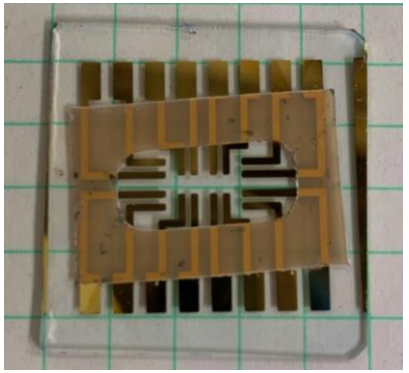
Tohoku Univ. Technology

Non-enzymatic biosensor

Organic electrochemical device that can be manufactured by the entire printing process

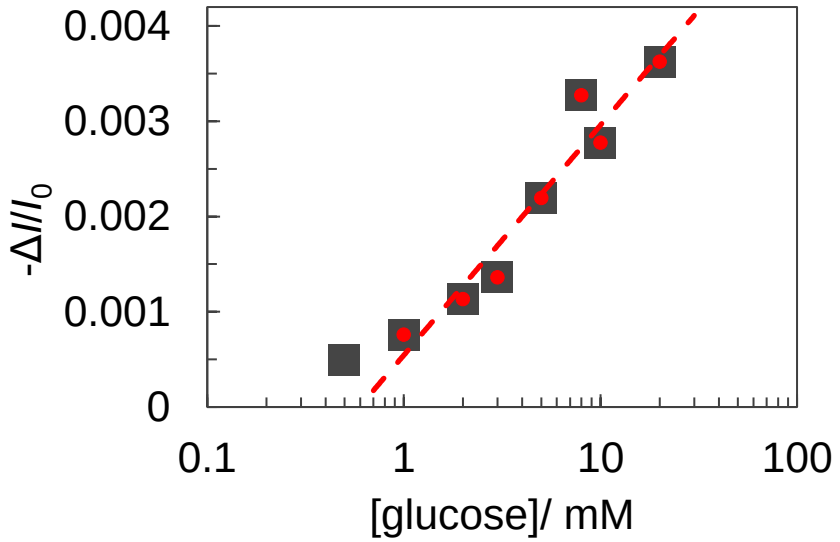


Overview

When an organic electrochemical transistor (OECT) is modified with an enzyme such as glucose oxidase, it can be applied to a biosensor capable of detecting a sugar such as a blood sugar-level. The development of a non-enzymatic OECT biosensor has been promoted because of the instability and high price of enzymes. In the non-enzymatic OECT biosensor, phenylboronic acid (PBA), a glucose-sensing functional moiety, is generally used instead of enzymes. However, the electropolymerization reaction is essential for the application of PBA, and the complicated manufacturing process has been a problem.

The present invention relates to a glucose sensor that does not use an enzyme or PBA. The glucose sensor is driven by using a membrane containing a polysaccharide mixed with a conductive polymer as a glucose sensing site. The simplicity of the manufacturing process is also a major advantage because the entire process can be produced by printing if various metal inks are used as electrodes. The figure shows the result of measuring a glucose solution using the sensor. It can be seen that the low concentration of glucose can be detected without using enzyme or PBA.

Features・Outstandings



Product Application

- ☐ Sensors for monitoring plants
- ☐ Sensor for monitoring blood sugar
- ☐ Various other sensors for detecting minute amounts of sugars in the mM class

IP Data

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