**UNIVERSITY OF GENOA**
**DEPARTMENT OF INFORMATICS, BIOENGINEERING, ROBOTICS AND SYSTEMS ENGINEERING**
**MASTER'S PROGRAM IN BIOENGINEERING**

# Thesis Project Form

**Title (tentative):** Effects of nanoparticle on the electrophysiological activity of in-vitro neuronal networks

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## Description

### Motivation and application domain

There is a lot of interest in understanding the possible neurotoxic effect of nanoparticle at the level of the nervous system. The use of in-vitro models is a preliminary step for understanding these effects at cellular network level.

### General objectives and main activities

There are very few systematic studies dealing with in-vitro neurons and electrophysiological induced changes by nanoparticles.

The main objective is to establish a protocol and perform experiments for investigating acute (and chronic) effects in a dose dependent manner. Starting from preliminary experiments performed in our Lab and from literature the student will develop an appropriate protocol and will analyse the obtained data.

### Training Objectives (technical/analytical tools, experimental methodologies)

- Use of MEAs, use of electrophysiological experimental set-up and experiment execution.
- Development of experimental protocols.
- Analysis of data and development of new algorithms

**Place(s) where the thesis work will be carried out:** Neuroengineering Lab

## Additional information

**Curriculum:** Neuroengineering and Bio-ICT

**Maximum number of students:** 2