

## MASSENA

MASSENA, focus on materials for sensing and energy harvesting, corner stones of modern society.



### INSPIRATION

In our daily life, there are more and more connected autonomous devices monitoring parameters related to objects around us such as temperature in cars, pressure in tyres, humidity in houses, energy consumption in buildings and even internal blood pressure or glycaemia level in our bodies. Most sensors are powered by batteries which need to be frequently replaced. A desirable alternative is to have efficient sensors associated with renewable energy harvesters.

In this context, LIST and the University of Luxembourg (UL) jointly launched MASSENA Doctoral Training Unit (DTU). It is in line with the FNR's priority research domain "New Functional and Intelligent Materials and New Sensing Applications" and with the Luxembourg's Smart Specialization Strategy that states "Advanced Materials and Nanotechnology" as important drivers of competitiveness and diversification in Luxembourg.

### INNOVATION

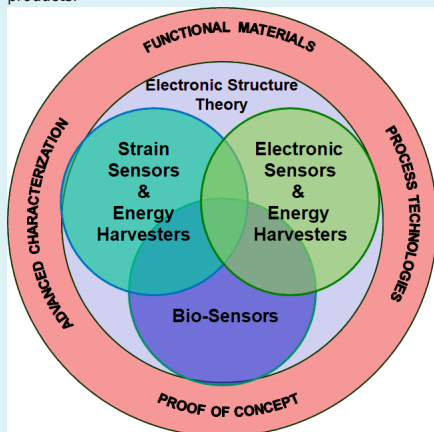
MASSENA focuses on materials enabling future applications in sensors and energy harvesting by embracing stimuli from (and coupling with) strain, motion, temperature, electric field, light and chemistry. Towards this goal the DTU is organised in four thematic clusters: strain sensors and energy harvesters; electronic sensors and energy harvesters; bio-sensing; electronic structure theory.

The DTU's objective is to acquire and use broad knowledge of coupling/sensing and energy conversion phenomena with an aim of discovering new general concepts, materials and devices, clearing the way for both understanding and applications. The research lines cover both core competencies and new activities with higher risk at the forefront of science and technology, running up to laboratory proof of concept. The goal is understanding and comprehension of new physico-chemical phenomena as well as technology oriented research, in order to enable new applications and improved performance.

### IMPACT

Massena will accelerate the basic and advanced research by federating LIST's and UL's recognized and considerable expertise in the field of materials and technology for sensors and energy harvesting. By educating young researchers in the field of advanced materials and nanotechnology, the DTU MASSENA will generate skilled resources for Luxembourg's industrial ecosystem which can take advantage of the created talent.

Furthermore, MASSENA will put in place mechanisms to identify together with industry the outputs of the DTU activities having the highest potentials to be turned into innovation and ultimately into products.



### Partners

University of Luxembourg (LU)

### Financial Support

Fonds National de la Recherche

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