

Department	School of Engineering and the Built Environment
Supervisors	Dr.Libù Manjakkal
Project Title	Flexible Electrochemical Multisensors For online Water Quality Monitoring
<p>PROJECT DESCRIPTION</p> <p>Solid state electrochemical sensor technologies with IoT systems have significant importance in many fields such as medical, biological, agricultural and environmental pollution monitoring systems. In environmental pollution, water pollution has serious consequences for human health, animal, fish and plant life. Water quality monitoring demands the determination of parameters like pH, dissolved oxygen (DO), conductivity, turbidity, Cl⁻ ion, temperature, content of ammonia, metal ions, etc. This PhD project will develop a new flexible electrochemical multisensor patch (pH, DO, dissolved ions) on flexible substrate. Such sensor patch will have potential implementation in underwater vehicles for online water quality monitoring. The sensors will be fabricated by screen printing technology.</p> <p>The expected major activities are</p> <ol style="list-style-type: none"> 1. Preparation of new biocompatible sensitive electrode paste and fabrication of flexible electrodes. 2. Structural, morphological and elemental analysis of the sensitive electrodes 3. Fabrication of the sensors by printing technology and investigate the sensing mechanism using electrochemical characterisations. <p>Academic qualifications</p> <p>A first degree (at least a 2.1) ideally in material science, chemistry, physics and electronics engineering with a good fundamental knowledge of electrochemistry and advanced functional materials.</p> <p>English language requirement</p> <p>IELTS score must be at least 6.5 (with not less than 6.0 in each of the four components). Other, equivalent qualifications will be accepted. Full details of the University's policy are available online.</p> <p>Essential attributes:</p> <ul style="list-style-type: none"> • 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 <p>Desirable attributes:</p> <p>Knowledge in wireless communication</p>	
Enquiries	For informal enquiries about this PhD project, please contact Dr. Libù Manjakkal, L.Manjakkal@napier.ac.uk
Web page	https://www.napier.ac.uk/research-and-innovation/research-degrees/application-process