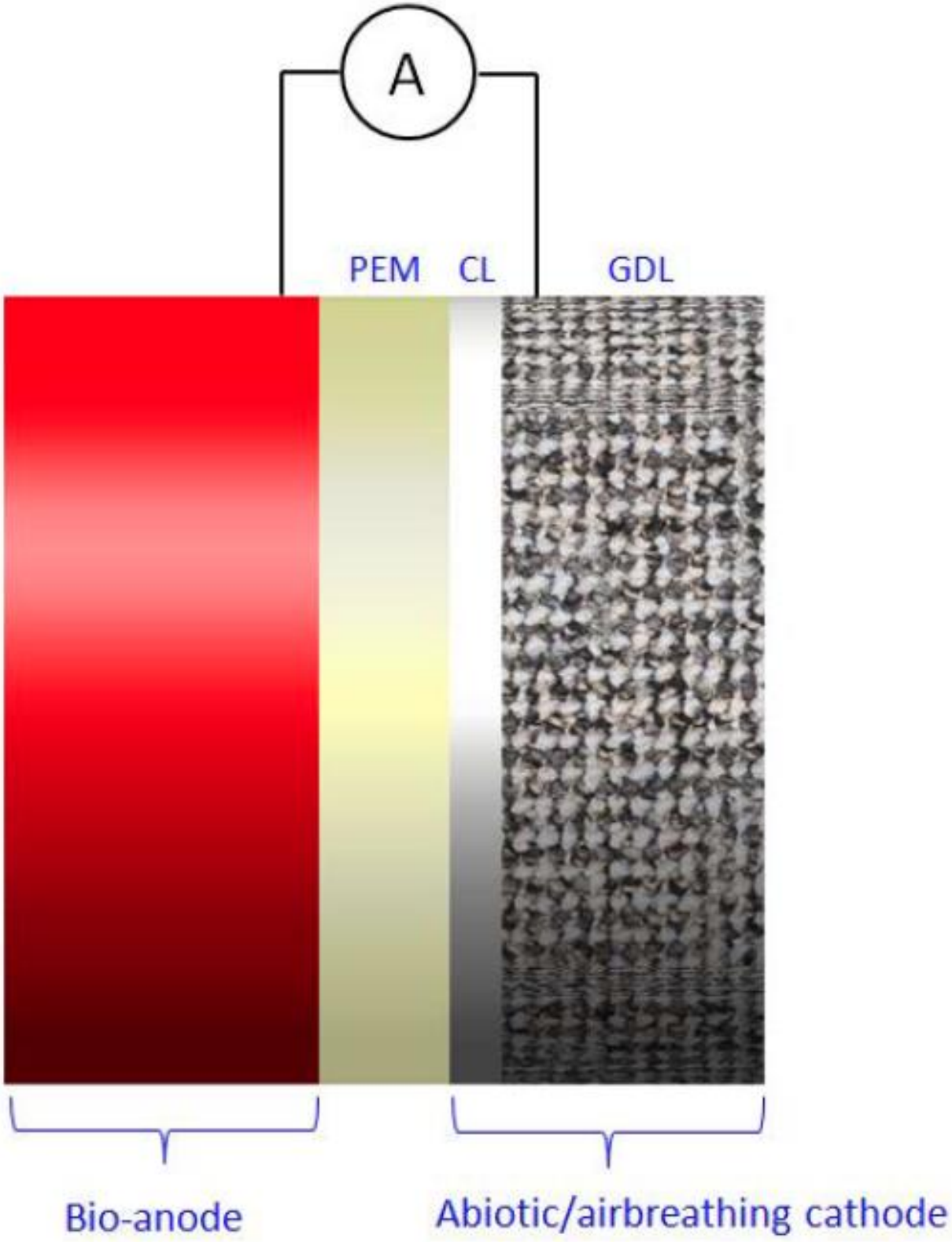
IN VIVO BLOOD GLUCOSE SENSING DEVICE AND METHOD OF MAKING SAME

Published date: May 12, 2014

Technology description

Self-measuring of blood glucose level is an essential daily activity for diabetic patients. While a finger-prick method accompanied with portable blood testers is dominating in the market, the needs for less-invasive and non-disposable approaches have been growing for decades. In addition, none of the existing methods provides in vivo and continuous operation. As an in vivo blood glucose sensor, a biological energy conversion device that utilizes glucose as fuel is proposed, which does not require surgeries for implantation and therefore easily replaceable if needed. Electrochemically generated currents are measured and calibrated to estimate glucose level in human blood. Combined with already-proven benefits from micro/nanofabrication techniques and low cost materials, the proposed device is expected to open up a new era in the market of home blood glucose monitoring

Device Demo



Schematic of the device

Application area

The main application of the invented technology is home blood glucose level monitoring for diabetes and hyperglycemia.
As a fuel cell, the proposed device can also power up other implanted devices such as signal transmitters, pacemakers, and health monitoring sensor

Advantages

Ø In vivo home blood glucose monitoring sensor.
Ø Capable of continuous monitoring the blood glucose level
Ø Less invasive and less expensive than the prick-finger method.
Ø Can power up other implanted devices such as pacemaker, signal transmitter, and health monitoring sensor, etc.
Ø No disposable components involved and therefore inexpensive and environmental friendly.
Ø As fully exposed to the ambient air, the air-breathing cathode of the device ensures a continuous and sufficient supply of oxygen. Therefore, the proposed design does not require additional ways to supply oxidants.
o More importantly, this unique feature allows a less-invasive method of installing the device in human bodies.
o As long as the device contacts directly with blood in any place of human body, this glucose sensor will function continuously

Institution

University of Arkansas, Little Rock

Inventors

Jin Wook Lee

联系我们

叶先生

电 话：021-65679356

手 机：13414935137

邮 箱：yeyingsheng@zf-ym.com