UNIVERSITY OF BRESCIA

PhD Program
in
TECHNOLOGY FOR HEALTH

SENSORS for BIOTECHNOLOGICAL APPLICATIONS

PhD Candidate: Saad Abdullah

Email: s.abdullah@unibs.it

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Tutor: Prof. Emilio Sardini and Prof. Mauro Serpelloni

Background

The demand for the development of swift, simple, and ultra-sensitive biosensors has been increasing after the introduction of innovative approaches such as bioelectronics, nanotechnology, electrochemistry. In every electrochemical sensor, a potentiostat is needed to maintain electrochemical stability in the sensor by regulating the potential difference between the reference electrode and working electrode.

Objectives

This research focuses on design and development of multichannel potentiostat for protein detection present in biological fluids.

Methodologies

The research aims to analyze all the available potentiostat used for protein detection and based on the analysis develop a methodology which overcomes all the limitations of previous designs.

Major steps involved in design and development are.

1) Analyze the previous designs
2) Develop a soft model for the analysis and prototyping
3) Develop a working prototype and analyze all the physical parameters
4) Develop a final working prototype with software-controlled unit.

Expected Results and Impact

The expected device will be,

1) Low cost
2) Bluetooth operated
3) Highly sensitive
4) Generalized for proteins
5) Portable unit