We have started production of bioelectrodes and electrochemical sensors

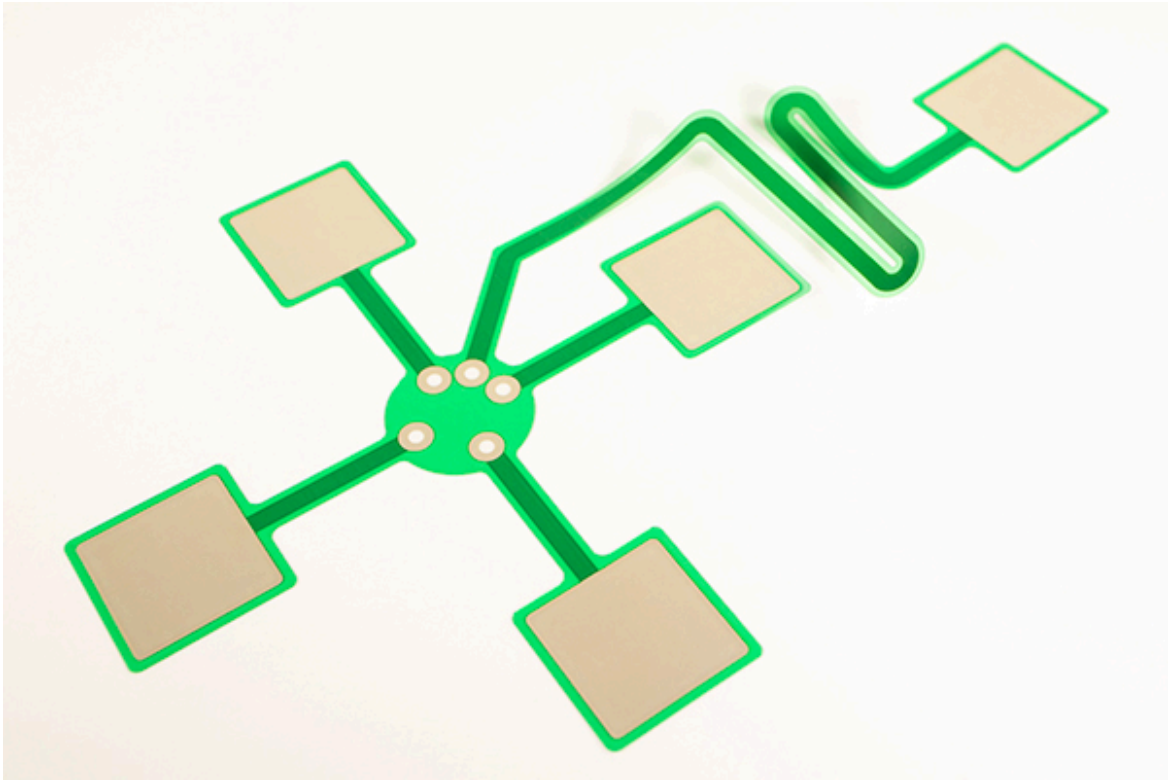
August 3rd 2018

Elephantech Inc. (head office: Chuo-ku, Tokyo, CEO: Shinya Shimizu, hereinafter “Elephantech”) manufactures “P-Flex®”, a flexible PCB, and advocates new circuit board manufacturing methods using printed electronics technology. Elephantech has started production of bioelectrodes and electrochemical sensors.

We bring together the technological knowledge of former AgIC Inc. and Elephantech to provide sensors that benefit from the advantages of inkjet printing technologies.

Bioelectrode

Click! Bioelectrodes made with inkjet printed circuit boards



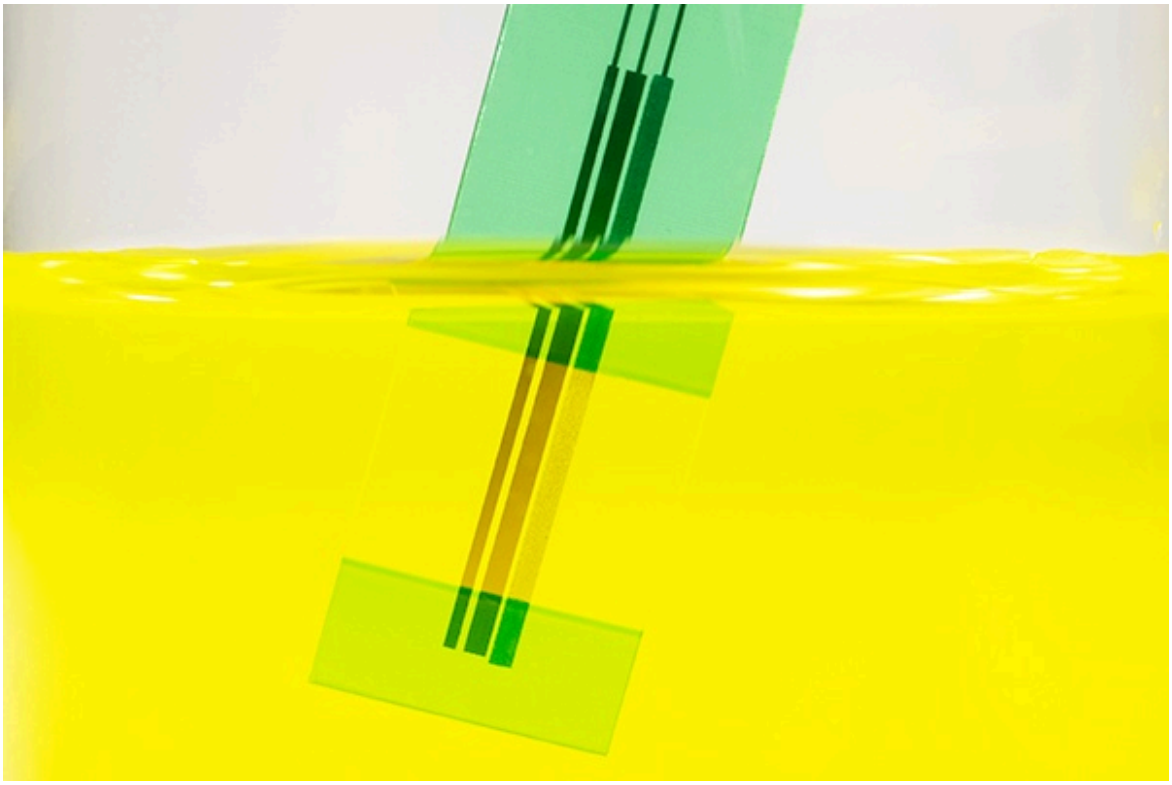
Bioelectrodes are used to detect bioelectric potentials such as ECG (electrocardiogram), EEG (electroencephalogram) or EMG (electromyogram). There are several kinds of electrodes but, especially for monitoring, the use of Ag/AgCl electrodes is well-suited as it can be used stably over long periods of time and has a low polarizing potential between the skin and the electrodes.

An Ag/AgCl bioelectrode fabricated with P-Flex® has lower resistance to electrodes than silver paste and such due to its copper wiring and holds an advantage in that it is capable of components mounting. In addition, the following benefits come with the use of our inkjet technology for production:

- Production at a reasonable price and in a short period of time as there is no need for any mold other than for the area applying Ag/AgCl paste.
- Suitable for medium and small lot production.
- Choice between PET film or polyimide film substrates.
- Possibility to adapt to material ratio adjustments of the Ag/AgCl paste and can cope with prototyping for iontophoresis and such.

Electrochemical sensor

Click! Electrochemical sensors made with P-Flex® PET



An electrochemical sensor is a sensor that can sense the state by using redox potential. It is used in environmental and water quality analyses to measure the amount of copper, arsenic, mercury and the like contained within the water. In addition to this, as the transducer part of a biosensor, it is used in blood glucose level, lactic acid, urine sugar, and glutamic acid sensors and such.

Benefits of making electrochemical sensors with P-Flex® PET are:

- Reduced trace resistance.
- Lower cost compared to gold paste printing due to the gold electrode being made with gold flash (gold plating).
- Reduced water absorption induced sensor sensitivity as it is a PET base that doesn't absorb water and can also be used with flow cell and such.
- Can be produced in small batches.

Please feel free to ask any questions via e-mail or phone.

Company Overview

Name	Elephantech Inc.
Representative	Shinya Shimizu, CEO
Establishment	January 2014
Capital	JPY 458,390,000 (including capital reserve)
Address	4-3-8 Hatchobori, Chuo-ku, Tokyo 104-0032, Japan
URL	https://www.elephantech.co.jp/en/
Business description	Development of printed electronics manufacturing technology and provision of related services

(As of September, 2018)