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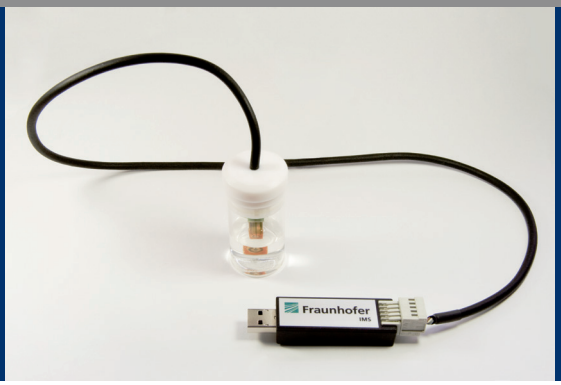

1 *Glucose Sensor with Wireless Interface*
2 *Nanopotentiostat-USB-System*

USB-STICK NANO POTENTIOSTAT FOR INNOVATIVE BIO SENSORS

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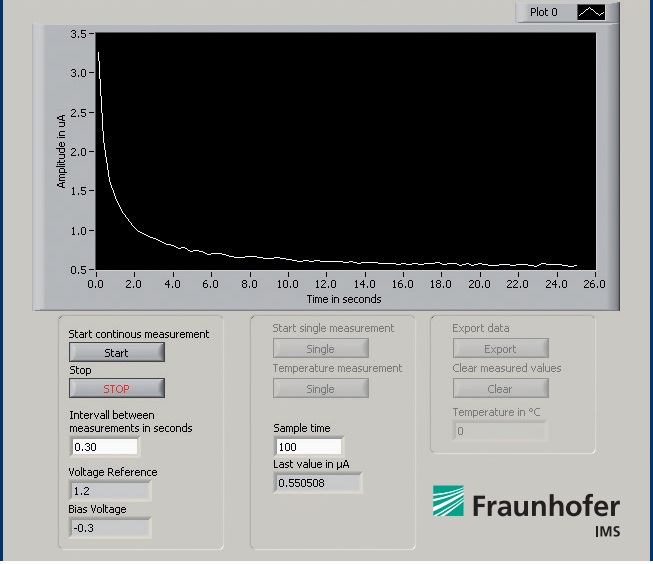
A potentiostat to fit into your pocket

- portable
- highly sensitive
- miniaturized potentiostat

There is a growing demand for highly sensitive and portable devices that can measure biological parameters real time and in a non-invasive manner.
To measure these parameters, devices increasingly translate a binding event between receptors and their targets into an electrical signal. These devices often require a potentiostat for sensitive and reliable results.
This system is a sensitive and miniaturized potentiostat co-developed by NovioSense and Fraunhofer IMS. Due to its reduced size, the device is highly portable, making it ideally suited for field work.

A variety of possibilities

1. Based on its intuitive use the measurement system can be used for teaching purposes. The system will come with a kit containing suitable samples and a workbook. In a playful manner students will learn to understand the mechanism of reduction and oxidation reactions.
2. The system can be used for detecting a large variety of biological analytes, such as glucose, lactate and neurotransmitters which are measured in an amperometric manner. For example, the dutch company NovioSense is currently implementing the system into a miniaturized glucose sensor. It can also be used in cell and bacteria culturing for the detection of airborne metabolites like oxygen and nitrogen oxygen.
3. The measurement system is ideally suited for use in process monitoring for example by detecting fermentation, rotting or other unwanted processes. It can also monitor chemical reactions.



The glucose diagnostic system

The principle of measurement involves an eletcrochemical reaction that is activated with the aid of an enzyme. Glucose oxidase converts glucose into hydrogen peroxide (H_2O_2) and other chemicals whose concentration can be measured with a pontentiostat. This measurement is used for calculating glucose level. In the future the Fraunhofer researchers want to integrate the biosensor and the nanopotentiostat on one chip. It even has an integrated analog digital converter that converts the electrochemical signals into digital data. The biosensor transmits this data via a wireless interface, for example to a mobile receiver. Thus, the patient can keep a steady eye on his or her glucose level. In the past, you used to need a circuit board the size of a half-sheet of paper and you also had to have a driver. But even these things are no longer necessary with our new sensor.

Durable biosensor

The minimal size of the Chip is not the only thing that provides a substantial advantage over previous biosenesors of this type. In addition, the sensor consumes substantially less power. Earlier systems required about 500 microamperes at five volts; now it is less than 100 microamperes. That increases the durability of the system – allowing the patient to wear the sensor for weeks, or even months. The use of a passive system makes this durability possible. The sensor is able to send and receive data packages, but it can also be supplied with power through radio frequency.

Device potential

Chronoamperometry	yes
Cyclic voltametry	yes
Linear Sweep voltametry	yes
Potential range	-3/+3 V
Current range	±10 nA to ±750 µA
Dimensions	55 x 20 x 12 mm

3 *PC Software Screenshot - Data Aquisition and Analysis*

4 *Nanopotentiostat-USB-Stick*

noviosense
glucose sensor

www.noviosense.com