Title: Models and Interfaces for Electrochemical Sensors: Architectures and Implementations

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Abstract: To determine and optimize the electrochemical sensor interface circuit specifications, as well as to propose novel topologies, a comprehensive understanding of its equivalent model is foremost necessary. This chapter provides a detailed analysis of the sensor's electrode-electrolyte interface and illustrates the electrical modelling of both two-electrode and three-electrode electrochemical systems. Furthermore, several realistic design assumptions and concerns are discussed, along with examples of typical electrochemical sensor interfaces, namely, potentiostats and current readout circuits. In conclusion, challenges and future trends are discussed for both the sensor modelling and the sensor interface, with the intention of researching and presenting new opportunities and future advances.

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- Completed his M.E. Degree in Electronics Engineering from IoE Research Group at University College Dublin (UCD), Dublin, Ireland in 2019, and is conducting Ph.D. research at Microelectronic Circuits Centre Ireland (MCCI), Cork, Ireland
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