



School of Computing, Engineering, and the Built Environment Edinburgh Napier University

PHD STUDENT PROJECT

Funding and application details

Funding status: Self-funded students only

Application instructions:

Detailed instructions are available at <https://www.napier.ac.uk/research-and-innovation/research-degrees/how-to-apply>

Prospective candidates are encouraged to contact the Director of Studies (see details below) to discuss the project and their suitability for it.

Project details

Supervisory Team:

- DIRECTOR OF STUDY: Libu Manjakkal (Email: L.Manjakkal@napier.ac.uk)
- 2ND SUPERVISOR: Amir Hussain

Subject Group: Cyber-security and system engineering

Research Areas: Physical Chemistry, Polymer Chemistry, Structural Chemistry, Electrical Engineering, Electronic Engineering, Energy Technologies, Environmental Engineering

Project Title: Development of Stretchable Conductive Layers For Wearable Devices

Project description:

Flexible and wearable electronic devices require the development of, highly conductive, mechanically, electrochemically stable (against oxidation/reduction with various fluids), weightless and a sustainable (recyclable and biocompatible materials), and conductive electrodes. For the active material loading and long-term stability of the electrodes (without oxidation or delamination) in sensors or other electronic component development, the conductive electrodes design has a critical role.

To achieve high performance of the flexible and wearable conductive layers networks in this work, the student will investigate the performances of different sets of biocompatible organic and inorganic nanoparticles based electrodes. The expected major activities

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1. Preparation of new organic and inorganic nanoparticles
2. Structural, morphological and elemental analysis of the nanoparticles
3. Design of new electrode layers

References:

Candidate characteristics

Education:

A second class honour degree or equivalent qualification in material science, renewable energy, chemistry, physics and electrical/electronics engineering

Subject knowledge:

Good fundamental knowledge of electrochemistry and advanced functional materials.

Essential attributes:

- Experience of fundamental sensors fabrication, electrochemistry and advanced functional materials
- Competent in collaborative research work
- Knowledge of sensing technology
- Good written and oral communication skills
- Strong motivation, with evidence of independent research skills relevant to the project
- Good time management

Desirable attributes: