Multiple-Use Renewable Electrochemical Sensors Based on Direct Drawing of Enzymatic Inks

Tech ID: 25257 / UC Case 2015-063-0

TECHNOLOGY DESCRIPTION

University researchers have developed biosensors enabled by enzymatic ink loaded in roller pens (“enzymatic pen”) that can draw active enzyme layers, thus allowing for easy renewal of sensing components and repeated use of substrates. A prime application would be blood glucose monitoring in conjunction with a hand-held electronic unit with display, where the glucose strip becomes reusable, or the enzymatic sensors can be drawn/erased at will over electrodes on the unit. The invention has been reduced to practice for detection of glucose levels in buffer as well as in undiluted human blood sample. The concept is not limited to glucose (diabetes) sensing and can easily be extended to other analytes by using different enzymes.

The invention also provides techniques of using enzymatic inks for fabricating sensors and biofuel cells directly drawn on diverse substrates (for example, leaves, cellphone, walls, paper etc). However, the approach can be extended to a plethora of other diverse applications requiring reusable electrochemical sensors. The transfer of the ink to a substrate is not limited to roller pen and other means like squeeze tubes, syringes and stamps can also be used.

This technology has patent pending and is available for sponsored research and/or licensing.

RELATED MATERIALS

- Biocompatible Enzymatic Roller Pens for Direct Writing of Biocatalytic Materials: “Do-it-Yourself” Electrochemical Biosensors, DOI: 10.1002/adhm.201400808, Advanced Healthcare Materials, Volume 4, Issue 8, pages 1215–1224, June 3, 2015 - 06/03/2015
- Pens Filled with High-Tech Inks for Do It Yourself Sensors
- Draw Biosensors on Your Skin

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	10,501,770	12/10/2019	2015-063
United States Of America	Published Application	011573 A1	04/16/2020	2015-063
Patent Cooperation Treaty	Published Application	2016127105	08/11/2016	2015-063

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OTHER INFORMATION

CATEGORIZED AS

- **Environment**
  - Sensing
- **Sensors & Instrumentation**
  - Biosensors
  - Environmental Sensors
  - Medical

RELATED CASES

2015-063-0

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