Interoperable Distributed Research Infrastructure for Nanoscience (IDRIN) supporting research on materials and functional systems at the nanoscale and at the microscale. NEP provides a unique overarching offer of experimental and theoretical facilities to be combined to suit user needs ranging from materials synthesis, growth, nanofabrication to nanocharacterization, microscopy and spectroscopies, also with fine analysis methods at large scale X-ray and neutron radiation sources, and to numerical simulation. The catalogue of facilities offers, among other advanced capabilities, cleanroom services, high-end electron microscopy, unique 50-100 fs sources for optical and electron spectroscopies, Free Electron Laser beamlines and chemistry based mesoscale material science. An overarching metadata and data management tool (Metastore) will realize the interoperability of the NEP results and a unique open access archive of FAIR nanoscience data to merge with the EOSC. The multi-technique character of the NEP user proposals leads to advanced reproducibility of results, research goals and effectiveness in multi-disciplinary research for curiosity driven, mission-oriented and application-oriented projects by academic or industrial users.

<https://nffa.eu>

EnABLES: European Infrastructure Powering the Internet of Things

EnABLES integrates key European research infrastructures in powering the Internet of Things (IoT). Six research institutes together with 5 knowledge hubs of excellence address the long-term needs of energy management in self-powered smart sensor systems as required by IoT innovation. Through providing access to unique infrastructure, world-leading expertise, advanced equipment and state-of-the-art technologies, EnABLES empowers hundreds of academic researchers and technologists to advance energy harvesting, storage and micropower management solutions for the integrated design and deployment of miniaturised autonomous sensors. Nanotech offers many opportunities to enhance material/device performance as well as miniaturize 'power IoT' solutions. Access ranges from materials & models to devices and systems and the access providers work with the user community to accelerate adoption and innovation in real-life applications. The EnABLES integration offers a paradigm shift in building an infrastructure network that links new scientific knowledge with application-driven research.

<https://www.enables-project.eu/>

EuroNanoLab: cleanrooms distributed infrastructure providing world-class nanofabrication services and expertise

EuroNanoLab is a new distributed research infrastructure consisting of over 40 state-of-the-art academic nanofabrication centers across Europe. Its main vision is to **accelerate research in the micro- and nanotechnology sector** by enabling the **transformation** of a fragmented landscape of **nanofabrication facilities into an integrated knowledge base supporting scientific excellence** and providing researchers a fast-track to results. EuroNanoLab strives to provide:

- **New «nanofabrication system»** able to fabricate more complex micro/nanodevices by integrating the contributions of several specialised cleanrooms to accelerate excellent scientific projects.
- **Central-hub-coordinated user access** to world-class nanofabrication equipment and expertise, technology development, and knowledge base.
- **Multidisciplinary outreach and creation of novel «nanofabrication building blocks»** defined together with leading experts in the following initial scientific communities:
Quantum technologies / 2D materials / Nanobiosciences / Neuromorphic computing / Astronomy and space exploration
- **Fast transfer of technology** developments to start-ups and SMEs.

<http://euronanolab.eu/>

SUSNANOFAB: Promoting sustainable nanofabrication

Nanofabrication is of growing interest in the production of multifunctional devices with unique properties. Its impact is significant in diverse fields, including health, industry and energy. SUSNANOFAB project aims to put in place an integrated and concerted effort focusing on sustainable nanofabrication and to provide an 'EU wide strategic roadmap on nanofabrication'. The basis of the project will include setting up a large set of training, workshop and brokerage services fostering the access to the infrastructures related to the nanomaterials field. Finally, the development of the SUSNANOFAB Digital Platform will promote networking activities and the match-making between the technology providers and potential customers interactively.

<https://susnanofab.eu/>