Nano from lab to app

The Nano Engineering Research Initiative of TU Delft (NERI) exploits the opportunities of the small scale to create breakthrough innovations for industry and society. Nanotechnology is recognized as a key enabling technology for a wide variety of applications to address important societal challenges in health, energy and sustainability. Within the domain of modern mechanical systems, instruments and devices, the nano-scale brings new materials and structures, as well as new generations of active functions, such as extremely sensitive, small-footprint sensors and nano-positioners.

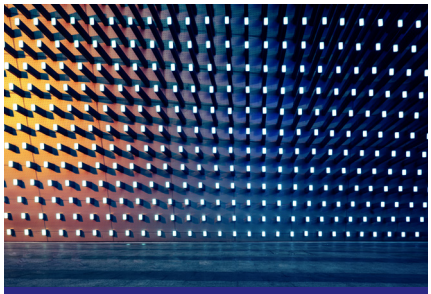
NERI has the mission to establish the knowledge and technology foundation to move nano from lab to app, and to accelerate repeatable and reliable design and manufacturing of relevant functions and applications at an industry-compatible scale. Research is performed within strategic and sustainable partnerships, bringing together industry and knowledge institutes to lay the basis for new industrial activities. Within the NERI programme, science meets industry to join forces and bring nano-enabled innovations, inspired by real industrial cases. NERI is composed of three main research programmes: Functional Material Structures, Precision Instruments and Nanomaterials and Devices.

NERI is an initiative of the TU Delft
Department of Precision and Microsystems Engineering.

NERI Nano Engineering Research Initiative
nano from lab to app

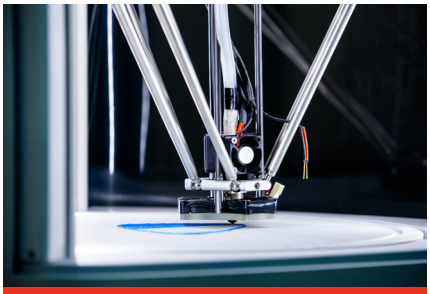
TU Delft

Research Programmes NERI



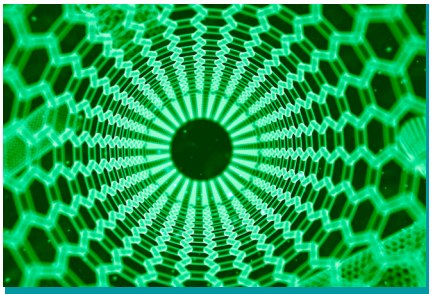
Functional Material Structures

The engineering of materials by designing 3D micro/ nano structures, to achieve unique properties and functionality. Examples are anisotropic mechanical behaviour, and material embedded sensor and actuator functions.



Precision Instruments

Smart precision components and systems, combining precision engineering and micro/nano technology, for high tech instruments to work at very high precision levels, for applications in industrial metrology and science.



Nanomaterials and Devices

Nanomaterials and nanostructured surfaces to create highly sensitive and small footprint mechanical and chemical sensors.

Partners

Together with our partners we work on projects inspired by the partners' challenges and needs, bringing solutions from the small scale to breakthrough achievements.

Examples are:

- Engineered functional material structures for advanced sensing in high tech instruments with industry partners Nexperia and Krohne;
- Development of nanoparticle based manufacturing for smart electronic interconnect systems with industry partner Conpart and academic partner the Nanomechanical lab of the Norwegian University of Science and Technology;
- Integrated microfluidic sensor and actuator platform technology for small footprint low flow control systems with industry partner Bronkhorst;
- Next generation metrology instruments with industry partner VSL.

Are you interested to join forces and become a NERI partner? Are you curious what the small scale can bring for your products and processes?

- If your answer is yes, than we like to define together with you the opportunities for joined research leading to results.

How does NERI create value for you?

- We provide access to a multi-disciplinary team of scientists, as a creative think tank to explore and identify research-based innovations.
- We value sustainable relations, built on trust and mutual inspiration, and find real interest in your challenges. We jointly develop roadmaps, and create impact beyond a single topic of research.
- We tailor the collaboration to your needs, generate and activate the national and international network of research partners and industry, and involve you in national and international funding schemes.
- We involve MSc students, your future young professionals, trained in a high-quality multidisciplinary programme, covering fundamentals, technology and systematic/numerical design, in our joint research projects.

Please feel free to contact us to investigate how to become part of our NERI ecosystem:

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