

Building Your Device and App: A Guide for Pocketable Biosensors

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Biosensors, comprised of the bioreceptor, transducer, and signal output components, have traditionally leaned towards using laboratory potentiostats for electrochemical applications, with limited exploration of portable alternatives. However, in today's landscape, individuals with basic electronics and programming knowledge can craft portable potentiostats, develop custom smartphone apps, and engineer compact devices. This school delves into the fabrication of pocketable devices. As a practical case study, we will showcase the development of an electrophoretic power supply tailored for paper-based sensors with wireless electrochemical readout—a project executed by our research group. We will highlight key points to consider during the design, how to control it in a wireless way through Bluetooth. Additionally, the design of antennas specifically tailored for NFC (Near Field Communication) potentiostats, considering factors like series resistance and geometry will be presented. Finally, in order to have a user-friendly pocketable device, we will provide an introductory overview of creating mobile applications using a block-based approach, without the need for advanced programming skills.